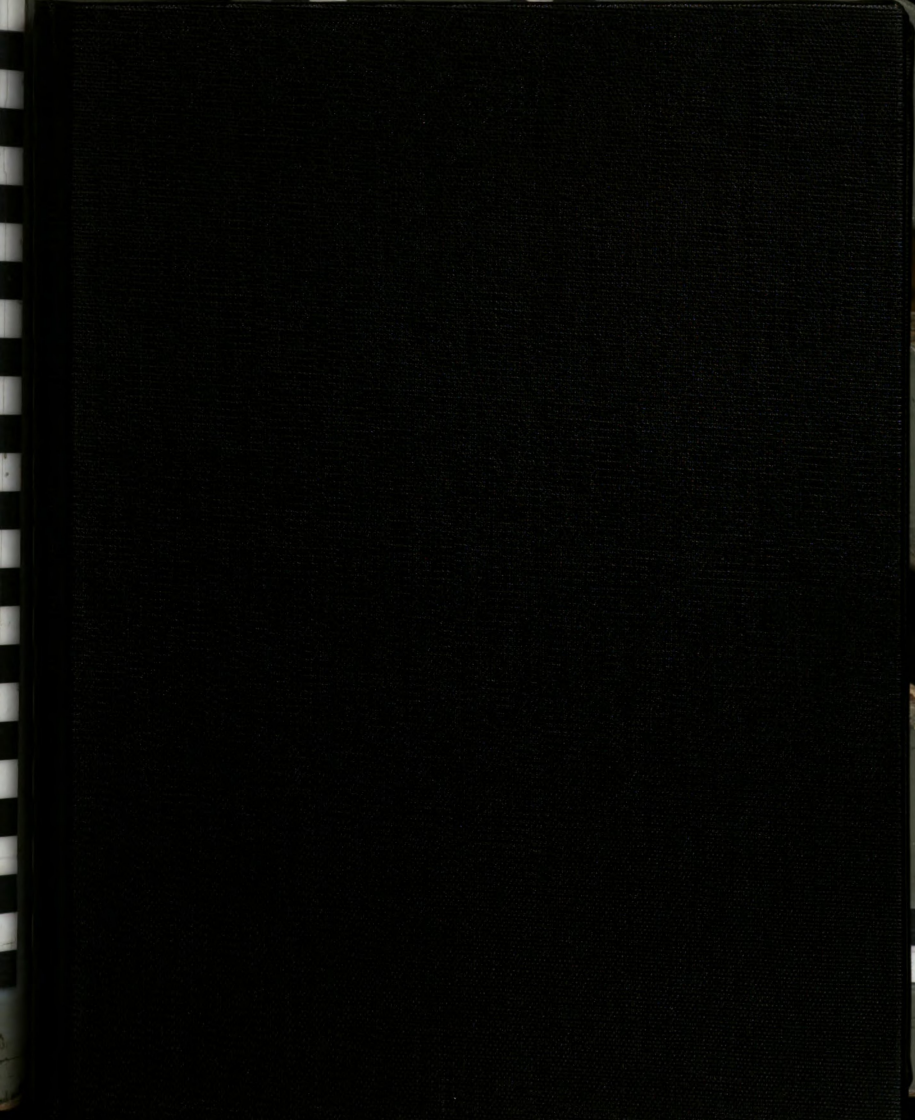






26805903

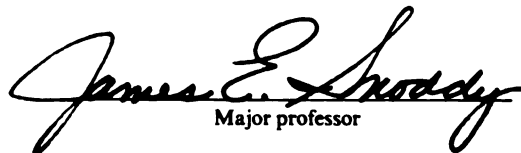


This is to certify that the
dissertation entitled
FEEDING, WEANING, AND DIARRHEA ILLNESS
IN YOUNG HAUSA CHILDREN IN NIGER:
VILLAGE PRACTICE AND EDUCATIONAL IMPLICATIONS
presented by

NANCY KEITH

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Educational Administration


Major professor

Date February 21, 1991

**PLACE IN RETURN BOX to remove this checkout from your record.
TO AVOID FINES return on or before date due.**

DATE DUE	DATE DUE	DATE DUE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

MSU Is An Affirmative Action/Equal Opportunity Institution

c:\circ\datedue.pm3-p.1

FEEDING, WEANING, AND DIARRHEA ILLNESS
IN YOUNG HAUSA CHILDREN IN NIGER:
VILLAGE PRACTICE AND EDUCATIONAL IMPLICATIONS

By

Nancy Keith

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Educational Administration

1991

ABSTRACT

FEEDING, WEANING, AND DIARRHEA ILLNESS IN YOUNG HAUSA CHILDREN IN NIGER: VILLAGE PRACTICE AND EDUCATIONAL IMPLICATIONS

By

Nancy Keith

Feeding, weaning, and diarrhea treatment practices have been implicated in the high mortality rates of young children in Niger, but in fact, little is known about the Nigerien practices and belief system. This ethnographic study examines and documents Hausa views and practices in these areas and discusses the implications for educational interventions. A sample of twenty-four mother-child (four to sixteen months) pairs was selected in one village and followed over a year using the following methods: 1) in-depth interviews with each mother, 2) monthly questionnaires which included a 24 hour food recall and open-ended questions on illness, food preparation and consumption, women's money and women's work, and 3) description of feeding and diarrhea treatment using participant observation of sample families and villagers.

Findings in the areas of feeding and weaning include the following: Nearly all children in the village breast-feed on demand until age two or until the mother becomes pregnant. The traditional practice of withholding colostrum is changing. The majority of pregnant and nursing women fast during Ramadan even though they say that their breast

milk decreases and their nursing babies lose weight. Termination of breast-feeding takes place in one day. Solid foods are introduced by seven months and most children experience a weaning period of 8 - 18 months. The child tends to regulate its own food consumption. The purpose of food is to fill the stomach, and government recommended supplementary foods are viewed either as medicine or as part of preparing the child to eat from the family pot, rather than as having a nutritional benefit.

Findings in the area of diarrhea illness include the following: Diarrhea is attributed to a number of environmental and behavioral factors. Since most diarrhea is first attributed to teething, treatment-seeking is usually delayed. Dehydration is not viewed as a loss of water from the body, so rehydration is not seen as the appropriate treatment. Traditional herbal teas are given and are viewed as stopping diarrhea. Oral rehydration therapy (ORT) is widely known, but is not the first step taken in the majority of diarrhea episodes. When ORT is given it is expected to stop the diarrhea. Traditional treatments and ORT are often given concurrently or serially, depending on the money at hand at the time, the perceived cause and the results. Liquids, breast milk, and food are seldom withheld during diarrhea episodes, but the anorectic child may not be compelled to eat or drink. No special

foods are prepared when the child is ill.

A model for change is proposed which examines and compares the Hausa view and the health educator's biomedical view of these health events. The probable non-negotiable standards for the Hausa and the probable non-negotiable standards for the health educator are compared and strategies are suggested for reconciling the two views and developing interventions which would be acceptable to the Hausa. The mother's reluctance to control what her child consumes by compelling or helping the child to eat and drink must be addressed in any educational strategy dealing with nutrition education or oral rehydration therapy.

© Copyright by
Nancy Keith
1991

**This work is dedicated to
The Peace Corps Nutritionists**

ACKNOWLEDGMENTS

I would like to thank the many Peace Corps volunteers and friends in Niger who helped at one point or another in finding funding, in the development, implementation or analysis of the study, in solving computer problems, or who gave me rides and welcomed me into their homes as a member of the family. Thanks are in order to the following who assisted directly in the study: The Chef C.M. in Birnin Konni and the Dispensary Nurses in Sabon Gari; Seribe Coulibaly Boubacar and Mammadou Issa; Hauwa Sani, who transcribed hundreds of pages of Hausa interviews; Jacques Greger, who typed hundreds of pages of Hausa into the computer; Eva Koeniger, Carla Lima, and Sabine Perrier, who assisted with data input.

I thank everyone in the village of Sabon Gari. I am grateful to the government of The Republic of Niger for granting permission for the research.

Funding was provided by a United States Department of Education Title VI Foreign Language Area Studies Fellowship, and research grants from Technologies in Primary Health Care (PRITECH) and from the Health Sector Grant, USAID/ Niger. This support is gratefully acknowledged.

TABLE OF CONTENTS

LIST OF FIGURES	xi
CHAPTER I. INTRODUCTION	1
The Purpose Of This Study	5
The Research Questions	7
Discussion of Terms	10
Organization of the Dissertation	12
CHAPTER II. LITERATURE REVIEW	15
The Biomedical View	
Malnutrition	15
Diarrhea Disease and Treatment	17
Young Child Feeding	23
Ethnographic Studies	
The Concept of Benign Neglect	28
Ethnologies of Young Child Feeding and Diarrhea Illness	31
Studies of the Hausa	34
Hausa Women's Lives	35
Hausa Ideas of Illness and Therapy	40
Health and Nutrition Therapy	41
CHAPTER III. METHODS	45
Selection of the Topic	46
Selection of the Village	47
Becoming a Member of the Community	48
Selection of the Sample	52
Interviews	54
Key Informants	56
Analysis of Data	57
CHAPTER IV. THE SETTING	63
The Village	63
Making A Living: The Man's Role	74
Women's Work	83
The House	89
Women and Money	93

CHAPTER V. BREAST-FEEDING	108
First Milk or Colostrum	110
Dakashi	111
Kaikai	113
The Knife Test	116
Adoption of the Practice of Giving Colostrum	118
Vitamin A and the Adoption of Colostrum	121
Preparing the Child to Consume Breast Milk	122
Other Findings About Breast Milk	129
Breast Milk and the Sexual Activity of the Mother:	
Sweet Milk	130
Hot Milk	132
Wet Nursing	133
Galactagogues	135
Breast Milk and the Muslim Fast	136
 CHAPTER VI. THE TERMINATION OF BREAST-FEEDING	 147
Principles Used in the Decision to Terminate	
Breast-Feeding	153
The Child's Readiness	156
The Quality of the Breast Milk	160
The Mother's Health or Situation	166
The Day on Which Nursing Ends Forever	169
 CHAPTER VII. SUPPLEMENTARY FEEDING	 175
The Hausa Child Learns to Eat	175
The Hausa Family Evening Meal	176
Bauri: Preparation of the Child for Solid Foods ...	179
Initiation and Termination of Eating	181
Becoming an Expert at Eating	185
The Meaning of Food: Getting Enough; Getting Full;	
Getting Fat	191
Getting Used to Eating	195
Feeding the Sick Child	196
The Use of Supplementary Foods	200
Traditional Supplementary Foods	201
The Young Child's Typical Day of Eating	206
PMI Recommended Supplementary Foods	211

CHAPTER VIII. DIARRHEA ILLNESS AND TREATMENT	217
Hausa Views of Diarrhea	217
Dehydration-How Is It Perceived?	221
Hausa Classifications of Diarrhea:	
Their Symptoms and Treatments	223
Teething Diarrhea	224
Diarrhea Caused by Zahi	228
Diarrhea Caused By The Cold	230
Diarrhea Caused By Pregnant Woman's Breast Milk ...	233
Diarrhea Caused By Anago	233
Diarrhea Caused by Eating Things	
One is Not Used to Eating	235
Diarrhea Caused By The Swelling Of The Uvula	235
Diarrhea Caused By Stepping Over Pot Black	238
Diarrhea Classified as "Na Allah"	238
Traditional Treatments for Diarrhea	239
Oral Rehydration Therapy	240
Other Biomedical Treatments	243
Liquids and Feeding the Child With Diarrhea	244
Diarrhea Treatment Patterns	245
 CHAPTER IX. CONCLUSIONS, DISCUSSION AND	
EDUCATIONAL IMPLICATIONS	249
Conclusions	249
Discussion and Educational Implications	257
A Model for Developing Interventions	257
Discussion of the Findings	260
Breast-feeding	262
Termination of Breast-feeding	267
Supplementary Feeding	270
Diarrhea Illness	275
Some Hausa Ideas About Health	280
Recommendations for Further Research	283
 GLOSSARY OF WORDS IN FRENCH AND HAUSA	286
 APPENDICES	292
Appendix A - ORAL REYHDRATION THERAPY	292
Appendix B - GOVERNMENT RECOMMENDED BABY CEREALS	293
 REFERENCES	294

LIST OF FIGURES

Figure 1 - Diagram of a Hausa Compound	90
Figure 2 - Breast-Feeding	263
Figure 3 - Termination of Breast-Feeding	268
Figure 4 - Supplementary Feeding	271
Figure 5 - Diarrhea Illness	276

CHAPTER I

INTRODUCTION

This ethnographic study describes Hausa¹ practices and views of young child² feeding, weaning, and diarrhea illness. Using mainly in-depth interviews and participant observation, the study followed 24 mother-child pairs over one year in a Hausa village in Niger, Sabon Gari, (pseudonym) documenting the practice of Hausa mothers throughout the period between the introduction of solid foods to the time when most children have been removed from the breast. The findings are described and analyzed, and the nutritional and health implications examined with the goal of assisting child survival projects in the development of culturally relevant educational interventions.

The infant mortality rate (the number of deaths before the age of one per 1,000 live births) for Niger in 1960 was 191/1000 and 134/1000 for 1988 (Grant, 1990). The child mortality rate (the number of deaths before the age of five per 1000 live births) was 320/1000 for 1960 and 228/1000 for 1990. These very high rates have shown improvement since the country's independence in 1960, but even the recent figures suggest a serious problem in Niger. A 32 year old

¹ The Hausa were chosen for the study because I had already spent two years in a Hausa village and had been fluent in the language.

² "Young child" is used for children aged birth to three years.

Hausa woman recalls the births of her children:

I've had eight births. Five are in the ground; now there are three left. The first one was a boy. He didn't live to be a year old. He couldn't sit up yet. He died because my milk was not good; he turned white and then he died.

The second one was a boy. He had reached two years of age; when he was in his third year, he died. He could walk; he had already been weaned. He died of hepatitis.

The third child; this is she. [She points to a girl whom she says is seven years old].

The fourth was a girl. She was also between two and three years when she was killed by measles.

The fifth one; here she is. They were twins; the other twin girl died. She could sit up, but she couldn't crawl. Maybe she was four months old. Maha³ is what killed her. Mabugi, you know, the one where one puts a razor to the forehead and makes scars. [These little cuts in the skin on the forehead let out the bad blood to lower a high fever].

We did the scarring after we went to the dispensary. When we went to the dispensary they gave her a shot. Then the dispensary nurse hit her, the hitting that one does for maha. When she died, then we scarred her; then she came back to life. [The child went into a coma; then they made the incisions to make the fever go down. Then the child became conscious again temporarily.] But she died soon after.

The sixth one died in bed. He could sit up... Breastmilk killed him. I was pregnant. I was pregnant with this girl here and he drank the breastmilk...He had diarrhea and fever and vomiting. He got very skinny... I took him to the dispensary and they gave him shots. But he didn't get better. Five shots they gave him! He had the diarrhea for a long time - a whole month!

After him it was this one here. [She points to her four month old infant who was to die a year later

³ Mabugi (one who beats or place where something is beaten) means the convulsions which accompany cerebral malaria. Maha is apparently another word for the same thing.

of cerebral malaria and possibly amoebic dysentery.⁴] (Case # 19).

