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International Nutrition Communication Service
(INCS)

CONSULTANT REPORT

for

CAMEROON

(March 9 - 23, 1983)

(The ethnographic component of a project to determine the effect of food availability and infant feeding practices on the nutritional status of children 0-23 months)

BY

Gretel H. Pelto - INCS Consultant

Submitted by
Education Development Center
55 Chapel Street
Newton, MA 02160

To the United States Agency for International Development
Washington, D.C.

This project has been conducted under Contract A.I.D./DSAN-C-0209,
Office of Nutrition, Development Support Bureau, Agency for International Development, Washington, D.C.

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INTRODUCTION

Over the past decade there has been increasing interest in using the discipline of anthropology to increase the effectiveness of nutrition interventions. Most nutrition professionals are in agreement with this objective, but few have known how to go about it. Dr. Pelto's report details one approach.

At the request of the Government of the Cameroon Dr. Pelto was asked to help design the ethnographic component of a study to assess the determinants of infant malnutrition in Northern Cameroon. This study will be carried out over the next two years by an inter-disciplinary team of anthropologists, public health specialists and nutritionists. It will document changes in nutritional status, dietary intake and relevant household practices over the course of a year in four target communities.

Dr. Pelto's contribution to the study is the design of the preliminary research phase. This phase will rely on anthropological observation to define the important variables of household and community life that affect the nutritional status of young children. These variables will include significant infant feeding practices, the community's perception of the developmental stages of childhood, family food availability and food utilization, aspects of the prevailing food belief system and significant social characteristics of the social relationships of members of the target communities.

Data will be collected over the next six months to answer the questions posed in Dr. Pelto's design. Once it is analyzed it will become part of the project's household survey, and will act as a basis for the hypothesis about infant malnutrition that the project will seek to prove or disprove. If the design is useful, INCS is hopeful that it might become a model for integrating anthropology into other nutrition survey research projects.

Ron Israel
Director, INCS

May, 1983

BACKGROUND

As outlined in previous documents (1 - 4), the purpose of the project on "The Effect of Food Availability and Infant Feeding Practices on the Nutritional Status of Children 0 - 23 Months" is to assist the development of programs to improve nutritional status and health of infants and children in Northern Cameroon by identifying the major factors that influence the nutrition and health of young children in this area. The National Nutrition Survey of 1978 (5) revealed that infants and young children in the northern part of the country are at risk of poor nutrition, and the consequences that follow from poor nutrition, particularly during the weaning period. While it may be presumed that in Cameroon, as everywhere else in the world, the causes of infant malnutrition are multiple and complex, an understanding of the main factors and their interaction may provide guidelines for more effective and efficient utilization of resources to prevent the tragedy.

From its inception, this study has been guided by an emerging orientation in applied nutrition research, which is characterized by a number of assumptions:

1. The nutritional status of an individual (infant, child or adult) is strongly affected by conditions and characteristics of the household in which that individual lives. Therefore, it is necessary to obtain household-level data.

2. The material resources of a household (land, income, and

so on) should be regarded as a primary influence on nutrition, through its effect on food availability. Therefore, it is important to obtain data on food availability and the factors that affect it.

3. Cultural beliefs and values affect decisions about food acquisition, preparation and consumption. Therefore, it is necessary to obtain data about the cultural aspects of food use in order to understand and interpret food practices.

4. The synergistic relationship between nutrition and infection is of such a magnitude that, at least in areas of serious, endemic infectious disease, it is necessary to obtain data on morbidity, as well as food intake.

5. Infant feeding practices are best understood as an aspect of child care, and it is therefore important to study the context of child care (including maternal activities and time allocation) in order to comprehend the logic of these practices.

From these assumptions, a general theoretical model of the determinants of nutritional status in infants and young children can be derived. The model outlined below postulates that nutritional status is the outcome of the interactions among a series of variables that can be classified under the following general headings:

1. Infant Feeding and Child Care Practices

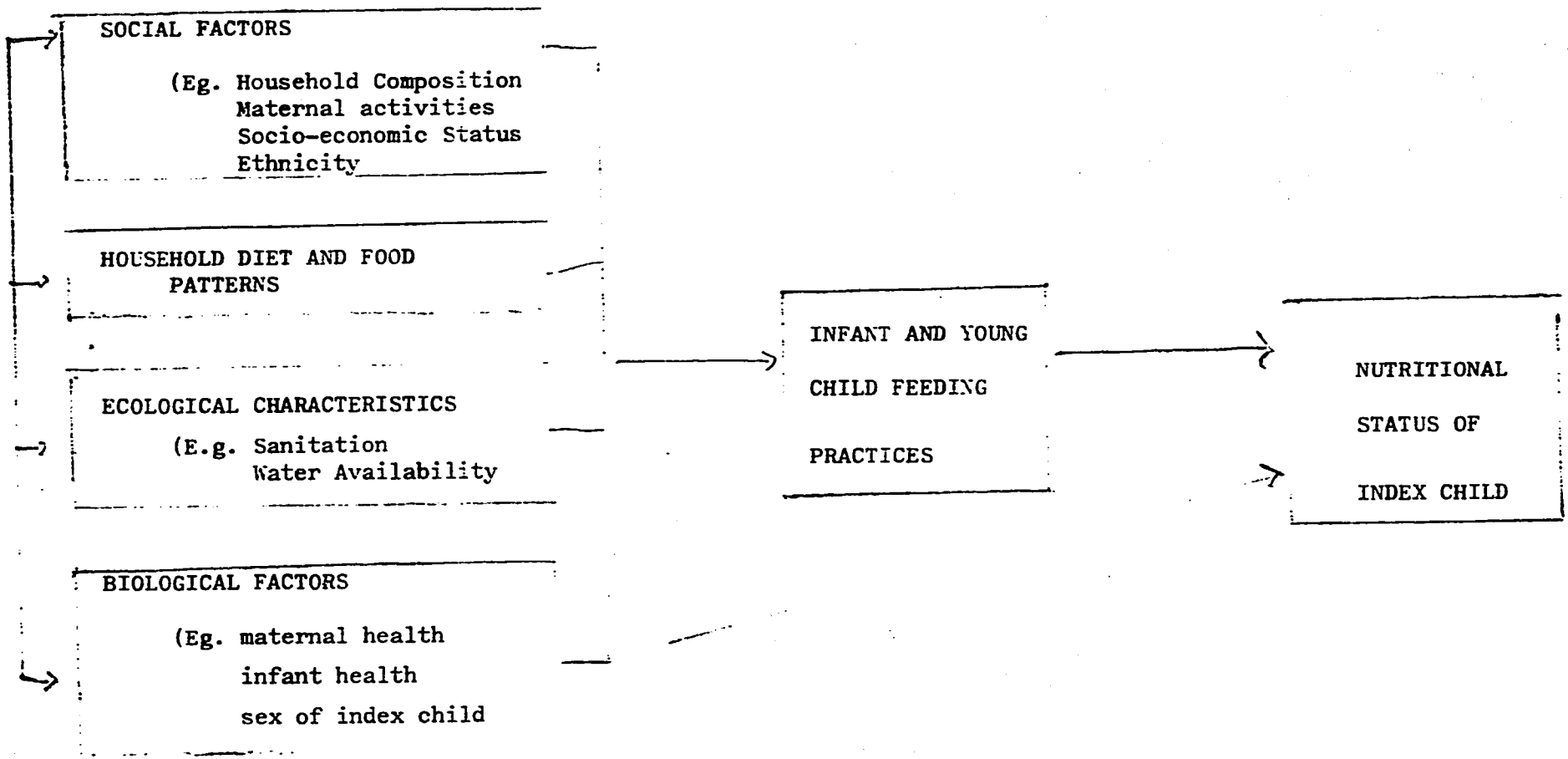
2. Household Diet and Food Patterns

3. Household Social Characteristics (including socio-economic status, household composition, maternal activities and ethnic-religious identity)

4. Household Ecological Characteristics (including water supply, sanitation and other environmental factors)

5. Health Status of Household Members (including infant morbidity)

The following diagram illustrates the postulated relationships. (Cf. Winikoff, et. al. (6) for a similar model).


SOCIAL FACTORS
(Eg. Household Composition
Maternal activities
Socio-economic Status
Ethnicity
HOUSEHOLD DIET AND FOOD PATTERNS
ECOLOGICAL CHARACTERISTICS
(E.g. Sanitation
Water Availability
BIOLOGICAL FACTORS
(Eg. maternal health
infant health
sex of index child
INFANT AND YOUNG CHILD FEEDING PRACTICES
NUTRITIONAL STATUS OF INDEX CHILD

THE RESEARCH DESIGN

The application of this model as the basis for a study of infant feeding requires a number of research operations in addition to those that are basic to any nutritional study; that is, in addition to dietary intake measurement, anthropometry and other indicators of nutritional status, the collection of data on the other variables in the model requires:

1. A period of ethnographic fieldwork in order to identify operational measures of the relevant variables.

2. A longitudinal research design in order to account for the effect of seasonal changes in the independent variables, as well as to monitor growth and other parameters of infant development.

3. A multi-disciplinary research team

4. The use of multivariate statistical procedures to analyze the interactions among the variables.

Based on these propositions, the recommendations of previous consultants, pilot studies in the research area, and discussion and visits to the potential research communities, the following recommendations are made about the design of the study:

I. THE SAMPLE

Four communities within reasonable distance of Maroua, representing the three major ethnic groups in the region, and the variation in exposure to urban conditions, growing of cash crops, and access to health care should be selected as the sites for the

study.

The communities of Meskine, Mokong, Gawar and Dogba represent such a range, and it is recommended that they be selected as the communities for the study.

In each community, all children between birth and twenty three months of age should be included in the initial survey.

In the follow-up surveys (at four month intervals) the sample will consist of a subsample of all children who were zero to eight months of age at the time of the initial survey.

In addition to the cohort (of the zero to eight month olds), the longitudinal sample will also include all infants born during the study period.

Based on the previously-completed census, it is estimated that the first survey will include approximately 750 childen. It should be noted that there are no sampling procedures to be employed within the communities since the sample, in each community, is the universe of all children of the appropriate age.

It is estimated that the longitudinal sample will consist of approximately 350 to 400 children.

The sample sizes, for both the initial cross-sectional survey and the longitudinal study are more than adequate for statistical analysis.

THE INITIAL SURVEY

The first, cross-sectional survey will involve the following components: the administration of a household interview schedule to collect data on all of the major independent variables; dietary intake of the index child; and anthropometric measurements of the index child. Prior to the development of the initial survey instrument, a period of four months of ethnographic work will be undertaken. (See below)

INTERMEDIATE HEALTH MONITORING Although this study is primarily descriptive, prior to the development of an intervention program, it does have an experimental component. At the time of the initial survey, some aspects of health care will be introduced; specifically, malarial prophylaxis, innoculations and some measures to control infant diarrhea. these health interventions will be administered by local para-professionals or community people. At the time of contact (eg. for receipt of antimalarial medication) a one-week retrospective recall of illness symptoms for the index child can be collected. Thus, there will be an on-going record of morbidity, in addition to the information collected during the surveys.

Although the procedure and schedule of collection of dietary intake data has not yet been finalized, the intermediate health monitoring contacts may be an ideal time to collect 24-hour dietary recall data on the infant.

FOLLOW-UP SURVEYS

Four months after the initial survey, and at four month intervals thereafter until a full seasonal cycle has been monitored, the cohort of children who were zero to eight months

at the time of the initial survey will be resurveyed. The follow-up surveys will include anthropometric measurement, food intake, and a minimal set of follow-up questions to monitor changes in the independent variables.

SCHEDULE OF RESEARCH ACTIVITIES

1.Ethnographic Work: Phase I - April 1 - August 30, 1983

Tasks: Community Ethnography; Project - Specific Ethnography; Development of Household Interview Schedule

2. Initial Survey: September, 1983

Tasks: Administration of Household Interview Schedule; Dietary Intake Record and Anthropometry to all households with child 0 to 23 months of age.

3. Intermediate Health Monitoring: October - December, 1983

Tasks: Administration of Medical Intervention; Collection of illness symptoms for index child

4. Follow-up Survey I: January, 1984

Tasks: Anthropometry and Dietary Intake of Index Child; Follow-up Household Interview

5. Intermediate Health Monitoring: February - April, 1984

Tasks: As in Number 3, Above

6. Follow-up Survey II: May, 1984

Tasks: As in Number 4, Above

7. Intermediate Health Monitoring: June - August, 1984

Tasks: As in Number 3, Above

8. Follow-up Survey III: September, 1984

Tasks: As in Number 4, Above

NOTE: The foregoing is a list of the main data collection activities, not a list of all research activities. In addition to data collection, the latter activities include training research personnel; developing interview schedules; checking translations; standardizing anthropometric techniques; monitoring data collection for quality control; coding data for computer analysis and entering data; monitoring quality of coding and data entry; and statistical analysis of results.