Of the eight children born alive to this mother only two were still living at the time the researcher left the village. Although the mother has named various specific illnesses as the cause of death in her children, from a biomedical point of view, young child deaths usually involve more than one illness at a time and their complications, all interacting in a vicious cycle with malnutrition (Scrimshaw et al., 1968). Malnutrition is a major determinant of mortality risk in young children (Puffer & Serrano, 1973) and on the average, child mortality is doubled between the ages of 1-36 months for each 10% decline below 80% of the Harvard weight-for-age median (Kielmann & McCord, 1978).

The World Bank (1980) states that malnutrition is largely a reflection of poverty, but many others have suggested that differences in mortality rates for young children can not be completely explained either by biological or environmental factors beyond their parents' control. Inadequate or inappropriate feeding practices have been strongly implicated in the high mortality rates of children in the developing world (Mata, 1985; Pelto, 1981;

⁴ This youngest child had a fever for three weeks and the mother purchased aspirin (or possibly nivaquine) on the market. When he began to have convulsions she took him to the dispensary and got a prescription for quinamax injections. She purchased a total of seven for 300 CFA each, and took the child to the dispensary for six consecutive days for a shot. Meanwhile the child began to have blood in his stools. He died the day of the sixth injection.

Scrimshaw, 1978; Wray & Acquirre, 1969).

Millard, et al. (1989) propose a three-tier causal model of child mortality, which incorporates biological, cultural and economic factors which function as proximate, intermediate and ultimate causes of malnutrition. The proximate cause is the biomedical cause of death, usually some combination of malnutrition, diarrhea, and other infections in a synergistic relationship. Malnutrition lowers resistance to infection so the child becomes sick. Then the infection makes the co-existing malnutrition worse, leading to decreased resistance and more infections. A child in this compromised state is much more likely to die from measles, whooping cough, diarrhea, or malaria (Chen, 1983; Hoyle et al., 1980; Martorell et al., 1980; Mata, 1978; Mata et al., 1977; Murray & Murray, 1979; Scrimshaw, et al., 1968). Interventions addressed to the proximate causes include immunization campaigns and increasing access to treatment for malaria and other common illnesses.

The second level in the causal model consists of the intermediate causes such as patterns of child care which may predispose children to malnutrition and illness. Examples of interventions at the intermediate level of causes might be nutrition education and campaigns urging mothers not to withhold water and foods during diarrhea episodes. The ultimate level of causes of high rates of infant mortality have to do with poverty and the global economic system. Millard et al suggest that the ultimate causes of child

mortality (poverty) may underlie culture-specific patterns of child care on the intermediate tier of causes, predisposing the child to illnesses and malnutrition which are the proximate causes of death.

The Purpose Of This Study

Mortality rates exemplified in the case study (p. 2) are thought by health care providers to be due in part to the practices and beliefs of Nigerien mothers in the areas of feeding, weaning, and diarrhea illness, but in fact, little is known about the Nigerien practices or belief system. There is a common perception in the health provider community, for example, that children are exclusively breast-fed until breast-feeding is terminated. That is, the child goes from only breast milk on one day to only non-breast milk foods the next day, around the age of one and one half to two years (USAID, 1978). This practice was not substantiated by the present research. Although a number of ethnographies have been written on various aspects of Hausa life, none have focused on infant and child care. Darrah's (1980) study of Hausa therapeutics as they were symbolized in rituals, songs, and proverbs and Wall's 1988 study contributed much to an understanding of Hausa thinking about illness and therapy, but as men they were not able to interview or observe Hausa women in their everyday life and the care of young children is mentioned only incidentally. Also most research on women and health has been conducted

among the Hausa of Nigeria, and it is difficult to know how much the findings apply to the Hausa of Niger. The health provider community and recent child development projects in Niger have a need for information on how mothers care for their children and how they view food, health, illness, and child feeding, in order to develop culturally relevant educational strategies and interventions.

Greta Pelto (1987) reviewed social science research on cultural issues in maternal and child health and found a paucity of research in many areas, including an analysis of how feeding and other child care activities are carried out. Much information has been gathered in other parts of the world about small infant feeding in an attempt to learn about the change from breast-feeding to bottle feeding, but almost no work has been done on the weaning process or the mother-child interaction around food. Researchers are now developing folk taxonomies of types of diarrhea, decision-making concerning the use of medical resources, and feeding practices during diarrhea episodes (Escobar et al., 1983; Kendall et al., 1984, Lozoff et al., 1975; McKee, 1987; Nations, 1982). Other than a brief study done under the auspices of the National Campaign Against Diarrhea (Hogle, 1985), however, little is known about these issues in Niger.

This ethnographic study will provide detailed description and analysis of feeding and care giving practices as they are integrated into the cultural context of beliefs, the mother's social and physical environment,

and her past experiences. It will contribute to the body of theoretical knowledge and provide a better understanding of practices and the belief systems which support them. These findings may inform the development of culturally relevant educational interventions which could lead to improved nutritional status and lower rates of morbidity and mortality among young children in Niger.

The Research Questions

This study was designed to address the following umbrella research questions:

1. What are Hausa ideas and practices in the areas of young child feeding, weaning, and diarrhea illness and treatment?
2. What are the potential points of intervention and how might educational interventions be developed in a way which increases the probability of adoption?

The following questions guided me in the collection of data:

In the area of breast-feeding and cessation of breast-feeding

1. What meanings are given by the Hausa to breast milk and breast-feeding? How does society view women's role as the provider of breast milk?
2. How are children breast-fed? When, how often, where, and by whom? Is the breast withheld under certain circumstances? Which circumstances? How long does breast-feeding continue? How prevalent is the baby bottle? Why is it used? By whom?
3. How do women view colostrum? Do women give colostrum? If it is withheld, why? What strategies might make giving colostrum acceptable? Are other foods given before the first breast-feeding attempt?
4. Who makes the decision about how or when to terminate breast-feeding? How are these decisions

made?

5. How does the actual cessation of breast-feeding take place? What sort of preparations are made? Is this time seen as dangerous for the child?
6. Are children removed from the breast abruptly without having first been introduced to solid foods, as is thought by health providers? If so, why? Is it as damaging as is thought?
7. What do women perceive about the adequacy of their lactation in general, or in relation to the child's needs? How do they determine if they have enough breast milk? How is the relationship between milk production and sucking understood?
8. Do women terminate breast-feeding because their milk is bad as reported? What makes the milk bad? At what age and under what circumstances does this occur?
9. Do women have an awareness of the relationship between prolonged breast-feeding and amenorrhea? Do they attempt to use this knowledge for birth spacing?

In the area of supplementary feeding

1. How do Hausas view food? Are certain foods valued for specific purposes?
2. What foods are eaten by whom, in which season, and on what occasion? How are staple foods prepared? How much time and money is required to prepare staple foods? Who pays for food and under which circumstances?
3. When do mothers begin to give solid foods? What do they give, and for how long? How is the child fed, i.e. with spoon, fingers, etc.? Does baby eat out of the family pot?
4. Are there traditional weaning foods? How are they used? Do they meet biomedical nutritional requirements if given in sufficient amounts? How could they be modified to be more nutritious? Under what circumstances would mothers be likely to make such modifications?

5. How are PMI⁵ recommended weaning foods perceived? Are they used as intended? If not why not? Is it because of lack of ingredients, lack of money, lack of time, or because recommended foods are not compatible with the Hausa views of feeding young children? Are there other reasons why women don't make them?

In the area of diarrhea illness and treatment

1. How do Hausas define diarrhea? How do they know when their child has diarrhea and how do they decide that the child needs treatment? Is diarrhea considered an illness? Is diarrhea seen as serious?
2. What are indigenous categories of diarrhea and by what criteria are they grouped? Are some kinds of diarrhea viewed as good, bad, or harmless? What do people see as the causes?
3. What are traditional treatments? How are they prepared? In what ways are they beneficial or harmful? How are they administered to the child?
4. Are there different treatments for diarrhea under different circumstances? Who makes illness treatment decisions? Who influences these decisions? On what basis does one decide to seek one treatment or another? Under what circumstances does one then decide to change treatments?
5. Are women familiar with oral rehydration therapy (ORT)? How is it viewed? When is ORT used? How is it given? Is it viewed as helpful? If it is not viewed as helpful what are the problems with it? Is it because it doesn't stop diarrhea? Is it too much trouble? Does it cost too much? Does the traditional remedy work better in the Hausa view? Or does ORT have elements which are not compatible with Hausa views of illness, diarrhea, and therapy?
6. What do mothers give as food or drink during a diarrhea episode? Do they withhold food or drink?

⁵ Protection Maternelle et Infantile, (Mother-Child Protection) refers to the mother child health services offered at the dispensary. Mothers in Sabon Gari refer to both the dispensary services and the PMI services as "the dispensary".

Do women feed after a diarrhea episode? What kinds of foods are given?

7. How is dehydration viewed? What is the Hausa understanding of what is happening to the body in dehydration? What is seen as the remedy? How is ORT understood in light of these understandings?

Discussion of Terms

The term "Nigerien", with its French orthography, is used to signify the people of Niger, while "Nigerian" is used for the people of Nigeria. Unless otherwise specified, references to Hausa practices and beliefs refer to the Hausa people in the village where the study was done, rather than all Hausa people. The term "infant" conventionally refers to children under the age of one year, but since this study focused on children aged 4 to 28 months, the term "young child" is used to mean all children from birth to age three years, in order to avoid the awkwardness of repeating the phrase "infants and young children". Quantities of prepared food are often described in terms of the purchase price rather than in standard measures. Case numbers of mother-child pairs or identification from the field notes are found in parentheses after direct quotes or segments from field notes.

Terms used in the discussion of breast-feeding and weaning are problematic and no set of terms seems to be entirely satisfactory⁶. "Solid foods" is here used to mean

⁶ For discussions of terms see Popkin, et al. 1986, Chapter 2; Walker-Smith & McNeish, 1986, p. 394; and Soderhjelm, 1981.

all foods that are not water, teas, juices, or milks. The first Hausa foods are called liquids in Hausa and are "drunk", but they are usually quite thick and will be grouped with solid foods. Supplementary feeding⁷ is used to mean feeding solid foods or semi-solid foods in addition to breast milk on a regular daily basis. "Weaning" has been used both to mean the process of becoming accustomed to non-breast milk foods, and the actual cessation of breast-feeding. In this research, weaning refers to the process of children becoming accustomed to non-breast milk foods, from the time that the child first starts to taste foods from it's mother's finger, until the time when breast-feeding ceases. However, the term is not used to refer to the cessation of breast-feeding. Weaning in this research reflects the gradual introduction of non-breast milk foods but not necessarily a gradual decrease in breast-feeding.

The "termination" or "cessation" of breast-feeding here refers to the day on which the mother refuses to allow the child to nurse again. The word for this event in Hausa, hida⁸, means to "take something off", and reflects the abrupt removal of the child from the breast. These phrases will be used rather than "weaning" because they describe more accurately what actually happens and how Hausas view the event.

⁷ In French, alimentation complémentaire.

⁸ Yaye in other parts of Hausaland.

The Hausa orthography follows the spelling as given in Abraham (1962), but the words may be Aderawa, a regional variation of Hausa. When the word in Aderawa was different from standard Hausa, the equivalent word is indicated in the notes. In Hausa, as in English, the third person masculine pronoun "he" is used to mean "a person". Although an attempt is made to avoid non-sexist language in this research, whenever a Hausa speaker is quoted, the English translation guards the informant's pronouns.

Organization of the Dissertation

The organization of the dissertation is as follows: Chapter II reviews the relevant literature, looking first at the biomedical view of these health issues and then at the ethnographic literature. Chapter III describes the methods used in this study. Chapter IV acquaints the reader with the setting in which the mother in Sabon Gari makes decisions affecting the health of her child. This chapter describes in broad terms, some of the factors which may be associated with young child nutrition, such as the father's socioeconomic status, male and female sex roles, mother's work load, women's access to and use of money, and women's trades.

Chapters V-VIII present the findings of the study in the areas of breast-feeding, the termination of breast-feeding, supplementary feeding, and diarrhea illness. In these chapters the assertions made about attitudes are

supported by informants own words quoted from tape recorded interviews. Assertions made about practices are supported by specific instances from the field notes. The intent in these chapters is to present the issues from the Hausa point of view, and to show how these views and practices form an internally coherent system. Care is taken in these chapters not to make judgments about these practices from a biomedical point of view. The biomedical view of these issues, first explained in the Literature Review, is reintroduced in the last chapter.

Chapter IX presents the conclusions of the study. The findings of the study are discussed, examining the similarities and differences between the Hausa view as documented in Chapters IV - VIII, and the biomedical view of the health educator as outlined in Chapter II. An overall intervention strategy is suggested and practices which may be appropriate to educational intervention are discussed and culturally appropriate interventions considered. Finally recommendations for further research are made.

CHAPTER II

LITERATURE REVIEW

The three-tier causal model of child mortality proposed by Millard et al. (1989) and discussed on page four of this dissertation, points to three main theoretical approaches to the problem. Those who focus on the proximate or biomedical cause of death, concern themselves mainly with disease and malnutrition. The second theoretical approach (the intermediate level in the causal model) focuses on cultural attitudes and practices which may predispose children to malnutrition and illness. The third level has to do with economics, food shortages, lack of sanitation and medicine - all things which are part of the general picture of poverty experienced in developing countries. This research addresses the issue of cultural attitudes and practices, but these cannot be examined for their implications for children's health status without an understanding of the biomedical point of view. This chapter will review the biomedical literature on diarrhea disease, malnutrition, and young child feeding. Then relevant ethnographic studies of child care practices will be reviewed and the concept of benign neglect discussed. Before developing educational interventions, the health educator must take into account the social and economic relationships and constraints within the family and the village. Hausa ethnographies will be reviewed with some discussion of those having to do with

social and economic aspects of Hausa women's lives, and of Hausa ideas of therapy. Finally one model of nutrition education will be discussed.

The Biomedical View

In order to examine the educational implications of the attitudes and practices found in this research, the biomedical view must be understood. First there is an overview of malnutrition and the biomedical view of diarrhea disease and dehydration, including the relationship between diarrhea disease and Vitamin A deficiency. The biomedical view of young child feeding includes breast-feeding, the effect of the mother fasting, and supplementary feeding.

Malnutrition

The most widespread and serious nutritional public-health problem in the world is the group of conditions known as "protein-calorie malnutrition" (PCM)¹ of early childhood (Jelliffe, 1959). Marasmus, one of the two severe forms of malnutrition, is due to a diet low in both calories and protein and manifests itself in the slow starvation associated with famine. Various vitamin deficiencies and a history of diarrhea usually accompany this condition. Children with mild to moderate degrees of PCM who are highly susceptible to infections of all kinds, are at risk of developing severe malnutrition, and are more likely than

¹ Also known as protein-energy malnutrition (PEM).

well nourished children to die from these infections.