Data analysis should be an on-going process, beginning immediately after the initial survey. Ideally, the analysis of the initial survey would be at least partially completed before the first follow-up survey.

Although the ethnographic work is particularly concentrated in the first four months of the study, this should be regarded as an on-going research activity. Ethnographic work should be carried out throughout the year in order to observe seasonal variations. Furthermore, more than four months is needed to develop an adequate understanding of the meaning of the social and culture data. An extension of the present plan to ensure continuing ethnographic work beyond the initial period is to be strongly recommended.

PERSONNEL REQUIREMENTS

1. Ethnographic Fieldworker(s)

2. Bilingual Ethnographic Assistants (French-Fulfulde; French-Giziga; and French-Mufu)

3. Research Coordinator/ Data Manager

4. Bilingual Household Survey Interviewers

5. Anthropometric-Dietary Intake Team

6. Health Intervention-Health Monitoring Assistants

7. Assistants to code and enter data

8. Statistical-Computer Analyst

9. Secretarial Support

GUIDELINES FOR ETHNOGRAPHIC WORK: PHASE I

During the initial ethnographic phase (April - August) the work will be concentrated in two areas: 1) general community description, and 2) data on the sectors of information for the household survey, with the second area receiving considerably more attention. A main purpose of the work is to improve the quantitative data collection procedures by identifying key questions, identifying threats to the validity of subjects' responses and and providing guidelines to reduce the household interview schedule to a manageable length. In-depth investigation of key cultural components affecting infant feeding will probably have to be postponed until the second phase of ethnographic work, following the administration of the initial

survey.

General Community Description

Although description of the four research communities is not a primary aim of the research, there is a minimum data base that should be accumulated, elaborated to the extent that time and personnel resources allow. The census data and pilot work that have already been collected will provide an important base for this descriptive work and should be fully utilized. It should be stressed that the sectors of data for community description that follow are to be collected at the level of the community, not at the level of the household. The general community description should include the following:

1. Community Map and Geographic-Ecological Characteristics

2. Ethnic Groups and Their Geographic Distribution

3. Agricultural Activities and Their Schedule During the Year

4. Economic Organization

5. Political and Social Organization

6. Health Care Resources: Biomedical and Traditional

7. Food Acquisition Resources (including markets and stores)

8. External Information Resources and the Extent and Types of Contact with the World Outside the Community (including transportation resources)

SECTORS OF INFORMATION FOR THE HOUSEHOLD INTERVIEW

The sections of the report that follow are divided into the five main areas or sectors of information that are the independent variables to be linked with infant and young child nutritional status. Each section outlines a series of questions, as well as setting out specific research tasks. The questions are intended to serve as guidelines for the ethnographic observation and interviewing; it will be impossible to obtain even preliminary answers to all of them in the short time available. However, to the extent possible, some data (however minimal) should be accumulated with respect to the questions. It is important to cover all sectors, so that detail within any given sector may have to be sacrificed in the interests of broad coverage. On the other hand, another main purpose of the ethnographic work is to discover new information and generate new hypotheses. Thus it is important to regard the following sections as suggestions to assist the research process rather than a rigid framework. Further, these suggestions should be used in conjunction with the earlier project documents, all of which contain many important suggestions for the ethnographic work.

I. INFANT FEEDING AND CHILD CARE PRACTICES

This section concerns the heart of the research - the factors that are immediately proximate to infant and young child nutritional status. The materials here are organized in two parts. The first part presents a series of questions concerning relevant behaviors and beliefs. The second part outlines a research plan for obtaining this data. The format of this plan can be applied to the other sectors of information-gathering.

Birth and the Early Post-Natal Period

To understand feeding practices in the immediate post-natal period, it is important to have some information on pregnancy and child birth, including data on the social support and dietary practices affecting women during this potentially stressful time.

Specific Research Questions

1.Where does childbirth occur? in the home of the father? in the mother's home prior to her marriage? Are there differences in birth location of second and subsequent children compared to first-born? What is the effect of distance from mother's home on birthplace? If childbirth takes place in the mother's natal home, how long does she remain there before returning to her husband's compound?

2.If childbirth takes place in the husband's compound (or village) do any of the mother's kin come to stay with her? Is there a difference in first births compared to subsequent births with respect to this?

3. Who attends the mother at birth? To what extent do women rely on traditional birth attendants?

4. How much do women use medical services prenatally? How often do deliveries take place in a clinic rather than at home?

5.Is the baby put to the breast immediately after birth or

after some period of time? Does this differ with the location of delivery (eg. home versus clinic)?

6. Is colostrum distinquished from milk, linquistically? How is colostrum regarded (what are its properties)?

7. Is a newborn put the breast of a women who is already in full lactation rather than, or in addition to, the breast of the mother? if so, what is given as the rationale for this practice?

8.Are any special foods/drinks given to the new mother to promote milk production? Are there any foods that a newly-delivered mother should avoid? Why?

9. What are women's expectations about problems associated with the early post-natal period? do they expect to have sore nipples or breast engorgement? Are such conditions regarded as normal or abnormal? What are the remedies?

10. In the early post-natal period, are babies put to both breasts at a feeding or only one? What is the behavioral pattern of breast-feeding?

11. In addition to (or in place of) breast milk, are infants given anything else in the early post-natal period? What? How is it prepared? How is it given?

Perception of Developmental Stages

In order to develop questions about changes in infant feeding and child care practices as the child matures, it is

important to understand how people perceive developmental stages. If there are clear, culturally-recognized markers of development (e.g. "when a child sits," "when a child talks," etc.), these can be used to inquire about feeding practices,

1. What behavioral and/or physical changes in infants are recognized as important?

2. Are any of these developmental stages given names, such as "lap child" or "yard child"? In other words, are there cultural equivalents to the western distinction between "infant" and "toddler"?

Perceptions of Breast Milk, other Milk and water

1. What do people regard as the qualities of breast milk that distinguish it from the milk of other animals? Is commercial infant formula recognized as modified cow's milk or as a separate entity?

2. Can breast milk "spoil," or become bad for a child? What causes the milk to be bad? How does one know that it is bad?

3. Is there a concept of "milk insufficiency"? that is, do women recognize the possibility that milk volume is low? Are concerns about volume linked to the child's developmental stage?

4. Are babies given milk (other than human milk)? at what developmental stage? Is this a routine practice, initiated as part of weaning or does it occur only under special conditions (eg. of mother's illness, perception that the

baby isn't satisfied, etc.)