It is thought that malnutrition might start during early or even intrauterine life (McAnarney, 1981; Munir et al., 1983; Rowland & Paul, 1981) making the child more vulnerable to the stresses which occur between birth and three years of age. Jelliffe (1966, p. 273) describes a four-stage weight curve pattern that is often seen in young children in developing countries: Stage 1) In general during the first four to six months the breast-fed child gains weight satisfactorily and is protected by maternal antibodies received through the placenta. Stage 2) After six months the quantity of breast milk may not be sufficient, the child begins to eat starchy gruels and becomes increasingly exposed to disease organisms, while at the same time the child's passive immunity from the mother is decreasing. One or more bouts of diarrhea can cause the weight curve to flatten out or to dip and then slowly begin to recover. The association of diarrhea with the introduction of supplementary foods has led to the term "weanling diarrhea". Stage 3) Between one and two years of age the child is exposed to even more pathogens as the child begins to move around and put things into the mouth. Breast milk is no longer sufficient and weaning foods may be very low in protein and vitamins. Weight curves during this dangerous year typically drop following an episode of diarrhea or some other traumatic event. Often during the recovery period the child does not eat the extra food that

is required for catch up growth and the child's growth curve may spiral downward leading to severe PCM or, Stage 4) may follow a flat line, remaining below standard levels.

Diarrhea Disease and Treatment

Diarrhea is a serious problem in developing countries because of the ease with which it can be transmitted in areas with poor hygiene and scarce water, the deleterious effect it has on the nutritional status of young children, and the speed with which children can become dehydrated and die. Although the folk wisdom in most cultures associates most cases of diarrhea with teething and weaning in young children and food indigestion in older humans, research has shown that diarrhea which heretofore was often attributed to teething and other "normal" causes, has been found to be caused by a number of viruses, bacteria and other enteric (of or pertaining to the intestines) pathogens (Konno et al., 1983; Black et al., 1983; Mata, 1983; Sack, 1983).

All of these pathogenic agents are carried from fecal matter to the mouth of a susceptible individual. The first part of this equation, oral fecal contamination, usually involves contamination of foods or the mouth by human hands or flies in areas where water is in short supply, defecation takes place on the ground in the open, and people do not have a basic understanding of the value of hand washing in preventing disease. A study in Bangladesh observing mothers' hand movement (Aziz et al., 1981) found that

although they did not use the left hand for many activities, both hands were used to handle cooking utensils, prepare and serve food (especially fresh fruit), touch the breast in breast-feeding, carry water and transfer it to the water jar (water was spilled over the hands), and finally, to dispose of children's feces. Gambian weaning foods have been found to contain high levels of the diarrhea-causing pathogens at every stage of preparation, including bacteria in the uncooked grain, polluted well water from water spilled around the well leaching animal and human feces through laterite soils into the well, animals loose in the compound, contamination not destroyed in cooking, personal hygiene, and most important, the problem of bacterial multiplication in food after cooking (Barrell & Rowland, 1979; Rowland, 1985). The longer the foods are stored at air temperature the higher the levels of contamination, presumably because of bacterial multiplication in the food (Black et al., 1982a); the higher the levels of contamination the more frequent the diarrhea (Black et al., 1982a).

The second half of the equation, that is the susceptibility of the individual, has to do with the age of the host and the state of his or her immune system. Newborns, especially low-birth-weight infants, are highly susceptible to infections because their immune systems are not yet mature (Sahni & Chandra, 1983). Breast milk and colostrum protect exclusively breast-fed infants from many of the diarrhea-causing agents (Goldman & Smith, 1973; Mata

& Wyatt, 1971) but children in developing countries are often given water, teas, various medicines, and sometimes animal milk and thin gruels from birth. The child's consumption of non-breast milk foods greatly increases exposure to pathogens at the same time that protection from human milk is decreasing.

Scrimshaw, Taylor, and Gordon (1968) first described the synergistic relationship between diarrhea (and other infections) and malnutrition; malnutrition predisposes the child to diarrhea, diarrhea exacerbates the malnutrition, and moderate to severe nutritional deficiencies increase the seriousness of the infection. Thus the mutual interaction of infection and malnutrition can become a vicious cycle often ending in death.

Vitamin A deficiency is a specific type of malnutrition which usually accompanies protein-calorie malnutrition and makes the body more vulnerable to infection. A large percentage of the children of Niger are thought to have very marginal vitamin A stores². These stores are rapidly reduced by fever, infection, and measles; thus a child who has marginal vitamin A status can be thrown into a deficiency by one illness. Vitamin A has long been thought to be synergistic with infections. Recent studies have suggested that children with mild xerophthalmia, indicating Vitamin A deficiency, develop respiratory illnesses at twice

² For a report on vitamin A food consumption in Niger see Keith, 1990.

the rate and diarrhea at three times the rate of children with normal eyes (Sommer, et al., 1984). Mortality of children with diarrhea illness was found to be four times as great for children with normal eyes (Sommer et al., 1983). Another study suggested that giving a Vitamin A supplement to children in Vitamin A deficient populations may decrease mortality by as much as 34% (Sommer et al., 1986). Fortunately vitamin A deficiency responds dramatically to therapy, often even when it has reached the stage of corneal damage.

Epidemiologic studies in Gambia (Rowland, 1983), Guatemala (Martorell et al., 1975; Mata, 1978), Bangladesh (ICDDR, 1980) and Indonesia (Munir et al., 1983) have shown that diarrhea has a strong negative relationship with young child growth and development. Studies in the Gambia, of particular interest because of the similarities in environment and culture to Niger, found that children between the ages of 3 months to 3 years suffered diarrheal symptoms on average one day in eight and have diarrhea 25% of the time during the rainy season (Rowland, 1983). With this much of their young lives spent having diarrhea and other infections it is not surprising that children are unable make up for lost growth during the short periods when they are well. Some studies suggest that had the children suffered no infections in general (Mata et al., 1977), or diarrhea illness in particular (Rowland & Whitehead, 1980), their growth rates would have been similar to those of well

nourished children.

One of the greatest dangers with diarrhea is dehydration from loss of from 2.5% to 10% of body fluids within a few hours through frequent stools and vomiting. Signs of dehydration are as follows: thirst (This may be the only sign of mild dehydration.), increased pulse and breathing rates, decreased perspiration and urine, dry skin and mouth, sunken fontanelle, sunken eyes, and lax skin. In severe dehydration the child appears to have lost all body fat and the loose skin seems too big for the body, because of loss of fluids and the electrolytes which maintain the turgor within the cells. However, when rehydrated the body returns to its previous plumpness and elasticity.

The treatment for dehydration is oral rehydration therapy (ORT), which replaces the water and large quantities of sodium, potassium, and chloride. The ORT solution is made using a universal formula (World Health Organization, 1983) of table salt, baking soda, potassium chloride, and glucose or sugar. Packets of these salts are produced by UNICEF and distributed by local agencies, but a substitute recipe can be made by mothers in their own homes and is adequate for a child who is not severely dehydrated. There have been problems with the home made solution in developing countries, including women mixing a toxic proportion of salt (Kaur, 1986), and recipes have been devised to utilize local measures in order to assure uniformity of the recipe (Appendix A). Mothers are advised to give one cup of

solution for every loose stool passed (Cameron & Hofvander, 1983) in addition to breast milk or water.

Oral rehydration therapy is now generally recommended as the only treatment of diarrhea except in cholera and bloody dysentery (Jelliffe & Jelliffe, 1989; Rohde et al., 1983). Use of multiple antibiotics is often associated with chronic diarrhea and death (Rohde et al., 1983).

Antibiotics, anti-motility agents (Keusch, 1983), adsorbents (Kaolin, charcoal), antisecretory agents (aspirin, chlorpromazine), and membrane stabilizing agents (quinacrine, steroids) either make the diarrhea worse, lead to increased infections, or detract from more important therapy. Although it may save many lives, ORT does not reduce the duration of the diarrhea episode nor decrease the stool, facts which may discourage mothers and lead to a decrease in the utilization of ORT.

Breast-feeding should be continued throughout the diarrhea episode (Hoyle et al., 1980), and feeding is very important as soon as rehydration is complete³ (usually in a few hours), as feeding is associated with higher nutrient absorption, does not prolong diarrhea (Chung, 1948; Molla et al., 1983b) and can help prevent worse nutritional deterioration, even though it may increase stool volume (Mahalanabis, 1983, 1985; Molla et al., 1983a). Children need extra food for several weeks to achieve catch-up

³ Specific guidelines are given (Jelliffe & Jelliffe, 1989) for feeding during each stage of a diarrhea episode.

growth: generally, in the period immediately after the illness, the child needs to eat one and one-half times the normal diet for twice as many days as the child was ill (Rohde et al., 1983). If recovery is prolonged over several months stunting will occur and catch-up growth will not be possible. The child who does not get sufficient nutrient intake during the recovery period is extremely susceptible to reinfection and the continuation of the cyclical pattern of infection and malnutrition.

The findings in this study suggest numerous environmental factors which may contribute to the high frequency of diarrhea episodes. From the biomedical point of view, practices in the area of young child feeding combined with diarrhea illness and anorexia, may contribute to the malnutrition of young children.

Young Child Feeding

Breast-feeding is adaptive, that is, the process of nursing, the composition of the milk, and the lactation apparatus have become modified to suit the needs of a particular species to ensure the survival of that species (Jelliffe & Jelliffe, 1978). Healthy full term human babies' two feeding reflexes (the rooting reflex and the sucking reflex) are strongest 20-30 minutes after birth. These reflexes are weak or absent in premature births, low birth weight babies, and those with generalized infection and jaundice.

Putting the child to the breast early after birth stimulates the maternal reflexes, assuring a rapid return to birth weight, avoiding the congestion in the breast which makes it difficult for the baby to grasp the nipple, and enhancing the possibility of successful lactation, since the amount of milk produced is related to the amount of sucking. Engorgement of the breast, from not nursing or from an inhibited let-down reflex, leads to decreased prolactin circulation, making the nipple more difficult to grasp, sometimes causing the nipple to crack, allow infection to ascend, leading to mastitis and breast abscesses.

Human milk is physiologically variable in composition⁴ from mother to mother, day to day, feed to feed, and from the beginning to the end of a feed, variations apparently perfectly adapted to supply the nutrients required for each particular infant at each stage of growth and development. Colostrum, for example, the yellow viscous liquid that is secreted for a few days after parturition or childbirth, contains antibodies to insure the survival of the newborn child, more protein and vitamins than regular breast milk and is thought to aid in the evacuation of the meconium, or black sticky stool from the newborn's bowels. Additional fluid needs, such as thirst associated with living in a very hot dry climate, are met by the secretion of low solute milk in response to extra sucking from thirst.

⁴ Called "physiological chronobiological" by Jelliffe and Jelliffe (1978).

The following generalizations about breast-feeding are suggested by research: 1) Unsupplemented human milk is all that is required to sustain growth and good nutrition for the first six months of life in babies of well nourished mothers, who have produced fetuses with optimal stores, who themselves have laid down adequate nutritional reserves, including subcutaneous fat and who are well fed during lactation. 2) The volume and composition of milk of poorly nourished women is surprisingly good but is often lower in quantity, calories (fat), vitamin A, water soluble vitamins, calcium and protein, than that of well nourished mothers. 3) Adequacy of breast milk as the sole food is related to maternal diet in pregnancy, mother's fat and nutrient stores, fetal stores of nutrients, birth weight, and iron transferred from the placenta. 4) Breast milk in late lactation (7 months - 2 years) is insufficient by itself for needs of the rapidly growing infant, but it is a valuable supplementary source of "complete" protein, fat, calcium, and vitamins (Jelliffe & Jelliffe, 1978). In poor communities where food is sometimes inadequate the weight curve begins to drop around four months, suggesting that the breast milk is inadequate. Because of the rapid growth in early infancy, energy deficits at that time may be more detrimental than deficiencies later in life: thus if breast-feeding becomes inadequate at three months rather than six months, the effects of growth may be proportionately greater (Popkin et al., 1986).

The human reproductive process has a remarkable capacity to adapt to chronic moderate deficits in dietary intake of the mother, assuring the survival of the species in unfavorable situations. But a price is paid in the birth of a low birth weight baby which is associated with a later malnourished child (Briend, 1985). A study in the Gambia (Prentice et al., 1983) found that women in the third trimester who perform the fast of Ramadan give birth to babies who experience a reduction of fetal metabolism and growth (Briend, 1985). A poor weight gain in the third trimester is associated with low birth weights (Rajalakshmi, 1979), and low birth weight has been associated with higher infant mortality (Reinhardt et al., 1981), lower quantities of breast milk, and greater severity of diarrhea morbidity (Rowland, 1983). Prentice et al. (1984) found that although the lactating women lost more weight than non-lactating women during the fast, and lost more body water each day by the end of the 14 hour fasting period, they apparently overcompensated by super-hydrating themselves during the night.

The introduction of supplementary foods in most developing countries is problematic for two reasons: 1) increasing non-breast milk foods increases exposure to infection, and 2) the starchy staple which forms the basis of most developing world diets is often nutritionally inadequate to meet the needs of the growing child. The fat in breast-milk contributes about 52% of its total energy, but most starchy cereal staples only get about two to ten

percent of their energy from fat. When children are fed the family staple, millet, rice, sorghum, corn, or cassava made into a thick or a more liquid gruel, the starch-rich staple swells with water during the cooking process, making a voluminous, high bulk but low nutrient and energy density food. This food makes the stomach feel full and may be sufficient for adults, but young children require twice as much energy per kilo of body weight as adults. Young children cannot eat enough of this staple with their small stomachs to obtain the calories, protein, and other nutrients they need (Ljungqvist et al., 1981; Stewart, 1981).

The low energy and the viscosity of the starchy gruel can be overcome by the addition of oil or fat (Dearden et al., 1980), which are twice as energy dense as protein or carbohydrates, and by more frequent feedings. The focus in nutrition education has been on village level "multi-mixes" (Cameron & Hofvander, 1983; Jelliffe & Jelliffe, 1989; Walker-Smith & McNeish, 1986) which combine in appropriate proportions, a staple (cereals, tuber, or roots), a protein food (legumes and animal foods) vitamin and mineral foods (vegetables and fruits), and energy foods (fats, oils, and sugars). The idea of the multi-mix is that the local staple and local supplements can be used in a kind of baby cereal which will be culturally acceptable and made of locally available foods.

The current study looks at breast-feeding practices in

the areas of the imitation of breast-feeding, the possible ill effects on the nursing child (or fetus) of the mother fasting, and several other breast-feeding practices which help the reader to understand Hausa views of young child feeding and treatment during diarrhea illness. This study suggests that certain feeding practices combined with socioeconomic factors and high rates of infection may exacerbate the problem of malnutrition in young children.

Ethnographic Studies

Several kinds of ethnographic studies are relevant to this research. The school of thought known as "benign neglect" holds that child care attitudes and practices are responsible for young child malnutrition. Other ethnographers explore what mothers in various cultures do and why, from their point of view. Ethnographies on the Hausa and some of the newer ethnographic studies of Hausa women contribute to an understanding of the setting within which this study took place. Finally recent studies of Hausa therapy which have provided a basis for some of the analysis of the data in the current study, are discussed.

The Concept of Benign Neglect

The idea of benign neglect is that parents, although not acting with conscious intent, behave in ways which may lead to the illness and death of their children (Cassidy, 1980). Some examples are allowing the young child to compete with others for food, providing more food and

medical treatment to boy than to girl children (Carlioni, 1981; Chen et al., 1981), the taboo against high protein foods for young children in many cultures, the withdrawal of food during illness and diarrhea episodes, differences in nurturing, and not seeking medications and food prescribed for sick children, or so-called "maternal incompetence" (Scrimshaw, 1978).

Benign neglect is seen variously by the biomedical community as a bio-ecological mechanism for enhancing the survival of the society by culling out those least able to survive (Cassidy, 1985; Scrimshaw, 1978), a means of population control (Jelliffe, 1959; Puffer & Serrano 1973, Scrimshaw, 1978), and a preparation of the child for a lifetime of hunger (Cassidy, 1980). Some see benign neglect as evidence of the child survival hypothesis which holds that in order to accept fertility regulation, parents must believe that their children will survive to adulthood (Scheper-Hughes, 1984, 1985). Others see benign neglect as maladaptive in that mothers need to be educated more along the lines of Western ideas of child care. Howard (1980, p. 34) described kwashiorkor as "a mourning process in which children express through their illness, a loss of dependable nurturing." She posits that kwashiorkor represents for a Kenyan ethnic group, a moral failure of the parents, leading to mutual progressive distancing and withdrawal between the child and its care givers ending in malnutrition and death.

Nations and Rebhun (1988) argue that neither biomedical

nor neglect theories are sufficient to explain the nature of maternal behavior in northeast Brazil and its reaction to and effect upon the infant mortality rate. The extraordinary lengths to which some women go in trying to save their children and the fact that God or fate is invoked after the death rather than before, suggest that fatalism is a post hoc mechanism for dealing with death and does not prevent treatment-seeking. Within a folk system of triage, impoverished Brazillian parents and traditional healers decide through consensus for withdrawal of treatment to a dying child using such criteria as : 1) the severity of the child's symptoms and the likelihood of survival, 2) the resources readily available for successful treatment, 3) the drain of treatment on total family resources, and 4) the quality of life of the surviving child. Given the resources available the authors suggest that the "death decision" is based on an accurate appraisal of realities rather than selective neglect.

In Niger, expatriates and health professionals are often heard to accuse Nigerien mothers of neglecting their babies and young children and of virtually allowing their children to die because of their fatalistic view that only Allah can decide whose life will be spared. The present study attempts to show that although women in Sabon Gari may be following practices which the health workers view as leading to malnutrition, health decisions for children are based upon Hausa views of illness and health and the

economic, social, and medical realities of the world in which they live.

Ethnographies of Young Child Feeding and Diarrhea Illness

In an attempt to obtain accurate information on what mothers actually do and why, a number of ethnographic studies have documented feeding and child care practices in various cultures (Cherian, 1981; Barlow, 1984; Dettwyler, 1985; Hull & Simpson, 1985; Marshall, 1985; Raphael, 1979a, 1979b; Tietjen, 1984; Van Esterik & Elliott, 1986). Such studies have provided a holistic view of breast-feeding and young child feeding within the context of the family and community environment.

The Marshall study, for example, examines in detail the demands on the mother, the ideological system which gives meaning to the symbols of food and breast milk, the effect of outside agents which affect local customs, and variations in practice of who gives the breast and when, and when it is taken away, what foods are given, when, and by whom. The Hull and Simpson (1985) study elucidates a number of important issues: the nature of the support women require (the concept of doula in Raphael, 1979b), the discovery that breast-feeding women in traditional cultures give their babies all kinds of food in very small amounts at an early age, the prevalence of mixed feeding (breast milk and additional food) for the one- to six-month-old child as the mother senses that the baby wants food, and the finding that

rather than breast-feeding being "natural" and thus easy, many women complain of being tired when the baby wants to be breast-fed constantly. Hull & Simpson (1985) found that the conventional wisdom among health professionals that most women could breast-feed for six months to a year without supplementing, is not reflected in actual practice.

Winikoff et al. (1988) combined surveys and ethnographic research in four cities to examine the influence of the health system, maternal employment, and marketing on infant feeding. Latham (1988) found that although there is wide international concern that the prevalence and duration of breast-feeding are decreasing in the cities of developing countries, in Nairobi there is not much evidence of either. Instead the study found that women have simply added the bottle to the breast in what is now referred to as "triple nipple" infant feeding. The other interesting finding was that both contact with health professionals (who ostensibly support breast-feeding) and baby formula marketing, are associated with early bottle feeding and use of infant formulas, suggesting a need for more education in this area among health professionals.

Millard and Graham (1985a, 1985c) looked at weaning in Mexico and found that women follow a set of principles that guide them in making individual decisions about the course that will be followed for a particular child, based on the physical and psychological state of the mother and the child and the situation in which the mother finds herself.

Further they found that the guidelines used by women have much in common with biomedical recommendations. The current study uses this model for the termination of breast-feeding among Hausa mothers, since an analysis of mothers' statements and behavior revealed similar guiding principles. The current study found that mothers usually terminate breast-feeding abruptly, that is, in a single day. This practice has been criticized as having a traumatic effect on Zulu children (Albino & Thompson, 1956). Millard & Graham (1985a) found that although abrupt weaning had been reported, it was not actually practiced.

The ethnographic work most relevant to the current study of feeding practices is Dettwyler's study (1985) on the outskirts of Bamako, Mali, in which she documents beliefs and practices about breast-feeding, weaning, and other feeding practices and relates them to growth and development in young children. Many of her findings are similar to those of the current study, presumably because the cultures are similar. Of particular interest is her detailed description of how young children are fed their first solid foods, in which she examines the range of behaviors in child feeding and hypothesizes that "maternal attitude" has a greater influence on patterns of child growth than economic status. Dettwyler (Dettwyler, 1985, p. 360) suggests that education programs focus on the small differences which she saw in young child feeding practices, between well nourished and malnourished children, such as

buying a snack daily from the market for the child, putting powdered milk in the breakfast porridge, or calling the child to come when it is time for a meal.

Anorexia has been noted in the diarrhea and malnutrition literature (Briscoe, 1979; Mahalanabis, 1983; Martorell et al., 1980), but parental food control is just beginning to be studied as a possible factor in young child nutrition and growth (Dettwyler, 1989a, 1989b; Guldan, 1988). Dettwyler (1989a) discusses possible sources of anorexia in the Malian population including illness, chronic malnutrition, parasites, dietary monotony, zinc deficiency, and mouth sores. She compares caretaker control of eating in various cultures (1989b) and finds the Malian mothers near the extreme "minimum" end of the range of parental control of food consumption. She concludes that where considerable autonomy in food consumption decisions is coupled with numerous environmental factors leading to anorexia, the potential for malnutrition and growth failure is high, especially when combined with food inadequacies. These findings may have particular relevance to the current study in which mothers may not exert a high amount of control over the young child's food consumption.

Studies of the Hausa

Studies on the Hausa have documented social and economic organization (Hill, 1969, 1972; Longhurst, 1984; Nicolas, 1960; Raynaut, 1971, 1977a, 1977b; Smith, 1955,

1957) the political system (Faulkingham, 1970) and government (Smith, 1960), history (Echard, 1975a, 1975b), comparison between Muslim and non-Muslim Hausa (Barkow, 1973), spirit possession (Nicolas, 1967), health and therapy (Darrah, 1980; Wall 1988), and the life history of a Hausa woman (Smith, 1981). Watts (1983) traces changes that have occurred in peasant subsistence and consumption in northern Nigeria, focusing on the famine and food crisis of the 1970's. Horowitz (1983) profiles the health and agriculture as well as many other aspects of Nigerien life.

Hausa Women's Lives

There is a growing body of research which examines particular aspects of the social and economic life of the Hausa woman (Cairolì, 1988; Callaway, 1984; Coles, 1983; Longhurst, 1982; Saunders, 1978, 1980; Schroeder, 1987). In all of this literature child feeding, weaning, and diarrhea illness and treatment are mentioned only incidentally, but the concepts of Hausa therapy are central to understanding the issues of child survival. The studies on Hausa women shed light on particular aspects of women's social or economic lives, some of which could affect their ability to care for their children and the ways in which educational strategies might be formulated. Nearly all of these relevant studies were conducted in Nigeria and may not apply directly to Niger.

Among the Muslim Hausa it is very difficult for a man

to visit, interview, and ask questions to women. Mary Smith (1981)⁵ was the first to document Hausa women's own view of their experiences as she chronicled the life history of Baba, a 100-year-old Hausa woman in Nigeria, through war and slavery, illustrating kinship, marriage and divorce, bond-friendship, trades, farming, and crafts. Barkow (1972) contrasts the ancient pattern of women producing the bulk of the subsistence (a pagan man is quoted as saying, "Our women feed us!") with the development of crafts and women's individual wealth brought about by the end of slavery and the seclusion⁶ of women in Nigeria under Islam.

Under Islam, in some areas of Nigeria as many as 90% (Schildkrout, 1983) of the married women of reproductive age are confined within the walls of the compound⁷ under purdah or seclusion, and may not leave without their husband's permission and without covering themselves. Under seclusion, food, clothing and shelter are provided by the man; it is not the woman's role to contribute to production, but to bear children and care for the household. Theoretically only those Hausa men wealthy enough to hire others to do the work done by Hausa women before seclusion (planting, weeding, and harvesting in the fields, fetching

⁵ This life history was written and first published in 1954, although my edition was published in 1981.

⁶ The word "seclusion" will be used for the state of purdah.

⁷ Hausas live in large extended family compounds consisting of a cluster of buildings surrounded by a high wall.

water and wood, and shopping for food) would be able to seclude their wives. Increasingly, however, men who do not have the means are secluding their wives (Callaway, 1984; Schildkrout, 1983) in order to enhance their own status and please Allah (Seclusion of women is often seen as a religious obligation). Other prerequisites for seclusion are a well and a pit latrine in the compound, houses close together so that services can easily come to the door, and an abundance of donkeys to carry heavy loads (Hill, 1972).

Hausa women have found a number of ways to manipulate their roles so as to maintain a certain amount of autonomy and financial independence within the system. Relieved from much of the heavy work secluded women find time to pursue trades (sana'a), including food preparation, sale of produce, cloth, and other goods, and crafts such as mat weaving, which can be done within the walls of the compound and require only a relatively small amount of capital and children to sell the finished product in the market. Capital is obtained by borrowing from friends and relatives, joining other women in women's traditional credit associations (adashi) (Hill, 1969), receiving regular allowances of spending money from the husband (Schildkrout, 1983), taking small change daily from the money provided by the husband for the family's food, earning a commission for retailing goods for others, charging higher prices on grain which they are selling on commission for their husbands and pocketing the balance, or collecting and then selling grain

which has been allotted to them for family consumption (Hill, 1969). Daughters are recruited to hawk goods for their mothers and Schildkrout found that girls were enthusiastic about working for their mothers if they were paid in cash, because the girls were saving money for their dowries. Some men forbid their wives to have a trade (current study) and some men hire their wives to retail goods (Hill, 1969), but usually women's economic activity is ignored by the men.

Women's cash transactions with husbands are the same as those between non-kin⁸ and the money which women earn through their trade is theirs to keep or spend as they wish. A woman's income from her trade may be sufficient to isolate her from her husband's poverty and some women may even contribute to the support of the family (Hill, 1969). Women need cash for gifts for their social obligations such as weddings and baby naming ceremonies of friends, and food and clothing for themselves and their children beyond what the husband has provided. But most of the money is used to increase a woman's personal wealth and at the same time create a dowry for her daughter's marriage. This usually means the purchase of small animals (goats and sheep and sometimes chickens) and kayan daki (things of the room), bed linens, pots and pans, and decorative dishes.

Schildkrout (1983) suggests that men are actually

⁸ Longhurst (1982) also found women working as hired hands in their husband's fields, although being paid less than the going rate for men.

furnishing the capital for women's economic activities by paying for as many as two meals for the family per day which have been cooked by other secluded women in their homes. Men are therefore paying a price for food which includes a labor cost, even though their intent is only to provide the family's sustenance. Thus the cash that women receive from their husbands to purchase food for family consumption goes into the female sphere of exchange where women are independent producers. By using their profits to acquire dowries and investments, she suggests, women are manipulating the meager resources rationed out to them for the subsistence of the family and using them to protect their autonomy within a segregated system. On the other hand, these dowries and investments (pots and pans as well as animals) are liquidated by the family first when a famine or other peril occurs (Watts, 1983; the current study), serving as a buffer with which to buy food for the family. Perhaps this could be viewed as a way in which men are indirectly investing in famine insurance for the household.

Besides entrepreneurship Coles (1983) found that women use several other strategies to manipulate their situation:

- 1) Many may maintain an outward appearance and verbally support the norm of seclusion in order to preserve their own autonomy,
- 2) Others actually choose to enter a different life stage, such as "old woman" or young girl, in which seclusion does not apply,
- 3) Successful trade and prostitution can both provide the mechanism for women to be

able to instigate a divorce and contract a marriage to a more wealthy man, increasing their own status and wealth (Pittin, 1983; Schildkrout, 1983). Other studies examine Hausa women's status (Saunders, 1978) suggesting that women's power is derived from the ability to disrupt the organization of the household group through divorce (Cairolì, 1988), their control of desired goods and services, and their separateness from men (Callaway, 1984), which may actually provide a foundation for emotional self-sufficiency and independence similar to that recently achieved by Western women. Schroeder (1987) investigates the effects of different class-and gender-based relationships on the relative drought vulnerability of Hausa households, and finds that women, especially poor women, bear the brunt of drought vulnerability in Hausaland.

Hausa Ideas of Illness and Therapy

Hausa is a language which is rich with proverbs and metaphors. Darrah's (1980) study in Nigeria looked at Hausa symbols as they were expressed in rituals, songs, and proverbs. Through exegesis, he tried to extract the meaning which Hausas attach to the symbols and reveal the Hausa belief system around health, illness, and therapeutics. Darrah hypothesizes that the consumption of food makes it particularly conducive to metaphorical speech and thought. The most highly developed Hausa allegory equates human reproduction with alimentation. The root metaphor equates

intercourse with the consumption of food and is expressed in the homonym ci, the verb which means both to eat and to have intercourse. A few of the equivalents within this root metaphor are the following: intercourse is equated with eating, the vagina and the mouth are both orifices of consumption, the hymen and the uvula are both appendages which may become enlarged and block consumption and may be surgically removed in the small child. In a corollary allegory the production of food is metaphorically equivalent to gestation. Some examples of objects in this metaphor are: the vagina and the mortar, the penis and the pestle, the penis and testicles and the three-stoned cooking hearth, the womb and the cooking pot, the fetus and the staple starch (tuwo), and life and fire, both of whose thermal properties form the basis of the analogy. The way in which Hausas view thermal properties of the body, medicine, and food, sweet and bitter, the human body, sex, illness and therapy are central to understanding women's ideas about feeding, illness, and child care and Darrah's study (1980) will be referred to often in this research in order to better understand women's views and practices.

Health and Nutrition Therapy

Jelliffe (1966) offered a model for health education intervention in the developing world: He suggested analyzing local practices and dividing them into four categories: good, bad, neutral, and uncertain. If a

practice is good, Jelliffe counseled, encourage it; if it is bad (according to Western biomedical criteria), discourage it; if the practice is unimportant (doesn't have any bad effects) ignore it; if it is not clear in which category the practice belongs, this is an area needing further research. This is a simple formula and encourages the would be change agent to look for positive practices to reinforce, but it makes the assumption that the Western model is the preferable one and makes no attempt to understand the views of the other culture. It has the further problem of not dealing in any way with the problem of how the change agent is to facilitate the adoption of the proposed changes. More recently health educators have been concerned with cultural relevance of the health innovation and further, education has begun to be discussed as a two way process (Nichter & Nichter, 1981; Jordan, 1983).