5. How frequently are infants given water? or other liquids? Does this change with developmental stage? How is the water prepared? How is it given? Is water distinquished from "millet water?"

Infant Food and Feeding Practices

Since infants and young children are rapidly-changing organisms, the following questions have to be asked with respect to particular developmental stages.For recognized (post-neonatal) stages (or some clearly defined markers, such as "when a child crawls"), the following types of information should be obtained?

1. What food(s) can be given/should be given to a child of this age? What foods should not be given? Why?

2. How are these food prepared? How are they given to the child?

3. How do you know that a child (of this developmental stage) is ready for --------(food)?

4. Is a child (of this developmental stage) "force fed"? Under what circumstances? What kind of food is forced?

5. How does one know when a child (of this age) is hungry? Thirsty? What characterizes a child who has eaten enough?

6 .How many times, per day, is a child (of this age) fed? Is this pattern maintained when the mother is away from home for a day or part of a day?

7. If a mother takes a baby (of this age) with her, away from home, does she carry food for it? Buy food? Not give additional food?

8. What changes in feeding practices occur when a baby (of this age) is sick? What foods are with held? Are any special foods given? Do different types of illnesses call for different dietary changes?

9.What types of changes in feeding practices occur when the mother of a baby (of this age) is sick? Do different types of illnesses (of the mother) lead to different types of dietary change for the baby?

Infant Care-Takers

1. For each developmental stage, where does the baby stay during the day? At night?

2. At what age does an infant accompany his/her mother when she leaves the house?

3. What kinds of differences in child care practices occur in polgynous, as contrasted with households with only one wife?

4. At what age is an infant left in the care of someone other than his/her mother?

5. At what age is an infant entrusted to a child caretaker, as contrasted with an adult caretaker other than the mother?

6. What is the role of the father in infant care?

7. What are the normative expectations about infant care? Are there generational differences in these expectations?

Research Plan for Infant Feeding

The following sets of research operations are intended as general guidelines to assist in the development of answers to the preceding sets of questions. As noted earlier, the same techniques can be used to obtain a data base for the other sectors of information-gathering.

Observation: Note carefully and and make a case record of all of your observances of infant feeding. Keep a file of "cases" in which you include as much information as possible about the "event": location, approximate age of mother, approximate age of baby, type of food, how given, if breast-feeding, thorough description of mother's and baby's behavior, mother's position, baby's position, duration, and so on.

Key Informant Structured Interviewing: In each community identify several women (with a wide age range) who are articulate and knowledgable. After establishing good rapport and making clear your interest in infant feeding, more formal interviewing can begin. The structured interviews can be assisted by the use of "eliciting frames," by a semantic differential type of instrument and by photographs or drawings.

Open-Ended Interviewing: Take every opportunity (Eg.

when a baby is being fed) to ask a primary set of questions, derived from the list above.

Small Community Sample: Once you have a handle on the main issues and the types of answers you can expect, select a small sample of 8 - 10 women and administer a structured interview that includes questions on infant feeding practices and beliefs, preferably with the use of a specially-designed instrument, such as a semantic differential.

SUMMARY

1. Observation: Recording of Events

2. Key Informant: open-ended; eliciting frames; semantic differential and other projective test

3. Unstructured Interviews: Range of community people

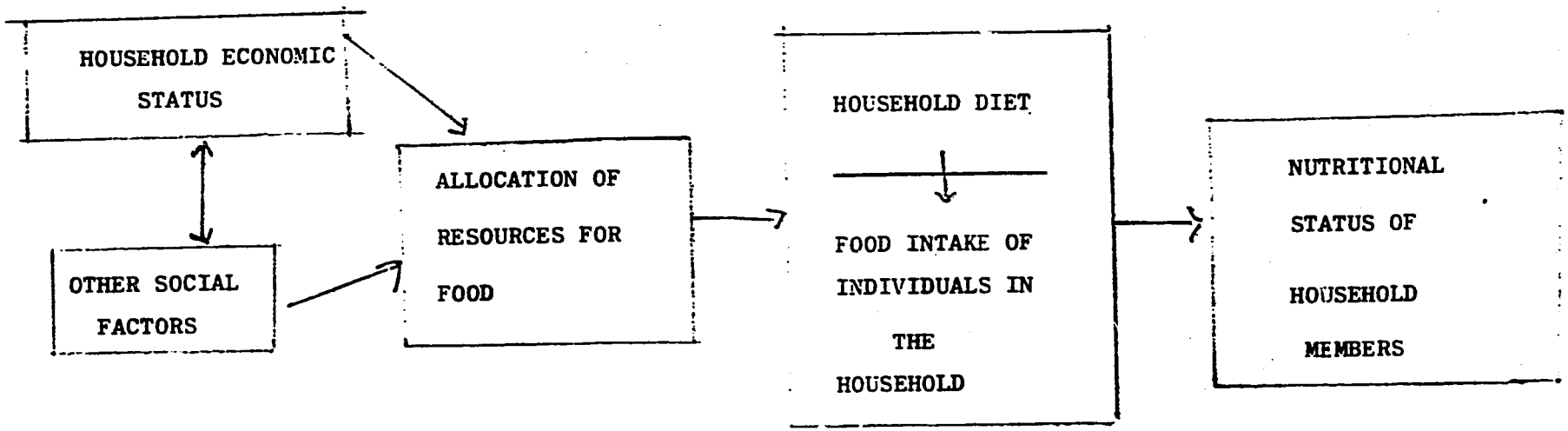
4. Small Community Sample: structured questions and semantic differential

III. FAMILY FOOD AVAILABILITY AND FOOD UTILIZATION

While household economic conditions provide the context for good or poor nutrition, the relationship between nutrition and social factors involves a series of linkages, as follows:

Although these linkages can be regarded as a causal chain, each component is, itself, influenced by multiple factors. For example, nutritional status is only partially a function of food intake, as other factors such as disease, physiological state and energy expenditure are also involved.

At present there is relatively little systematic knowledge about the relationship of intra-household food distribution and total family food availability to infant feeding practices. One of the key hypotheses to be investigated in this study is that constraints on family food availability and family food practices affect infant feeding, and hence infant and young child nutritional status. The following sets of questions pertaining to various components of food availability and family food practices are intended to help identify and measure key variables for testing this hypothesis. Specifically, the purpose of the questions about "land and crops," "food storage," and "food acquisition" is to discover the best way to assess household food availability.