The Nichters (1981) differentiate among indigenous dietary belief/practices which are: 1) taboos which are strongly resistant to change for deep rooted cultural identity reasons, 2) food restrictions contingent upon indigenous notions of physiology, health, etiology and modes of illness treatment, 3) beliefs and practices which are structured by overarching conceptual frameworks but which may be negotiated vis a vis coexisting reasoning patterns, and 4) weak cultural survivals. They suggest ways in which a health educator can adapt the health innovation to the culture by addressing the health concerns and beliefs held

by the people. They argue that the health educator must play the role of a cultural broker, in which the educator bridges the gap between the conceptual universes and explanatory models of the villager and the change agency. Using insights into indigenous knowledge, the educator works within existing conceptual reasoning pathways to facilitate change within the context of culture.

The Nichters utilize the convergence model of communication which emphasizes information flow rather than messages. In this process alternative interpretations in a situation are minimized and mutual understanding and mutual exchange of information is emphasized. Using this model the nutrition educator would dialogue with a villager about similarities in points of view and they would eventually arrive at mutual understanding even though they have seemingly divergent explanatory models. The areas of approximate mutual understanding or conceptual overlap are those issues around which negotiation as an educational strategy can be initiated. This process does not challenge a culture's basic beliefs, values, or institutions, but places emphasis on the culture's capacity to adapt and on strategies which facilitate cultural continuity.

This idea of change being negotiated is taken even further by the research on birthing practices done by Jordan (1983), in which she proposes that equal status and legitimacy be given to the traditional way of birth. This orientation has the potential, in her view, of generating

change strategies which acknowledge and preserve what is useful in both systems, under local conditions and with the participation of the people to be affected by the change. The universe of possible procedures is considered; each system evaluates the other system using their own criteria; and a mutually agreeable set of procedures is negotiated which includes items each culture feels that it cannot give up. This resulting intervention meets the basic requirements of both systems and has the potential to increase adoption by the indigenous system as well as suggest some improvements in the dominant culture system.

Chapter IX utilizes a modification of Jordan's model to compare the biomedical view of young child feeding, weaning, and diarrhea illness with the Hausa view of these issues.

CHAPTER III

METHODS

Qualitative research using participant observation attempts to describe what is happening and what is said in people's daily lives for an extended period of time, for the purpose of learning what people are doing and why they are doing it, from their own point of view (Bogdan & Biklen, 1982; Hammersley & Atkinson, 1983). The researcher becomes a participant in the social world being studied and the assumption is made that the perspectives and the culture being studied are rational and internally consistent: it rests with the researcher to discover the insiders' point of view by becoming, to some extent, an insider. Using largely inductive reasoning, categories are drawn out from within the data, from which models and hypotheses may emerge which can be tested in later research. This type of research is the most appropriate when little is known about subject, since in doing ethnographic research, analysis is constantly taking place at the same time as the data collection, allowing the strategy and the direction of the research to change as the data suggest. The frequency of certain events is carefully examined and triangulation of different sources of data and different researchers is used to increase confidence in the conclusions.

The methods chosen for this research are qualitative because it was felt that not enough was known about Hausa

practice and attitudes a priori to be able to accurately identify the problems and hypotheses and that these would better be discovered in the course of the research (Glaser and Strauss, 1967). One of the advantages of participant observation, that is participating in people's lives to some degree for an extended period of time, is that understandings can be checked out as they come up and the direction of the research can change as needed. One of the limitations of participant observation is the effect that the researcher's presence and participation may have on the setting. Triangulating multiple data sources allows the researcher to deal with the threats to validity associated with this effect. What follows in this chapter, is a brief description of methods used, with some discussion of the problems and limits associated with these methods.

A number of papers and books contributed to the design of particular aspects of the study: assessing household organization (Pelto & Pelto 1974); food and nutrition (Dewalt & Pelto, 1977; Worsley, 1979; Jerome & Pelto, 1981); young child feeding (Pelto, 1987; Bentley, 1988); diarrhea and diarrhea treatment (Bentley, 1988a; Bentley et al., 1988); and fieldwork (Brown, 1977; Buzzard, 1984; Campbell, 1988; Van Esterlik, 1983; Glik et al., 1986-1987; Gorden, 1980; Pelto & Pelto, 1978; Schatzman & Strauss, 1973).

Selection of the Topic

The focus of this study was expanded after the first

six months in Niger. For years it has been the conventional wisdom among health professionals that children in Niger do not experience a weaning period, that is they change from exclusive breast-feeding one day to exclusive non-breast milk foods the next day (USAID, 1978). So the proposed research was originally designed to focus on the very short transitional period during which they are removed from the breast. Results of the preliminary door-to-door survey, however, found that women introduce solid foods to their children at an early age, suggesting that a study of the weaning process should follow children from four or five months of age until two years or more. Upon arrival in the country it was also learned that the Ministry of Health was in the process of developing strategies for a national diarrhea disease campaign and needed information about how Nigerien women deal with and think about diarrhea illness and its treatment. These considerations led to the development of a plan to follow a small representative sample of mother-child pairs, over an entire calendar year and to include diarrhea disease as a central focus of the study.

Selection of the Village

The study was conducted in Sabon Gari a large rural village of around 3600 people in the Department of Tahoua, in the Republic of Niger, between February, 1987, to March, 1989. Sabon Gari was chosen because it met the criteria for

the research site: it had a population of around 3000 people, it was within the Tahoua Department, an area where the people were Aderawa Hausa (This is the same variation of Hausa I had learned to speak 25 years earlier.), the village had not previously had a Peace Corps nutritionist, but one was assigned to the village at the about the same time that I arrived. The dispensary had been weighing babies for several years before the arrival of the Peace Corps nutritionist, but the education program was new with the arrival of the volunteer so it was thought that traditional ideas might be more easily obtainable here than in a community with a long-standing education program. Also the education program would give me the opportunity to see how the new ideas were viewed by mothers.

Becoming a Member of the Community

When I arrived in Sabon Gari the village chief was ill and did not present me to the community or explain my presence, so the dispensary staff became my sponsors and took it upon themselves to explain my reason for being there. "This woman has come here to better the health services of the PMI", they would tell everyone. "She will be asking questions about what you feed your children, but she is not going to do you any harm. So answer her questions. She works with us at the dispensary but she is the home visit part of the team." For better or for worse, I had become the home visit arm of the dispensary staff and

was introduced as such to every member of the village. The disadvantage of this role was that I was perceived as one of the government health professionals, revealing my bias toward the biomedical point of view, and probably leading people to try to give the answers they think health professionals want to hear. On the other hand an American in a rural village asking about health is automatically going to be perceived as a person in authority, and a person to whom one should show respect, including telling her what she wants to hear. The advantage of the designation as the home visit arm of the dispensary staff was that I was allowed to go into any compound and women's rooms.

Being an older woman and a mother made my questions and concern about young children more credible than if I had been a young unmarried woman. Being a professional woman in Niger allows one to walk freely in both the male and female worlds. When with men, one is treated as a professional. When with women, one is treated as a woman, that is one is allowed to enter the separate world of women with its special language, sense of humor, and secrets not discussed with men. Men have a disadvantage working in this society as they can rarely work with rural women in any role which requires asking personal questions and they are seldom allowed to go into women's homes, even if the women are not considered to be secluded¹. On the other hand, I did not

¹ There are many levels of seclusion (see Chapter IV).

develop the kind of relationships with men which a man researcher might have.

Hausa is a language and a culture rather than an ethnic group and Hausa speakers are proud of their language and pleased when someone tries to learn it. The word, "Hausa" means "the language" (Abraham, 1962). Although the language is tonal, which presents a major hurdle for the Western learner, it is fairly easy to become conversational as long as one can hear the tones. But to truly become a Hausa speaker one must begin to perceive and use the different levels of meaning developed through the use of metaphors, proverbs, and habaci, a kind of innuendo used between co-wives to criticize someone indirectly.

The idea of research is the antithesis to Hausa ideas of how one learns or acquires information. Hausas do not like to ask a direct question or give a direct answer, so one must learn to understand the subtleties of metaphorical speech which hide the person's real meaning. Darrah (1980) says that Hausas' theory of pedagogics is based on the discovery of hidden knowledge, much as students of the Koran gradually become learned by searching for the meaning of the Koranic verses. Much of the analysis of Hausa views in this dissertation depends on the discovery of the meaning that the speaker attached to the words.

Hausas love to tease and play language games to see if the newcomer understands. I was tested constantly to see how my command of Hausa was coming along. Men would shout

out to me in the street obscure words like barin dawo, the piece of broken pottery formerly placed under a ball of dough in a clay pot (clay pots have all been replaced with aluminum ones from Nigeria molded from melted down tin cans) to keep it from sticking to the bottom of the pot: "Hey, Nana, do you know what barin dawo is?". If I knew the correct answer everyone would roll on the ground with laughter. If not, it will be painstakingly explained, and I would be tested on this word the next time I passed. Teasing remarks and taunts would be shouted out just to see if the newcomer could come up with a retort that shows a good command of the Hausa language and humor. If I managed to make a quick comeback which had the potential to embarrass the original speaker, then everyone would burst into laughter and exclaim, "Ah, she can speak Hausa!"

It was at least six months before I was fluent enough in Hausa to pose the complicated research questions in a way that women understood. It was a full year before the level of fluency was sufficient to understand everything that was said in response. If I asked for clarification villagers would say the sentence in a new way rather than repeat the original phrase. This often meant that I was unable to grasp the entire answer, making it even more important than anticipated to do as many interviews as possible with a tape recorder.

Privacy within one's own house is not valued, in fact it is viewed as strange to enjoy being alone. When I was

conducting an interview, neighbors and relatives often crowded around out of curiosity, sometimes chatting loudly and sometimes with loudly crying babies on their backs. But it is considered very rude to chase people away from your house or the spot where you are working because, as a proverb warns, if you chase away people you may not get to heaven because you may be chasing away the prophet, Mohammed. I very often stopped the interview or questioning because the questions were too personal to ask in front of neighbors and relatives. This meant that I either had to wait for all the observers to go back to their work so I could continue the interview, or I had to abandon the interview and come back later. This made the interview process lengthy and sometimes very frustrating.

Selection of the Sample

First a preliminary door-to-door survey was conducted with 250 mothers of children under three years of age in the village of Sabon Gari. Questions identified broad parameters of practice and served to provide a nearly complete list of children below the age of three in the community. The age at which solid foods were introduced, it was learned in the preliminary survey, was about seven months, (four months at the earliest) and the age at cessation of breast-feeding was rarely more than 26 months. Therefore it was decided to study children aged 4 to 28 months, by sampling children aged 4 to 16 months and

following them for a full year. Anticipating drop outs, a sample of 24 mother-child pairs was chosen with the goal of completing data collection on 20 children. A non-random sample of 24 mother-child pairs was chosen using the variables quartier (quarter or neighborhood) of residence and age of the child. Within each quartier a list of children was compiled, using the Protection Maternelle et Infantile (PMI) rolls and the preliminary door-to-door survey. Children were grouped according to their age: 4 through 7 months, 8 through 11 months, and 12 through 16 months. The families were classified roughly into three socioeconomic levels according to the socioeconomic status of the father, using key indicators developed through interviews with villagers, such as ownership of a donkey or donkey cart (charette)² and number of certain types of rooms in the compound. Within each age group two children per quartier were systematically selected using a CFA³ bill serial number to determine the first child and then by counting off the sampling interval to determine the next child. The total sample was kept to one half boys and one half girls and the proportion of families at each socioeconomic level kept approximately representative of the village as a whole.

² Two wheeled cart or wagon pulled by people, oxen, or donkeys, which sell for either 50,000 or 100,000 francs, depending on size.

³ Francs CFA are the currency used in Niger.

The intent was to select a sample of children who had a chance of living for over a year and to find women and children who would be representative of the Hausa villagers. The following children were eliminated: those whose parents were not both Hausa, two who were marasmic and dehydrated, one who had an undiagnosed chronic illness, one who lived in the same compound as another sample child, three whose mothers seemed to be extremely uncooperative, one whose mother was blind and one whose mother was mentally retarded. In each case where a child was rejected the next child on the list was chosen. Of the 24 mother-child pairs finally chosen one pair was dropped in the third month, (May, 1988) because the mother repeatedly refused to do the interviews. Three more of the sample children died between June and September, 1988, leaving the sample at twenty children at the end of the study, in February, 1989. Therefore sometimes the sample will be referred to as containing fewer than 24.

Interviews

The 24 mother-child pairs were followed from March, 1988 through February, 1989. Each month a set of open-ended questions were administered to the mother on the illnesses of mother and child, diarrhea illness and treatment, mother's work and cash flow, along with a 24 hour food recall and a food frequency assessment for the family. All of these were conducted in Hausa and of the more than 250

completed over the year of the study about 200 were tape-recorded and transcribed in Hausa.

In addition to the regular monthly questions, sample mothers were interviewed on a number of special topics, such as behavior during the fast, breastfeeding behavior at birth, and diarrhea classifications. In-depth interviews were also conducted with key informants, men, Muslim priests, traditional healers, and health personnel. Many of these interviews were tape recorded and later transcribed in Hausa.

Residence in the village allowed me to participate in village life and to observe firsthand the practices not only of the sample women, but of a large number of the villagers. Many "opportunity" interviews were done with women and men on the street and in their homes as I was walking by and was called in to "look at my baby" and many of these unplanned interviews were done with mothers of children who were having an episode of diarrhea. Many of these interviews and conversations were tape recorded.

Field notes were taken in abbreviated form on the side of the monthly interview questionnaires and during the planned in-depth interviews whenever it could be managed, and written up after returning home. Keeping up with field notes presented the greatest problem as writing after dark by kerosene lantern was nearly impossible and it was difficult to find time during the day and still complete the data collection.

Because of the difficulty of understanding and recording all of a response in Hausa, especially while walking down the street engaged in spontaneous conversation, I carried a tape recorder with me much of the time and turned it on when a conversation began. This helped to solve the problem of getting people's exact words, but it was not without problems. At first, when people saw the tape recorder, they wanted to sing songs to put in my "radio". Women often burst into spontaneous poetry or song and performed for me and my machine. After a while women became more used to the tape recorder and I was able to focus on my task of asking questions and conducting interviews.

Key Informants

Several people in the village became key informants to the study. The matrones⁴ were consulted often to help explain something which another woman had said. Hadiza, one of the matrones, was especially able to see what it was that I did not understand and to explain it. Some of the women in the small sample became personal friends, probably because they were closer to my own age. They were able to transcend cultural barriers and find the common ground which we shared as women and mothers. It was these conversations

⁴ These are midwives - the French word matrone is used to distinguish between the traditional or lay volunteer midwife chosen by the village to assist at births and the formally educated and salaried functionary mid-wife, called a sage-femme.

which helped me to understand things from their point of view, rather than view their ideas as isolated, strange, and not connected in any logical way.

Ali, who is of a low socioeconomic status in the community, was the only man who was willing to tell the village secrets about people's income and how men view very private issues, and helped to increase my understanding to the point where I could ask informed questions of other men. He, like Hadiza, had an ability to understand what it was I was trying to find out and what it was that I did not understand.

Analysis of Data

The majority of the data for this study are in the form of verbatim transcriptions of conversations in Hausa between myself and informants in their homes or during conversations in the street. About 200 hundred taped Hausa dialogues were open-ended interviews which were part of the monthly follow up of the 24 mother-child pairs. Another 100 were conversations or visits with other village mothers, sometimes spontaneously initiated by the mother to discuss her sick child. A number of interviews were with men, traditional healers, health personnel, and traditional midwives. Many of these verbatim dialogues are complemented by field notes on behavior observed during the conversation.

The analysis of this data was an ongoing process taking place concurrently with data collection, allowing the

direction of the research to change as the data suggested. First I listened to the tapes upon arriving home from the interviews. During the first listening I looked up new words in the dictionary and summarized the ideas heard and the behavior observed during the interview. Sometimes these led to hunches about new hypotheses which might be emerging. Sometimes questions arose which demanded further research. Within the next few days these new ideas and questions would alter the direction of other interviews, as I tried to verify hunches and pose new questions.

Periodically I would write a set of assertions as they appeared at that moment. Over time my understanding of what was going on might evolve from one hypothesis to quite a different one, as the evidence accumulated. For example, an early hypothesis was that women may withhold breast milk, food, or liquids during diarrhea episodes. After the vast majority of women denied withholding anything from a sick child, and seemed somewhat horrified at the idea, I began to ask if the child drank or ate less and if so, why. Mothers responded that children "refuse" to eat when they are sick. This line of questioning eventually led to the new idea that children regulate their own food intake, and when children "refuse" to eat, mothers may not try very hard to get them to eat. This new assertion modified the content and direction of future interviews. Mothers were asked what they do when children refuse to eat and an attempt was made to observe mothers' feeding behavior during illness.

I visited many sick children daily during their illness, talking to the mother and observing her behavior. It was difficult, however, to find opportunities to watch ill children in the process of being fed, as very little feeding took place in my presence.

Verbatim tapes, meanwhile, were transcribed in Hausa, either by myself, or by a Hausa woman who had been educated in Nigeria and could read and write Hausa. When the transcriptions were returned to me, I went through them again, looking for recurrent themes both within the same case and across cases. After reading many interviews on the subject of feeding during illness, the idea kept recurring that mothers seem to feel helpless when their children suffer a loss of appetite.

As I was never able to get my computer to run on a solar powered car battery, I had to wait until I had finished data collection and left the village to enter the data into the computer. The dialogues were then typed into the computer in Hausa to preserve the original words of informants, and the field notes (my observations and reactions) were typed in English. Using the software, Ethnograph, each of the dialogues was coded. This process involves reading the material, and identifying each new idea suggested by the material. An attempt is made to allow the data itself, rather than a pre-established conceptual or analytic framework to dictate the labels. In this way unexpected features and new insights may emerge. Any

segment of data could have several labels or could be part of overlapping labels.

After the codes were entered into the computer, a search was done by code word and printouts were produced of all segments labeled with this particular code across all interviews and observations. These printouts were studied carefully and the informant's exact words examined. An attempt was made to extract the speaker's meaning from the context and the choice of words. The informant's tone of voice, body language, and observed behavior from the field notes gave clues to the speaker's meaning. Events and remarks which occurred many times became organized into themes, and when many of these small pieces of behavior and ideas had been put together, they often seemed to fit into a logical cohesive system.

For example, there were many instances of women who said that their child "refused to eat" when sick. When asked what they did, mothers repeatedly said something like, "What could I do? He didn't want food. He wouldn't eat." In the field notes where were many instances of women offering food on a spoon or on her finger to the sick child - the child would turn its head away or show no interest, and the mother would put the food away. Mothers seemed horrified at the idea of continuing to feed a child who, in my view, was too weak to eat without a lot of help and encouragement. This and other evidence eventually led to the following assertions:

When children have diarrhea, mothers do not withhold food, breast-milk, or liquids. Children, however, are allowed to regulate their food intake. The child who is ill and anorectic may not be compelled by the mother to eat.

In the last step, that of writing the findings, the researcher organizes the various themes which have emerged from the data. A model is laid out in which assertions and sub-assertions form hypotheses. Each assertion is supported by evidence from the data, which may take any of the following forms: direct quotations from informants, detailed description of instances of behavior from the field notes, statements and explanations from key informants, linguistic analysis of speech and metaphors which may reveal an underlying belief system, symbolism in rituals, songs, stories, jokes, and proverbs, and the findings of other researchers.

These multiple data sources allow the researcher to triangulate the evidence, increasing the confidence in the conclusions. Samples of the evidence and the process of analysis are presented so that other researchers can evaluate the conclusions and may perhaps have other interpretations. This process of writing can also be a continuation of analysis. The process of organizing the themes, trying to explore the possible connections, and pushing for conclusions, often reveals new relationships and leads to new insights and new hypotheses.

The value of qualitative research is that it allows the development of models and hypotheses in an area where little

is previously known. These models and hypotheses can then be tested by later research. Further research into one or more of the conclusions from the current study may lead to new understandings of these issues and somewhat different conclusions.

CHAPTER IV

THE SETTING

This chapter introduces the social and economic setting within which the Hausa woman in Sabon Gari makes decisions affecting the health and nutrition of her child. The first section presents in broad strokes the setting and the health and other services available to the people of area, including an overview of Hausa views of health and therapy. Then men's and women's work are discussed and a Hausa compound is described. The section on Hausa women and money examines where women get money and what they do with it. Case studies provide examples of women dealing with their roles of caring for children, feeding the family, and meeting their obligations to their husbands, their women friends, and their daughters.

The Village

Sabon Gari is a community of about 3600 people located on the tarmac road about half an hour from the Birnin Konni (Konni) and the border of Nigeria. From a distance the village appears as a long green strip against the red sand background. The water table is high and gardens lined with trees run the length of the village on the south side and in the village itself hundreds of nimes¹ have been planted. At the station people are sitting with their tied bundles

¹ Imported shade tree.

and baskets waiting for a village taxi, one of two or three barely running Peugeot station wagons, which make the round trip to the district capital and on to the Nigerian border carrying merchants and their goods back and forth. To go to Tahoua, the traveler stands on the other side of the tarmac and flags down one of the eight or ten small buses which pass here daily going north. Other designated spots (there is never a sign) are the origination of taxis which go to rural villages once or twice a week, carrying women and old people visiting family, or merchants with huge bags of assorted goods. Rows of three foot high bags of onions stand near the edge of the tarmac waiting to be loaded into huge trucks from the coast, and the whole area smells like onions. Under the trees a couple dozen men in long robes lie on mats, dozing or chatting about the price of onions. A crowd of teen-age boys sits on the ground in old tee shirts and pants, joking and arguing and hoping that when the onion truck arrives there will be work for them.

The tea table on the side of the road is the center of activity. The table is covered with a plastic cloth and has homemade benches on three sides for people to sit. The tea maker stands behind the table pouring tea and coffee. A large round enamel tray in the center holds glasses and enamel cups, a can of Nescafe, a box of Lipton tea bags, a plastic bag of granulated sugar, two cans of sweetened condensed milk, an opened can of margarine, and a metal spoon. About four flats of eggs are stacked next to a pile

of French bread wrapped in plastic; both of these are brought fresh from Konni twice a week. I never saw anyone buy eggs and French bread although the piles gradually disappeared as the week passed. In back of the table is a kerosene heater with a large pot of nearly boiling water with a couple of tea bags and dried ginger in it. This lightly flavored tea water is used whether one orders tea or coffee, so that those who are short of money can order plain water and still get a very light tea. Those who pay a little extra can have instant coffee added to their drink and everyone gets at least two ounces of sweetened condensed milk, making a hot, sweet, spicy drink.

Sitting on tiny wooden stools near the tea table, women sell corn tuwo² and sauce, millet pancakes, and deep fat fried bean cakes. Hungry travelers buy their meals here and men who have a little cash "in the pocket" buy a snack or a meal. It is at this gathering place and several others like it in the village where groups of men can be found resting and talking when they are out of work or between tasks. Those who are planning to spend their day at the station, the automobile mechanics and the onion growers who are hoping to make a good deal on their onions, have their lunch

² Tuwo is the staple dish often referred to in English as "porridge", but this word is misleading. Tuwo is a heavy, gluey, paste made by stirring large quantities of flour into boiling water and then beating it with a large paddle. It is usually made out of millet or sorghum, but now is frequently made of corn, especially when sold as prepared food in the market.

sent to them from home by children when it is time to eat. Other men may buy one or more meals per day at this or other street corners in town where street food is sold. A meat seller walks around with a huge (three foot diameter) enamel basin on his head filled with roasted meat. The tail of the animal is arranged so that it dangles off the side of the basin, advertising to would be buyers whether the meat is goat or mutton. A man in a long robe which is freshly washed and ironed, signals the meat seller, who sets the meat basin down in front of the alhaji³ and his four companions. The alhaji orders 200 francs of meat, and then squabbles with the meat seller about which piece to cut and how much he should get for 200 francs. The meat seller squats behind the basin, takes a long butcher knife, tears off a piece of brown paper bag⁴ and wipes the knife with it, picks up a piece of roasted meat and slices it into bite-sized slivers in his hands, dropping each piece into a small enamel plate. When the amount is agreed upon, he puts several tablespoons of yaji (powdered cayenne, black pepper, and ginger) on the side of the plate and hands the plate to the alhaji. The five men share the dish, dipping each piece of meat into the spices before eating it.

³ (pl. Alhajai). The title given to men who have made the pilgrimage to Mecca, usually the wealthier men in the community.

⁴ This brown paper is usually the bags that cement came in.

Another long table has piles of dates, kulikuli⁵ balls, boxes of sugar cubes, matches, kola nuts between layers of wet burlap, a row of sugar cane pieces, a pile of limes and a pile of mangoes. A rope suspended over the table and fastened between two trees displays tie-dyed fabric from Nigeria, rubber sandals from China, and a new kerosene lantern. Tables, which are usually small and can be carried long distances on the head, serve as small markets or stores where daily necessities are sold at one of about 20 street corners in the village. A shoe shine man has a table of used shoes for sale and two colors of shoe polish and a brush. At night each of these sellers will advertise with a small kerosene lantern, making a row of little lights signaling the travelers on the tarmac that they have come to a village.

The tarmac road runs through the eastern corner of town and a gravel automobile road runs from the tarmac diagonally through town, passing the dispensary, the school, the agriculture house, the pharmacy, the market, the slaughterhouse, and ending at the pépinière (tree nursery). The dispensary, the agriculture building, and the school all face on an open square where there is a capped well with a foot pump and a solar-powered television. On the three nights per week when the national station broadcasts, the

⁵ Peanut solids left over after the oil has been removed, recommended as an addition to baby cereals because they are high in plant protein, always available and relatively inexpensive.

space around the television is filled with about 150 men and boys lying in the sand, heads propped on elbows, watching the news in all five national languages followed by a French movie. Roots, the saga of African American slaves was shown with French subtitles on national TV in its entirety at least once during this study. The nurse, the school director, and three or four merchants in town own televisions and run them on car batteries when they have the time and money to go to Konni to have the car batteries charged. When someone's television is running neighbors and friends fill the yard and spill out into the street, glued to the screen, if not understanding very much of the French.

The village has a dispensary staffed by one government trained nurse, an assistant who gives shots, treats cuts and does the custodial work, and an American Peace Corps volunteer, who performs the services of the PMI. This dispensary building is an old cement-coated mud-brick building built soon after independence in 1960, and consists of two large receiving rooms, each with its own front door. One serves as the medical waiting room and one as the PMI, providing mother-child health care. Next door to the dispensary is a three room mud-brick building which serves as a hospital for complicated childbirths, and a place to stay for those who are too sick to go home. The dispensary is not equipped with any sort of lab equipment, does not do any surgery and does not get involved with childbirth except in the case of complications. Cases needing more

specialized attention are referred to Tahoua, Konni, or to the Galmi missionary hospital. Every morning there is a long line of people waiting in front of the medical dispensary door to be treated for everything from malaria to snake bite. Nowadays the dispensary is no longer seen as a place where people go to die, but as another source of therapy. A number of illnesses are viewed as best treated with Western medicine, including malaria and dysentery. Hepatitis is an illness which is known to have no treatment in Western medicine and traditional medicines for this illness are highly respected. For the majority of illnesses, however, the type of treatment sought is based upon the perceived cause, the money one has on hand at the moment, and the type of healer or treatment one believes in or has seen work for this illness in the past.

During this study Helen Keller International selected the district in which this village is found to pilot the distribution of vitamin A megadose capsules (200,000 international units) through the dispensaries. The matrones (midwives) attached to the dispensary were trained to give a capsule to the parturient immediately after childbirth. The young child is then given a capsule at six months and every six months thereafter.

Health is not viewed by the Hausa as a biomedical state. According to Darrah (1980), good health is one kind

of good fortune. One's arziki⁶ or good fortune, consists of health, wealth, status, and children. According to Darrah, each person is assigned a certain amount of arziki which can not be changed, but it can be decreased in one of the above areas and increased in another, as long as the total is maintained. This means that in order to maintain one's balance of arziki, when one gets ill (health), a price (wealth) must be paid in order to regain health.

Magani (medicine) in Hausa has several meanings: 1) medicine as in a treatment for an illness, as the word medicine is used in English, 2) method of obtaining something, as in medicine to help you get money or some other kind of good fortune and 3) means of avoiding or protecting oneself against something, as in medicine to keep others from beating you (Abraham, 1962). Women were constantly going to Muslim priests and to an assortment of traditional healers, either to obtain protection against something, buy medicine to produce a desired outcome, or to receive treatment for a certain illness.

There are several different types of traditional healers: the malamai (Muslim priests), the bokaye (herbalists), barber-surgeons, bone setters, and yan bori (spirit mediums), mai magani (sellers of medicine), and magori (traveling medicine sellers) and ungozomai (midwives).

⁶ This word is azziki in other parts of Hausaland.

Muslim priests prepare rubutu, which is the water resulting from washing Koranic verses from a wooden board and laya, amulets with verses folded up inside. A child who is about to be removed from the breast is given rubutu to drink, which puts the verses in the child's stomach and provides strong protection against the dangers of the termination of breast-feeding. Laya (amulets) are Koranic verses tied up in a string and sewn into a tiny square of leather worn around the neck or hips, usually to protect the child from the dangers of teething, evil mouth, or witches.

Barbers play a key role in the community by performing rituals which signal the passage of the individual to another stage in life. Their surgical procedures include circumcision, removal of the uvula to prevent digestive problems, clipping or removal of the hymen at birth if it is determined to be necessary to prevent reproductive problems, cuts to remove bad blood to lower fevers, scarification for identification as well as for health reasons, as well as shaving and hair cutting under certain circumstances to protect the child.

There are many kinds of traditional herbalists. Magori are medicine sellers who travel far and wide, sometimes as far as Mecca, to sell their formulas of minerals, barks, black cat hides, animal teeth, snake skins and other charms, sometimes earning as much as \$2000 when they successfully treat a wealthy person. The area around Sabon Gari is known for its magori, and some of the small villages nearby boast

several wealthy magori as residents. An informant whose husband was a magori, said that they rarely treat the people in their own village, because they are not "popular" in their own community. When asked what this meant she went on to say that magori medicine is sometimes "a lie" and that people in his own community don't always trust the magori. Other healers in Sabon Gari usually specialize in one specific illness. One old woman is a specialist in an illness called kaikai, another in a childhood illness called kai, and another in the treatment of abscesses, just to name a few.