HOUSEHOLD ECONOMIC STATUS
OTHER SOCIAL FACTORS
ALLOCATION OF RESOURCES FOR FOOD
HOUSEHOLD DIET
FOOD INTAKE OF INDIVIDUALS IN THE HOUSEHOLD
NUTRITIONAL STATUS OF HOUSEHOLD MEMBERS

renting, leasing or share-cropping?

2. What determines how much land an individual or household farms?

3. What types of crops are grown?

4. What are the agricultural activities through the year? What appear to be the factors that influence inter-household and inter-community differences in agricultural activities?

5. For each crop the following questions should be considered:

A) Is the crop used wholly for cash income, mixed cash and home use or home use only?

consumption and cash, what are the patterns of utilization (Eg. Is part of the crop sold immediately after harvest or stored and sold later)

C) Are there signficant inter-household differences in yield per unit of land? If so, to what is this due?

D) How much variation (seasonal, geographic) is there in the monetary value of crops?

Food Storage

1. Following harvesting, how are crops processed prior to storage?

2. For each crop, what are the forms of storage? Where are crops stored? Where are purchased foods stored?

3. Are seeds saved for the next planting season? Are these set apart in a different storage area?

4. Do households save grain for times of food scarcity?

5. Can food stores be readily assessed? If not, are there any indirect measures of food stores?

Food Acquisition

1. What is the full inventory of available foods in the community? For each food, is it entirely home produced? partially home produced and partially purchased or usually purchased?

2. Are there any wild, gathered foods? What is the seasonal pattern of gathered foods? Who uses them?

3. How are home-produced animals products (eggs, milk) utilized in the household?

4 .How often and under what circumstances do people kill animals for meat? Is the meat consumed at home or sold?

5. Does the sale of animal products take preference over home use or vice versa?

6. In a household, who purchases food in the market? Are some food items purchased by men, others by women?

7. Will people report accurately how much money they've spent in the market for food? Are there any tendencies to systematic distortion of reports of market purchases (eg. particular types of food or amounts)?

RESEARCH TASK: Create a food inventory. For each food include usual and alternative modes of acquisition, form of storage, seasonal availability, price and seasonal variation in price.

Food Preparation

1. Who decides what should be prepared: on an ordinary day? On special days?

2. What is the inventory of food preparation tasks? Who is responsible for each of these tasks?

3. At what age do children begin to have responsibilities for food preparation? What are the responsibilities of girls? Are boys given any food preparation tasks? responsibilities for food preparation?

4. When there is more than one adult woman in a household, do they trade off food preparation responsibilities? Does this occur with any adult women in the household or only with co-wives?

5. What is the full inventory of types of food preparation equipment to be found in the community? What is the cost of each item? What is the minimal set that all households have? What are the items that are optional or additional?

6. What are the types of fuels used in cooking? What are the relative costs in time and money of these different types?

7. Where are food preparation areas located? Are there any

differences among households in the location?

8. Is there a mechanical grain mill in the community? Where is it located, and what is the cost of using it? Is there intra-community variation in the use of mechanical milling? How much preparation takes place before milling? Are grain preparation techniques the same prior to mechanical, as contrasted with hand milling?

Food Consumption

The questions that follow below are intended to serve several puposes:

A) To provide the basis for a description of food consumption patterns.

B) To assist in the identification of questions for the initial household survey.

C) To assist in the final design of the food intake survey, which is to be a separate data gathering operation, apart from the initial survey.

In view of the third purpose of data collection with respect to "food consumption" the ethnographers should be particularly sensitive to any information that may help to improve the dietary survey. The section that follows below, on "food ideology" also has this additional component.

1. Who usually eats together, and where is food consumed? In households where men and women eat separately, is there evidence to suggest that children eat differently when they

eat with their mother as opposed to their father?

2. What are the usual times of day for eating? Are there names for particular meals? What are the usual foods for these meals?

3. Is there variation between households in the number of times per day that "meals" are eaten? Apart from Ramadan, is food eaten after dark?

4. Is there variation across seasons of the year in the number of meals?

5. Do people make a distinction between "meals" and "snacks"? What foods are eaten as snacks?

6. Are there any changes in the timing and content of meals across the week? Does the effect of the week differ in agricultural versus non-agricultural households? In Muslim households does meal preparation and types of food consumed change on the sabbath?

7. Does market day affect home food consumption? What kinds of snacks are consumed in the market and not brought home?

8. How are specific foods served? Do individuals have their own plates or do they eat only from a common pot? How much variation is there, from one household to another, in the number and types of serving vessels and utensils?

9. In Muslim households is there a taboo against observation, by strangers, of eating? Does this extend to meal preparation, as well as food consumption? Does it apply

to snacks as well as meals? Does it apply only to meals eaten in the house or to all food consumption?

10. In non-Muslim households, are there any taboos against observation of food preparation or consumption?

11. Would it be possible to weigh foods in the household?

RESEARCH TASK: Write a description of food consumption patterns, based on the preceding questions, and provide a set of recommendations for undertaking the dietary survey.

Food Ideology

The questions in this section pertain to the cognitive-cultural aspects of food consumption, except for beliefs related to infant feeding, which is described below. This set of questions is for the initial ethngraphic work but the development of more in-depth understanding will require longer term research, after the first household survey is undertaken.

1. What verbs are used to describe eating and drinking? What are the distinctions among these terms?

2 .What adjectives are used to describe foods? What are the main dimensions used to classify food?

3. Are there any foods that are regarded as particularly appropriate for various categories of persons (eg. children, males, old people)? Excluding infants, (see below) are there foods that are regarded as especially healthy for anyone to eat? As healthy for particular categories of persons? As healthy under certain circumstances (Eg. of balance of "humoral qualities")?

4. Are there any foods that are proscribed during pregnancy? What problems are thought to be associated with their consumption

5. Are there any foods that are prescribed during pregnancy? What benefits are they thought to confer?

(Note: for questions concerning maternal food intake during lactation, see below)

6. What are the beliefs about the relationship of food consumption to illness? Can eating certain foods cause one to become sick? Or to recover from illness? Specifically, for particular illness states, what foods are proscribed and/or prescribed?

7. Apart from illness or pregnancy, are there any food restrictions or food taboos?

8. How is food used in relation to ritual and religious activity? How does religion affect food consumption? What do people perceive as the effect of Ramadan on food consumption?

9. What foods are the most highly valued? For each food, what is the basis of its value? Are there any foods that are regarded as indispensable for particular types of social occassions (what foods and what occasions)?