Four traditional matrones report to the dispensary daily to assist in the well-baby clinics and the health education demonstrations. The matrones are uneducated post-menopausal women who were practicing traditional midwifery before the government incorporated them into the Village Health Teams. Their government training consists of participation in an initial workshop of a few days covering care of the umbilical cord, recording births, identification of birth complications which should be referred to another medical facility, and some familiarity with oral rehydration therapy and the government recommended baby cereal recipes. Since their initial training there have been several workshops to review the material and update their skills. Each matrone represents a quartier, where she will be called upon to assist at most birthings. Then she reports the birth to the dispensary and takes the vitamin A megadose to

the new mother. For her services she will usually receive a calabash⁷ of millet from the family.

On the PMI side of the dispensary building baby-weighing clinics are held Monday through Friday mornings and health education and expectant mother clinics during the afternoons. A different quartier comes to the baby-weighing clinic each day and 50-100 children are weighed and measured and their mothers counseled daily. The matrones help with the clinics, weighing babies, interpreting the Peace Corps Volunteer's words when they think her Hausa has not been understood, and giving advice and scolding mothers about child care and feeding.

An elementary school of six grades serves a total of about 300 children, representing only about one quarter of the eligible males and in some grades, less than five per cent of the appropriately aged female children⁸. The fonctionnaires (civil servants) in the village number around eleven: the nurse, the six school teachers, the agricultural extension agent, the pharmacist, a cooperative representative, an adult literacy representative, and a representative of the district veterinary office who gives animal vaccinations.

The traditional village chief's house has a thirty foot

⁷ A calabash is a bowl made from half a large gourd.

⁸ In a national health survey 4.4% of the mothers could read French (Ministère de la Santé et des Affaires Sociales, 1985).

long, ten foot deep straw sun roof which shades the chief and his entourage where they sit on mats, talking and solving village problems. Everyone who passes greets the chief and whoever else is gathered around. Men sometimes stop and sit on the mat for a few minutes and women often lower their heads and greet the men as they pass. It is here that complaints between villagers are heard and decided. There is often a husband and wife dispute, in which the chief listens to both sides and then gives a pronouncement about what each of the partners should do to patch up the relationship. This often ends with the husband being advised to give the woman six yards of new fabric and the wife being advised to be more patient.

The Friday mosque is a mud-brick structure with minarets where the limam (head Muslim priest) gives the message at the Friday service. The limam is an old man, who usually sits inside his entryway, which happens to be so dark that he can see out but no one can see in. People passing by stop and place their face in front of the door so that he can see who they are and greet him. The women bow and lower their heads to show respect and men shake the limam's hand and touch their palms to their own chests, and then continue on their way.

Making A Living: The Man's Role

The villagers are sedentary Hausa farmers who grow rainfed millet and sorghum for their own consumption and

some surplus which they sell on the market. Temperatures in this part of Niger range between 68 and 115 degrees Fahrenheit, with the hottest seasons being March through May and the month of October. The rainy season falls roughly between June and September, bringing 12-20 inches of rain annually. The timing of the rains is as important to millet's proper development as the total quantity of rain because the millet plant grows in stages: first the stalk comes up and forms branches, then it forms heads (like a cattail), then it forms grains, and finally the grains form "eyes", the stage at which each little seed enlarges and becomes a ripened grain. If the rains do not fall at the proper moment of each stage the plant may fail to develop properly.

In the Hausa culture the husband and wife are each responsible for different aspects of daily life: The husband is responsible to feed and clothe his wives and children and the woman bears his children, cares for the children and the household, and prepares food. The vast majority of the adult males in this village claim dryland agriculture during the rainy season as their main occupation, but most households depend on the income from other economic activities during the dry season. Those men who have second and third occupations have enough capital to be able to buy food if the harvest falls short. Those families with very little land or not enough able-bodied men in the family, and whose men do not have a second

occupation, can not grow or buy enough millet to feed their family for the year. These men must hire themselves out to larger landowners in order to buy the millet to feed their family for the rest of the year. Of 21 families in the study about a quarter grew less than enough millet to feed their family for six months, a quarter grew ten to twelve month's worth, a quarter grew enough for their family for a year to eighteen months and the last quarter grew over eighteen months worth of millet.

A strategy used by many families is to raise onions during the cold season, sell them around February or March, and use the money to buy millet. Families studied reported receiving a gross selling price for their onions ranging from 10,000 francs (\$30) for those who worked the gardens themselves to 200,000 francs (\$600) for those who are able to hire others. Most of the families with more than one year's worth of millet seal their own granaries and buy all of the millet that they consume between February and planting time, using their onion money to purchase millet when it is cheap and leaving their own stocks intact. Then, when the price of millet goes up and they have spent their onion money, they stop buying millet, and consume their own stocks through the rainy season⁹.

⁹ The Buzu families in the village follow a similar strategy; they often grow only enough grain to feed the family during the rainy season in their hometowns north of Tahoua. After harvest they move to Sabon Gari and carry on petty trade or physical labor and buy their food with cash. When they hear that it has rained up north, they move back home for the

Families who were able to grow a large surplus of millet, sold millet during May and June, using the money to buy a donkey or a charette which would help them during the growing season and become a source of income when it is rented out to others. Those who are unable to grow enough for the family for one year eat their millet until it is gone; then they are forced to buy millet on the market when it is at its highest price. They find themselves in an endless cycle of working to get each day's food and being at the mercy of the market and those who might hire them. Some men who are in this position in Sabon Gari look to the weekly market day to earn the family's food money by transporting goods on their heads.

Hausas in Sabon Gari themselves classify people roughly into three strata in terms of wealth: 1) mai kudi, mai arziki (one with money or good fortune) - They are big farmers and have much more than is needed for domestic requirements. They invest in cattle and hire others to perform labor. 2) middle group - These farmers have enough food to feed the family adequately and some extra to store or sell and they have one or more additional trades. (One informant divided this group into 2 groups. The lowest was dai dai da abincinsu (equal to their food). The higher income group, he called sun fi abcinsu (they have more than enough for their food).) 3) talakawa (peasants or poor

planting season, open their own granaries, and consume their own grain while they work their fields.

people) - An informant put it this way, "They may have today's food, but they don't know where tomorrow's is coming from". Their land is too small to grow enough food for their family for the whole year; they have no access to capital for trade and so are forced to sell their own labor. These definitions are very close to the categories given by Hill (1972) and Watts (1983) with one exception. Whereas the poor farmer in Nigeria could not pay for dry season plots, the farmers in Sabon Gari may use garden plots free, as long as they can show that they can get the capital for the seed and have shown themselves capable of following through with the harvest of the crop. Watts found the distribution of these classes within Hausa society as follows: 15% lowest class, 60% middle level, and 25% at the highest level.

Men are responsible to prepare the fields: cutting trees, burning brush, and plowing up the soil with a short-handled hoe. Some farmers fertilize the fields with manure from their compound, but this work requires time, a charette and laborers, so it is often not done. On the day of the first good rain all of the men and children over seven, and some women¹⁰ go to the fields to plant. The men dig a hole in the already prepared soil, and a woman or child places seeds in the hole, covers it with soil, and stamps on

¹⁰ In this village few women work in the fields, although some have fields of their own either given by a brother, inherited, or on loan from their husbands. When women work in the fields they usually do the planting and weeding.

it with his or her feet. Depending on how soon it rains again, the weeding takes place in the next two or three weeks and a second weeding a few weeks later. When the grain is ripe the stalks full of grain are cut, gathered and tied into bundles, carried home on the head or on charettes, and placed into large mud-brick granaries until needed.

In the past, men's work was confined largely to the rainy season, and there was time during the dry season for men to sit around and talk, but nowadays most men are busy year round with secondary occupations. Most of the men and a few post-menopausal women in this village grow contre saison (off season or dry season gardening) onions for commercial sale. These fadamas or gardens require hand labor to shape and repair the gravity feed mud irrigation channels. Although a few of the wealthier gardeners have gasoline engine pumps, most gardeners still depend on physical labor to pull every bucket of water up from the well and dump it into the water channels, while a second worker opens and closes the channels to direct the water so that each square gets enough water to maintain the plants until the next day.

Some farmers grow lettuce, tomatoes, or carrots which are sold in the village during about three weeks of the year in early March and a few farmers keep small crops growing in the fadamas year round. The village boasts a pépinière (tree nursery) which is run by the Ministry of Agriculture with the technical assistance of Care International.

Trainees are brought here from all over the department to train for several months in dry season gardening and fruit tree grafting and management. Some farmers in the village have followed the techniques of the pépinière and have year round gardens of mango trees, an occasional grapefruit or papaya, and a variety of Vitamin A rich plants for greens and sauces.

Hausas are consummate traders and when the men are not involved in the rainy season crop of millet and sorghum (June through November), or in the contre saison gardening (September through February), most Hausa men are either big commerçants (businessmen) or petty traders. At their tables or small shops they buy and sell animals, leather, tubers, millet, dates, canned goods, sugar, salt, matches, shoes, cloth and other consumer goods.

Before the drought killed up to 65% (Jepson, 1984) of the domestic animals in Niger, this village was the site of a large weekly animal market and even though the number of animals sold is smaller than in the past, the weekly market is still large and sellers come from all over the department and from Nigeria to sell their wares. On market day almost every man in the village and older women and young unmarried girls pack up something to sell at the market or just go to buy something. Tailors carry their sewing machines and set them up under a straw roofed tent, older women cook fried cakes under the trees, and young girls sell orange colored drinks in used bottles of every shape, each with a small

twist of paper as a cork. The market covers several acres surrounded by huge animal parking lots where tethered donkeys and camels rest and wait for the long walk home to a neighboring village, this time carrying goods to sell back home and any of the owner's goods which did not sell at the market.

Other secondary occupations include tailor, butcher, meat seller, carpenter, medicine seller, mat maker, barber, donkey cart hauler, launderer, tanner, blacksmith, and priest. The lowest status jobs include physical labor in other people's fields, mud brick house construction, and carrying things on one's head. People who carry things on their heads for money are said to be the poorest, as they have to sell their labor in order to put the day's food on the table. At the bottom of the social hierarchy in this village are about 12 Buzu families, who come here during the dry season in search of money to feed their families; the men sell tea at village corners or polish shoes and the women sell their labor to Hausa women who can pay to have someone pound millet and cook for them.

Those young men who do not have a contre-saison garden of their own and are not needed on the family plot, leave the village (exode) during the dry season to seek part time employment on the coast. When they are successful at making money, it is sent home to the women and children via the post office mandat (money order). On Tuesday and Thursday mornings crowds of old men and women sit outside the post

office in the district capital waiting for their names to be called to receive the money being sent from the family member who has gone to the coast to work. These mandats come with a message which the post office employee translates into Hausa as he hands the recipient the money. One woman was overheard being told "Half of this money is to go to my wives and children and the other half is to buy a donkey".

Animal husbandry is a favorite second or third occupation of Hausas, both men and women. Most of the animals which can be seen in this village are owned by the women, who use or sell the milk and butter produced on a day to day basis. A few men own large herds of animals which are not visible in the village as they are sent north with Fulani herders to pasture, following a very old tradition of exchanging the milk produced by the animal for the care and feeding of what can amount to a large investment.

Donkeys and charettes are considered a good investment because they can be used to produce food and can be rented out to provide income. The poorest cannot afford donkeys, but a family which grows enough millet to sell for profit may buy a donkey one year, and a charette the following year. Motorcycles are owned by those who have extra cash, particularly functionaires and alhajai, as one must have a dependable cash flow to buy fuel in order to use a motorcycle. Only about six people in Sabon Gari own automobiles. There are several dozen bicycles in the

village in various states of repair and they are popular with the young men, even if not very many manage to own one.¹¹

Women's Work

Women in the Hausa culture are responsible for food preparation, carrying water, and caring for the house and the children. A woman informant was asked to describe the typical woman's work day:

I'm going to tell you about women's work. Every day the woman gets up in the morning before the sun has come up. She bathes herself and then she prays. She gets water from the well. First she heats leftover tuwo or gets out the fura for her family to eat. Her husband gives her the millet for the day and then he goes to the village gardens to do vegetable gardening. She sweeps the compound.

She removes the millet grains from the stalk. She pours the grains from one bowl to the other so the wind will take away the chaff. She puts the grain in the mortar and does the first pounding using the pestle and adding a little water. She removes the bran and washes the grain. She washes the mortar and the cooking pot. She sets the pot aside to dry. The grain is put in a closed calabash. Then she puts the pot on the fire and lights the fire. She puts the grain back into the mortar and pounds it until it is flour. She makes the damp flour into balls and puts the balls into the cooking pot to boil.

Before the balls have cooked, if she has animals she gives them the water used to wash the grain; she chases them out to pasture. She milks the cow. She pounds the spices. Some use ginger and cloves; others use different kinds of pepper.

¹¹ It is considered inappropriate for a woman to ride on most of these modes of transportation unless she is being transported to the hospital, so when I occasionally hopped on a passing charette or pretended to steal someone's bike and took it for a spin, everyone within sight stopped what they were doing to laugh and see how the fiasco would end.

The balls have cooked. She takes them out of the pot and puts them into the mortar. She pounds them until the lumps are gone. Then she adds spices and a little water and stirs. When it is absorbed she puts it into a calabash. She washes the mortar and pestle. She goes back into the house and wet mixes the paste. Then she adds sour milk and water.

Then it is lunch time. She carries the fura to the husband where he is working in the garden or fields and then she may work in the field or garden while he eats his lunch. Some women have fields that their husbands have given them. Then she carries the dish home to clean. If she has older children she may send them to carry the husband's lunch to him.

The women and small children eat and rest. In the mid afternoon, the women may work on their craft or get their hair braided. Then they get more water and begin to make preparations for the evening meal (Halima).

Before sunrise the wells in Sabon Gari are crowded with women and girls. They lower buckets made from inner tubes into the well, pull the water up, and pour the water into larger buckets or clay water jars. When the bucket is full, the woman lifts the heavy container and places it on her head and carries it back to the house, where it will be poured into large earthen water jars for the day's supply. For most homes this process is repeated for three to six trips every morning and again every evening. Most women wash clothes about twice a week, doubling the amount of water needed. Women who are secluded (kubli)¹² and who do not have a well in their compound, go to the well before sunrise and after dark so that they can not easily be seen.

The village is fortunate to have a water table at three

¹² Kulle means locked, or keeping a woman in purdah; kubli is the Aderawa variation of the word.

to five meters during all but the last few months of the dry season. A large percentage of the houses in the newer quartiers have their own well within the compound, but women in the center of town, where houses are too crowded to dig a well, must walk to the nearest well outside of the compound. A closed well dug by Italian aid several years ago provides potable water. It is only a few meters deep, however, and draws from the same water table as the rest of the village wells and goes dry during the dry season.

Most of the women in this village pound millet for the family's daily fura, the sour milk drink. This preparation takes from approximately 7:30 a.m. till 11:30 a.m., but there are parts of the preparation which allow a few minutes to do something else. During the farming season there are periods when the men are in the fields all day and there are usually extra hands to feed. During this season the women spend all morning pounding the millet for the fura which will be carried to the workers to sip throughout the day whenever they take a break. A family which usually prepares one tiya (about 5½ lbs.) of millet for fura in the morning may now prepare five tiyas, greatly increasing the amount of pounding time required.