10. Are there any foods that are regarded as "starvation food," to be consumed only in times of scarcity? Are there any other foods that are "low prestige" foods. Will people report accurately about their consumption?

RESEARCH TASKS: Do a Componential Analysis of foods; Using a Semantic Differential format, elicit perceptions about the qualities of selected foods. For both of these tasks be sure to use a sufficient number of informants to get some feeling for the range of intra-cultural variation on the dimensions.

I. HOUSEHOLD SOCIAL CHARACTERISTICS

A. Household Composition and Structure

From the growing body of research in nutritional epidemiology, it is becoming increasingly clear that family composition is a very important factor affecting the nutritional status of children. For example, the ratio of children to adults, the birth order of a child and birth interval, the temporary or permanent absence of family members (especially male household head) has been repeatedly associated with differential

nutritional status of infants and children in many different cultures. Thus, it is necessary to to design questions to obtain information on household composition and structure.

Definition of Household

The "definition" of the household has to be determined for each of the three ethnic groups. The relationship of living quarters (within a compound) to a shared food supply is a general issue on which data should be accumulated. The understanding of food exchange between households also rests on the definition of "household," a further reason to develop good cultural description of the definition of household.

Specific Research Questions

1. What are the terms to use to ask about household composition?

In the survey it may be best to reference household members in relation to the index child (father, mother, half-sibling, father's mother, etc.) Therefore, it is important to elicit a full set of kinship terms in all three languages.

RESEARCH TASK: KINSHIP TERMINOLOGY

2. With respect to kinship and non-kin relationships of individuals within the household, are there any "sensitive" or "problematic" relationships that will be difficult to elicit?

3. What is the best way to obtain the age of adults?

With adults it may be difficult to obtain age in years exactly, in which case a general estimate will have to suffice. To facilitate age estimation, it may be useful to have a calendar of major events for the past 70 years. The necessity of this should be determined before time is invested in this research operation.

RESEARCH TASK: LONG-TERM CALENDAR OF EVENTS TO DATE ADULT AGE

4. What is the best way to get exact age of children under two?

An adequate assessment of a child's nutritional status depends on knowledge about the child's age, at least to the nearest month. This question therefore requires special effort. Assuming that the initial survey will begin between the first and fifteenth of September and will include children 0 to 23 months of age, a retrospective calendar for the past 17 months is required. However, part of the job is already completed in connection with the work done on the community census, which was finished in September, 1982. Local calendars for September, 1982 to April, 1983 will have to be retrospectively constructed, and during the initial ethnographic phase up-dating of local events should be on-going.

The calendar that was used for the 1982 census should be rechecked. A subsample of children from the census should be randomly selected and their age determined, by interview, using the local calendar that was developed for the 1982

census. Discrepancies should be carefully checked and their cause determined.

RESEARCH TASKS: Development of a local calendar for each community from September, 1982 to September, 1983 and recheck of calendar to September, 1982.

5. What are migration patterns into and out of the communities? How often is household composition affected by short-term migration? Who leaves? Where do they go? For how long? How frequently do individuals who migrate out for work return home?

6. How fluid or stable is household composition? How often is household size augmented by long-term "visitors"?

Note: Questions five and six affect the decision about how frequently and in what manner household composition has to be rechecked after the initial September survey.

7. Are there any household members or household residents who are likely to be omitted from an elicited enumeration of household membership? (Eg. Are mentally or physically handicapped individuals, informally adopted children or other categories of persons likely not to be included in response to a question on household membership?)

8. Beyond the members of the immediate household, what is the variation in the proximity of kin? What delimits "the family"? How difficult or time-consuming would it be to collect information on the larger kinship unit?

Maternal Activities

From the earlier work in the communities, there is a list of women's usual activities. This should be checked for completeness, and the following additional types of information should be collected:

1. What is the appropriate time unit of recall for activities? Can women report accurately for a week?

2. What is the average time and the approximate range of time that it takes women to complete each of the major tasks?

3. Do women perceive that the time it takes to complete a task changes during pregnancy or lactation?

4. Among non-Fulbe women, what kinds of agricultural tasks do women undertake? Under what circumstances do Fulbe women participate in agricultural activities?

5. What do women regard as the impact of seasons on: a) types of tasks, and b) amount of time it takes to complete particular tasks.

6. Dr. Martin has proposed a method of measuring the time it takes to complete particular tasks, which involves asking several children to carry out tasks that do not require a high degree of skill and taking the average time as the minimum time requirement. For what tasks is this experimental procedure appropriate?

7. Do women conceptualize tasks in a hierarchy from "essential" to "optional"? Are there any tasks that are seen as

optional during pregnancy and/or lactation? What tasks do women omit when they are not well?

8. What activities do women regard as "recreational"? What tasks are regarded as particularly onerous?

9. What tasks can women delegate to children? At what age? What tasks are shared by adult women in a household? What is the best way to ask about the allocation of tasks to others?

Socio-Economic Status

To recognize that malnutrition in developing countries is first and foremost a result of poverty is to say that household resources establish the conditions for individual nutritional status. The concept of "household resources" encompasses not only resources for food production and purchase, but also educational resources and patterns of resource allocation. Resource allocation, in turn, is influenced by a series of factors, including degree of utilization of and desire for products that are associated with urban lifestyles. Thus, for the ethnographic work, socio-economic status can be broadly defined to include direct economic resources, social prestige (and social obligation), education, resource allocation and degree of exposure to urban lifetyles.

Material-Style-Of-Life

In many societies it is very difficult to obtain data on cash income, and it is often not a good measure of economic resources even when it can be accurately determined. On the other hand, the material possessions of a household are often

easier to elicit; they reflect past monetary expenditures and household resource allocation. In most communities in the modern world, there are differences in household possessions and physical characteristics of the house from one household to another. A composite index of possessions and characteristics can therefore serve as a culturally-appropriate measure of socio-economic status.

At the same time, it should be recognized that some possessions have high social value or are social necessities, independent of their monetary value. For all items involved in the questions below, efforts should be made to determine the monetary value, the social value and the prestige value. The purpose of the following questions is to direct attention to the identification of items for a "material-style-of life" index:

1. What kinds of possessions are found in the community?

2. How are they acquired? (home manufactured, purchased, usually given as gifts, etc.)

3. For each item, what is its monetary value? social value? prestige value?

4. What possessions are used for agricultural production? Are there any items that are used exclusively or primarily for cash-generating activities as contrasted with production for home consumption?

5. For particular categories of possessions (eg. floor mats, enamel trays) are there differences in monetary or prestige value of particular styles or materials?

6. For what items is quantity rather than quality the main issue?

7. What are the differences in housing characteristics that reflect economic, as contrasted with ethnic, distinctions?

8. What aspects of house construction or housing characteristics reflect differences in household age, rather than strictly economic differences?

RESEARCH TASK: From the data collected with regard to questions 1 - 8, construct a material-style-of-life index for each community that can serve as a main measure of economic status.

Cash Income

The feasibility and meaning of a measure of cash income should be assessed during the initial ethnographic phase. The following questions may serve as a guide for this effort:

1. Will people give information to an interviewer about their cash income?

2. Do the answers reflect reality; Are they valid?

3. Are there any good surrogates for cash income, such as the number of times agricultural products have been sold in the market or the amount of land devoted to a cash crop?

4. Apart from agricultural production, what are the other sources for cash income?

5. If you know someone's non-agricultural occupation, can

you estimate their income? (Note: this is especially important for Meskine where people may commute to Maroua to work)

Education

1. What is the variation in level of education within the community? Is there a sufficient range to make it worthwhile to ask about level of schooling?

2. Will people tell an interviewer accurately the amount of formal education they've had?

3. Is there any stigma about not being able to read or write or is it easy to get data on literacy of individuals?

4. Is literacy a better measure than years of schooling?

Exposure to the Outside World

In societies that are undergoing rapid social change, differences in level of exposure to lifestyles and information about events outside the local community are often significant factors affecting food selection, utilization of health services and decisions about how to allocate time and money resources. Although "exposure" and "information" are not primary variables in this study, to the extent that indicators of "cosmopoliteness" can be easily identified, it may be useful to include this in the survey since a number of studies have shown that modernization affects nutrition. Throughout the ethnographic work, researchers should be on the lookout for ways to measure this variable.

Prestige

In many societies an individual's prestige is closely associated with his wealth. However, it is also important to recognize that in many cultures it is possible to enjoy one without the other. Sorting out the contrast often requires careful work, which would be beyond the scope of this study unless one is interested in testing the following hypothesis: "families with higher prestige, independent of wealth, will have children with better nutritional status." One could also hypothesize an inverse relationship in situations where traditional feeding practices are not optimal and adherence to cultural traditions is a marker of prestige. To test this, one would have to rate families on "prestige," a task that may require the assistance of key informants. If, in the course of the ethnographic work, this concept seems to be important in the community and seems to affect food availability and/or infant feeding practices, then this topic deserves further work.

Ethnic and Religious Identity

Cultural and religious norms and expectations influence child rearing practices, including infant feeding, in all societies. For example, the Koranic injunction to breastfeed for two years, and the widespread tradition in West Africa prohibiting intercourse while a woman is nursing a child, can be expected to affect infant feeding practices, even when the "cultural rules" are not strictly adhered to. In the multi-ethnic and multi-religious communities of the research area, cultural differences may be significant in determining nutritional status of infants through influences on infant feeding, child care, illness management and related factors. At the same time, it is

important to note that beliefs and expectations are not uniform within a cultural group. Intra-cultural diversity in beliefs and practices are to be found in even very small and isolated communities. Thus, it is necessary to identify the range of variation within a culture, as well as describing the main components of the belief system.

In societies undergoing rapid change from traditional to modern (urban-influenced) lifeways, ethnic identity can be thought of as a continuum ranging from a strong commitment to the traditions of one's ethnic group to marginal identification as a member of the group. The following questions should be considered, keeping the matter of intra-cultural diversity always in mind:

1. Do people usually give an honest response to the question of their tribal identity?

2. How often does marriage across tribal groups occur? When parents come from two different groups, how do people respond to a question about their tribal affiliation? Are they likely to report their association with both or only one? Is cross tribal marriage sufficiently common that the tribal identities of the index child's grandparents should be obtained in addition to information on the tribal identity of the mother and father?

3. How does birthplace (or place of origin) affect responses to questions about tribal affiliation?

4. Does length of residence in the community affect responses to questions about ethnic identity?

5. Are there any characteristics that are locally regarded as clear markers of particular ethnic groups?

RESEARCH TASK: Identify the characteristics (variables) for a scale of "degree of ethnic identity" for Fulbe, Giziga, and Mufu people.

Religious Identity

1. What is the appropriate way to ask for religious affiliation?

2. What are the markers of "religiosity" (degree of commitment to participation in one's religion)?

3. For non-Muslim people, what are the markers of "degree of Islamisization"?

4. Are there any specific religious precepts that directly or indirectly affect infant feeding practices?

II. ECOLOGICAL CHARACTERISTICS

In a community one can expect to find differences from one household to another in the magnitude of a child's exposure to pathogenic agents, differences that are the result of a number of factors including household access to water, defecation and bathing practices, number of animals and their care, and related factors. The questions in this section are intended to help identify and define these ecological variables related to health.

Water

1. What are the types of water resources in the community at different seasons of the year?

2. What types of containers are used to store and carry water?

3. Within the community what is the variation in distance to and access to water? Is this variation of such a magnitude that measurements of "time to fetch water" will have to be made for each residence group?

4. Are there any variations in treatment of water in the home (eg. boiling, filtering)?

5. What are the factors that seem to affect water availability at the household, as contrasted with the community, level?

6. How frequently, and in what manner, do people bathe? How is this affected by season of the year.

RESEARCH TASK: Write a general description of water utilization, which includes patterns of utilization (eg. conditions under which water is reused); intracommunity range in access, range in effect of seasonal contrasts, and so on.

Animals

Although animals are included here under the heading of "ecological characteristics," they are also related to socio-economic status. Animal ownership is, on one hand, a measure of economic resources, and, on the other hand, a factor

potentially influencing the level of exposure to disease. It should not be assumed that ownership of many animals is, ipso facto, a measure of wealth. As Martin has shown for the area of Cameroon in this study, ownership of more than five animals is a risk factor for malnutrition. Similarly, DeWalt and colleagues, in Mexico,(7) found that animal ownership was unrelated to nutritional intake, but whether or not animals were killed for home consumption was related to dietary quality. (Further issues concerning utilization of animals products will be discussed below in connection with family food patterns.) The following questions pertain to economic and health issues related to animals:

1. From one household to another, what is the range in number and types of animals owned?

2. What is the monetary value of different types of animals?

3. What types of animal sheltering are practiced in the community?

4. Is there a range of variation in proximity of animals to human eating and sleeping quarters of such a magnitude that this should be measured in the survey?

5. Does the placement of grain storage facilities relate to animal keeping practices?

6. Who takes care of animals?

7. What are the conditions or opportunities for exposure to animal feces?

8. Do people perceive animals or animal waste as potential sources of contamination?

Human Waste Disposal

1. Do any households have latrines? If so, when were they built?

2. What are the usual places for defecation?

3. In what manner is it most feasible to ask about (or observe) the household arrangements for defecation? 4. Are there any problems with asking people about toilet training practices?

5. How is infant defecation and urination handled? Are there any changes in practices when a child has diarrhea?

5. Is hand washing after defecation practiced? After cleaning a baby?

INFANT AND FAMILY MORBIDITY

As illustrated in the model, another major factor influencing nutritional status is the number and types of illnesses the infant experiences. Thus, it is important to collect data on illness episodes and treatment regimes, since the later may affect the duration and severity of the illness. Furthermore, in order to collect accurate information on illness and its treatment, it is necessary to understand how people perceive illness. Ideally one would like to have data on the occurence of illness in the household, not just in the index child; however, this may not be feasible. Minimally, it will be

important to understand how illness in the mother affects the index child. The following questions address various components of data gathering on illness.

1. In the local languages, what terms are used to label the main illnesses of infants? Of children and adults? Of pregnancy? What are the attributes or characteristics of these illnesses?

RESEARCH TASK: CARRY OUT A COMPONENTIAL ANALYSIS OF ILLNESS TERMS FOR INFANTS AND FOR CHILDREN AND ADULTS.

2. For each of the illnesses identified through the procedure above, what are the causes of the illness? What kinds of home remedies are utilized? What are the therapeutic techniques utilized by traditional healers to deal with the problem? Under what circumstances will people seek biomedical care for the illness, and what do they expect the health care workers to do?

3. What kinds of practices are utilized to prevent illness in infants? During pregnancy? During childhood and adolescence? In adulthood and old age?

4. What is the history of utilization of biomedical care? Where do people obtain care? What are the types of attitudes expressed about traditional healers and biomedical practitioners?

5. Are there any beliefs concerning the causes of illness that may affect data collection in the communities?

6. From previous studies or other experience in the area, what do people perceive about infant weighing and anthropometry? Have people been exposed to infant weighing? To anthropometric measurement?

7. Are there any beliefs about illness that will affect the medical prophylaxis-health care program, including its acceptability, management and compliance?

THE ROLE OF ETHNOGRAPHIC DATA IN CONSTRUCTING THE SURVEY INTERVIEW SCHEDULE

Integrating and utilizing the ethnographic data in the construction of the interview requires a truly collaborative relationship between the ethnographers and the other members of the research team. One activity that may help to facilitate such collaboration is the preparation, by the ethnographers, of short reports on each of the sectors of information. These should be made available, periodically, to Dr. Martin, the principal investigator for the project. However, the best way to ensure effective use of the ethnographic materials is to have the ethnographers participate directly in the construction of the interview. They should also be directly involved in the field-testing of the interview schedule.

In addition to pre-testing the survey interview schedule for acceptability and clarity of questions, length, and interpretability of the responses, all verbal translations from French to Fulfulde, Giziga, and Mufu should be carefully scrutinized. Using two bilingual assistants (for each language) all items should be translated and back translated.

Although a preliminary draft of the interview schedule for the follow-up survey can also be designed in late August (at the time the initial survey is constructed), it is important to be flexible and allow for modifications in the follow-up surveys, based on the results of the initial survey. The plan for rapid data analysis of the initial survey should make it possible to utilize this data to refine the follow-up surveys. As with the initial survey, it is important to have active participation of the ethnographers in the construction of the follow-up survey.

RESEARCH COORDINATION

This is a large and complex project, which calls for careful, effective coordination in order to accomplish the goals within the time period available for the research. Part of the coordination effort must, of course, be devoted to administrative matters, such as recruitment of research assistants, budget management, maintenance of project vehicles, and so on. While these activities are essential for smooth operation, data quality control and monitoring project operation with respect to research goals is critical to the success of the research. This can only be done by a field-experienced researcher who understands research methods and who is thoroughly familiar with all phases of the project.

The two aspects of research coordination -- administrative and substantive -- can probably be handled by one individual, provided there is good secretarial-clerical support. If Mr. Price could be persuaded to undertake this position, the project would be most fortunate. He is qualified to assume the substantive responsibilities and will, of course, be thoroughly

familiar with project goals. Although not formally trained in epidemiology, he has good understanding of data processing, research design, and statistics.

It is, however, also important to note that should Mr. Price be willing to work as the data coordinator, it would be highly advisable to obtain the services of a part-time ethnographer, who can continue the ethnographic work beyond the initial phase. Given the cultural setting and the subject matter of the research, it is very important to try to locate a woman ethnographer. It seems very likely that, no matter how skillful the male ethnographer is, there are aspects of data that will remain closed to him.

ADDITIONAL ISSUES AND CONCERNS

There are still a number of issues of research design and operation that remain incomplete. While the lack of closure on these will not impede progress during this first phase of research, they should be given serious attention in the coming months. The most important of these are as follows:

1. How frequently and in what manner will dietary intake data be collected on the index child?

It is clearly vitally important to the goals of the project to have very good dietary data on infant feeding practices. Whether or not such data has to be highly quantitative is a question that requires further discussion about the logistic costs and benefits of various levels of specificity. Regardless of the level of precision of intake, it will be important to collect data frequently

enough to "capture" changes over time in a behavior that is undoubtedly subject to relatively rapid change as the child matures.

2. Who will be in charge of data management and analysis once data leaves the fieldsite?

If research assistants can be found in Maroua, and if the research coordinator can over see data-coding, it is probably best to have data arrive in Yaounde already coded and ready to be entered into the computer. From that point it is essential to have an experienced data analyst-statistician who can carry the research forward through the analysis stage.

3. What kind of protocol will be developed to treat children who are ill or malnourished?

4. How will health care services in connection with the project be delivered? Who will train and monitor the health workers?

5. What types of people can be found who can function effectively as interviewers? How will they be recruited and trained?

CONCLUSIONS

Inspite of the unfortunate delays that have impeded the research, a great deal of work has already been done. The principal investigator and her colleagues have already accumulated a considerable body of vital data, and the research design has been very carefully thought through. As in all

projects in an early phase, there are still important decisions to be made, but the present research plan is sound and should yield vitally important insights into the determinants of infant feeding behavior.

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