There are some exceptions to this pounding routine. The Muslim law says that a man must treat all of his wives

equally¹³, so he rotates nights, spending a different night with each wife. The woman who is to sleep with the husband that night is the woman who prepares the food for that day. For those who have co-wives, the above description is their pattern on their "day to pound." On their off day, they may help with these preparations, but they are more likely to have some spare time to pursue their trade or talk with friends. In some homes the co-wife and her children eat the food prepared by the other wife. In others the woman who is not cooking that day may prepare something else for herself and her children.

Young girls begin pounding as soon as they can lift the pestle, but are not able to contribute to any extent until they are eight or nine. A woman in her thirties or forties may have a daughter old enough to do all of the pounding for her; the daughter will work for her mother with the knowledge that her mother will set her up in housekeeping when she marries by giving her pot and pans, blankets, and possibly a small goat or a calf. Very wealthy women may hire someone to pound millet for them or a wealthy husband may hire someone to pound for them.

Every day at about 11:30 a.m. the animals tethered in the compound are untied and driven to the clearing on the

¹³ Only about one third of the households in Niger are polygamous (Ministère de la Santé et des Affaires Sociales, 1985).

north side of town, where the Fulani¹⁴ herder family takes them outside of the village to pasture until about 6:00 p.m. Depending on the time of year and whether the animal is giving milk, owning animals entails additional work. During the millet growing season the women or children must gather weeds from the fields or purchase food for the animals. If a goat or cow is giving milk the woman milks the animal while the fura balls are cooking. The milk is set in a corner of her room and skimmed the next morning; the cream is collected for several days and then shaken in a gourd until it becomes butter. The skimmed sour milk is sold daily or traded for kasari, the water that the millet is washed in, which is used to fatten animals.

The second pounding of millet for the evening meal of tuwo, is done by most of the women in this village only two to four times per week with most people doing it about twice a week. During cultivation this may even become less frequent for those who have large amounts of pounding to do in the morning and are too tired by evening. When they do not cook tuwo in the evening they buy it already prepared. In some families where there is only one wife the mother-in-law cooks one day and the daughter the next, or the work is shared. After the evening meal is eaten people usually sit around the fire, in the entrance way, or under a tree, talking until they are ready to go to sleep. The dirty

¹⁴ Fulani is the Hausa word for the ethnic group known as Peule in French, or the speakers of Fulfulde.

dishes are often given to the animals to clean up and then left until the next morning to be washed.

Firewood must also be obtained daily and for the most part it can no longer be gathered in the nearby area¹⁵. Most homes burn millet stalks stored in the compound after harvest, so the woman does not have to go after fuel every day. A poor family will gather and burn cow dung during those seasons when there are no millet stalks left. Some people buy their wood for 50 to 100 francs per day.

Very few women in Sabon Gari are secluded under Muslim purdah. As Hill (1972) argues, in order to seclude one's wives a man must be able to pay others to do the farm work, carry water from wells outside the compound, and perform errands and shopping. Seclusion also requires a pit latrine and a well in the compound, which eliminate the need to leave the compound morning and night. Three or four of the women in the sample of 24 considered themselves to be secluded, but women explained that in Sabon Gari there are different levels of seclusion. Women who consider themselves partially secluded say that they can leave the house for weddings and showers or visiting family, but they must cover their heads when they leave the house during the day. A truly secluded woman rarely leaves the compound and if she does she covers not only her head, but also wears a

¹⁵ The shortage of wood and the destruction of the forests is a serious problem in Niger and several projects have introduced stoves designed to use less wood.

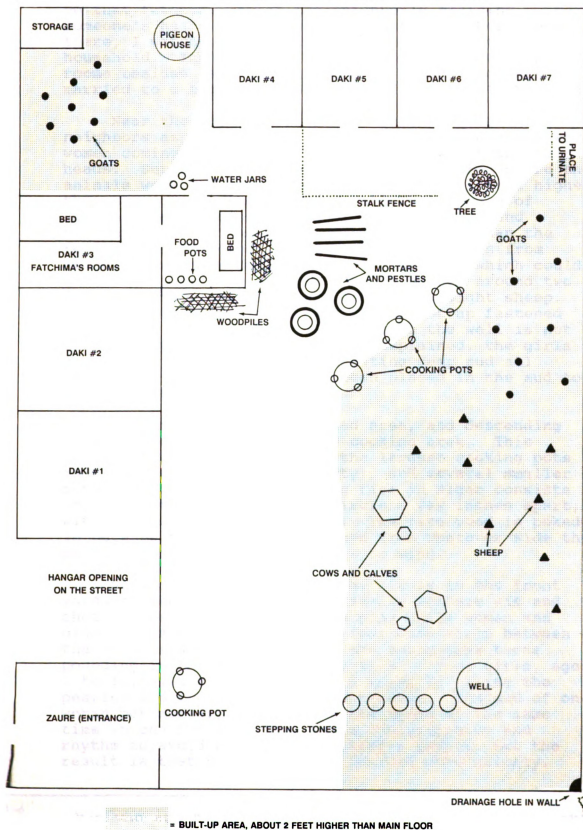
sheer veil over her face. Some women say that seclusion is the ideal to which they aspire: "If I could marry a rich man I wouldn't have to pound anymore and I could sit all day!". Others say that they would not want to be secluded because that they like to be able to come and go and visit their friends and relatives. Secluding one's wives is thought to please Allah, and most priests seclude their wives whether or not they can afford to pay others to do the work. Men who are not very well off sometimes seclude their wives for religious reasons or to acquire status, sometimes putting their wives in a difficult position in terms of getting food and health services.

The House

All houses but one in Sabon Gari are made of six foot high mud brick walls which enclose a number of smaller mud brick buildings and living areas sheltering a mai gida (homeowner or head of the household) and his sons, their wives and children (see Figure 1). The following passage from my field notes describes the home of Fatchima, the mother in case #1:

As I stepped into the zaure (entryway) an old woman sat in the dark room sorting a large calabash of green leaves. A two year old child kept grabbing handfuls of the leaves and throwing them to the ground. The floors of most buildings consist of sand three inches deep which is periodically replaced with fresh sand. The old woman cuffed the child's hand, scolded her, and carefully sifted the leaves out of the sand and put them back into the calabash. I stepped through

Figure 1 - Diagram of a Hausa Compound



the door into the open compound¹⁶ and a young boy told me that Fatchima was at the neighbor's braiding someone's hair. While a child ran to tell her I was there, I watched the activities going on in the household. The compound had six different women's rooms besides Fatchima's. Each of these women was married to a brother or an uncle of Fatchima's husband.

Near the entrance is a well which serves the neighbors as well as the residents, so there are always women coming and going with buckets of water on their heads. Surrounding the well is a raised area where the animals were tethered. The area is about 2 feet higher than the rest of the compound, and is composed of several years' accumulation of straw bedding and manure, allowing the area to remain higher than the rest of the compound. This keeps the animals from standing in water during the rainy season, which could make them ill. The animals usually number around two cows and their calves, eight goats, and eight sheep. Each has its own stick with a leather strap fastened around the animal's foot. Getting to the well is not always easy because, as Fatchima explained, the girls are sloppy and spill water, creating deep mud all around the well. Stones had been placed in the mud to serve as stepping stones.

On the edge of this raised area, and descending towards the dwellings, is the cooking area. This usually consists of three of the largest cooking pots made (about six gallon capacity), and several smaller pots. The traditional cooking fire in Niger consists of three stones placed in a circle a few inches apart, with the pot balanced on them. The fire wood is poked in between the stones and fanned from whatever side the person is standing, if there is no wind.

Next are the women's rooms. It is in the front yards of these rooms that the family members sit and chat between jobs and children play while women and older girls work. In the six foot wide strip between the animals and the dooryards the women take turns pounding in three different mortars. Young girls, aged 7 to 15, give the older women a break by taking the pestles and pounding for a few minutes. Instead of one woman per mortar, two young girls pound at the same time in one mortar. This takes concentration and rhythm to avoid hitting each other's pestle, but the result is that the grain gets pounded more quickly.

¹⁶

Men who are not family members are not allowed beyond this room without permission of the mai gida.

The girls often break into spontaneous song and clapping between pounds to help keep the rhythm steady and lighten the work. A stalk fence encloses one woman's small yard, and on the outside of this fence Fatchima has hung the stick from which she suspends the gourd filled with cream which she shakes to make butter.

The place where the family members urinate is next to the outer wall of the compound and shielded by a stalk screen. Most compounds have a corner where people urinate on the ground. There is usually a container of water for washing, and sometimes a bar of soap, but the urine is left of the surface of the ground to dry. Very few compounds have pit latrines. Most people in Sabon Gari walk to the nearest daji (edge of town) to defecate. Because it is often some distance and the trip interrupts their work, women often wait until their work is done or until dark and then go in groups of three or four.

Fatchima comes home, welcomes me, and invites me to come inside her room. Before entering she inspects the girls' pounding and gives some directions about what to do next. Inside Fatchima's room there are actually two rooms, each about six by eight feet. In the outer room there is a metal single bed with a mat on top of springs and several cloths or blankets in disarray. When Abdou gets tired during the day he comes in here and lies down and sleeps for a while. In the corner near the door Fatchima hands me a small wooden stool about six inches high to sit on. In the corner facing me are calabashes and assorted pots and pans, some dirty from some previous meal, and some covered with circular mats to keep the dust out of the food that is inside. The flies were thick enough in this room to produce a constant hum on my tape recorder when I listened to the tape later in the day. Fatchima sits on the bed and Abdou stands between her legs with his head on her knee. She reaches under the bed and pulls out a calabash and offers me¹⁷ a handful of peanuts. I hold out both hands, palms up¹⁷ and thank her, tucking them into my bag. Abdou starts to whine and Fatchima takes the lid off from the large calabash, picks up the gourd ladle where it is lying on top of another calabash, flicks out a piece of dirt from the ladle, scoops up a ladle of fura and holds it up to Abdou's lips to drink.

During my visit of one hour, four different women

¹⁷

The appropriate way to accept a gift.

come to the door of the room, some bringing rice or beans for Fatchima to inspect, some to pick up money which Fatchima owed them, and another to pay Fatchima money she owed her from yesterday. Fatchima tells me that her husband wants to take another wife, then upon seeing my look of surprise and disappointment, tells me that she was joking. Then she talks about the terrible jealousy that can occur between co-wives. She recalls a story of a woman whose co-wife had divorced and gone home, but the children had been kept by the husband. This meant that the woman had to bring up her co-wife's children as her own. The woman was so jealous and angry about the situation that she set fire to the hut with the co-wife's two children in it (case #1).

Women and Money

A Hausa man's money and his wife's money are kept completely separate and women are not expected to contribute to the general welfare of the family. Any money the woman earns is hers to keep and to spend on her own needs and the inheritance which goes to her daughters. The man is responsible to feed and clothe his wives and children, but the way in which the man's familial responsibilities are defined varies among individuals and from one socioeconomic group to another. Usually in Sabon Gari the man provides two clothing outfits per year, a room for each wife, the millet and other ingredients needed for the staple dishes, fura, and tuwo and sauce, and the firewood if it is purchased. The extent to which the man is expected to buy meat and snacks for the family seems to depend on his situation. The majority of families purchase meat once per week for sauce; middle income families eat meat two or three times per week, and the wealthy and fonctionnaires eat meat once or twice daily. Many farmers grow their own beans

(niébé or cowpeas) and men often bring home cassava roots, yams, and fruits on the weekly market day to add some variety to the family's diet. Beyond these the woman may buy snacks with her own money, including other legumes, vegetables, fruits, and wheat products (noodles, spaghetti, bread from Nigeria). If a woman wants additional clothing during the year for herself and her children she pays for it with her own money.

Longhurst (1982) poses the question of whether seclusion "puts a secure floor under married women" by guaranteeing their food and shelter, since men usually meet their obligations in this regard. This study found that although the "secure floor" of millet is usually provided, the family which has enough millet but not much else, may not be able to obtain the cash needed to meet nutritional and medical needs of young children. If the husband provides the ingredients for tuwo and fura, but there is no money for meat, fruit, or vegetables, the family's diet may have very little variety and may be low in certain nutrients. This was the situation for case # 5, as the following segment of field notes suggests:

Balira is married to a Muslim priest, who produced only three months' worth of millet in the harvest of 1987. He also has an onion plot which he works himself (although informants say that villagers help religious leaders work their fields) from which he earned 50,000 francs for millet, and he is a tailor on the side. Informants say that although a religious leader may be very poor, he never goes hungry because the villagers provide him with millet. These gifts, together with the millet he purchased, brought the family up to three years worth of millet in stock.

In looking at this family's diet it becomes apparent that although they may never "go hungry", they have relatively little variety in their diet. There seems to be little cash available to spend on what the Hausas consider "snacks" (kayan dadi), fruits, vegetables, meat, and a variety of grains prepared in different ways. After the fast was over Balira had visibly lost weight. When asked if she were making an effort to put the weight back on, she replied that she could not gain weight as long as she was nursing. This becomes understandable as one discovers that on many days of the year, the two women in this family eat nothing except fura, the sour skimmed milk (thinned with water) and millet mash. When Balira can raise the cash, she buys rice and beans from Fatchima (case #1, p. 103), at least for the children, as she knows that they need more to eat. But unlike some families where almost every time I entered the compound someone was nibbling on a snack, I never saw the women and children in this compound eating at non-meal times during the day except for an occasional sip of fura.

During the summer of 1988 the co-wife's daughter died of cerebral malaria, after waiting several days for the husband to find enough money to purchase the medicine which had been prescribed by the dispensary. After the study was over the sample child lost her eye because of a vitamin A deficiency. This family, although they have enough millet in their granaries, apparently have nutritional needs and occasional needs for cash for medicine that are not being met (case #5 - For more about this family, see Chapter VII).

Women have various legitimate ways to obtain money, such as trades, asking the husband for an allowance of spending money, and adashi or women's traditional credit organizations. But women sometimes find it difficult to meet needs through the legitimate sources of money and it is assumed that they will resort to other means, such as skimming from the food money allotted to them.

Adashi or traditional women's savings groups, work like this: A group of women get together and agree to contribute a certain amount to a fund each week or month. Each month

the entire pot goes to one of the women in the group. This seems to work well for fonctionnaire women in cities who are on monthly salaries. If a school teacher wants to buy a refrigerator, for example, she finds enough women who can each pledge 10,000 francs per month to add up to the price of her refrigerator. She picks the month that she wants to make the purchase and that month she gets the pot. Women of Sabon Gari knew about adashi but they said that it was impossible in the rural situation where women do not have much money, because one could not trust the other women to contribute on a regular basis.¹⁸ When it is attempted one or two women end up getting the money and everyone else loses.

If the woman has the time and the capital to get started and her husband gives her permission, she may engage in a trade of her own. Hausa women seem to love trading and if given the opportunity and the capital, these women would probably do as much trading as some of their wealthier sisters in Nigeria (See Hill, 1969; Schildkrout, 1983). In the sample of 23 women only four said that they did not have any trade. One is the wife of a poor Muslim priest, who probably thinks it would look bad for his wife to have a trade. During the study, however, she borrowed the capital and prepared food to sell on two occasions to meet specific

¹⁸ Longhurst (1982) found that nearly all of the women in his study in a rural village in northern Nigeria belonged to an adashi, contributing from 50-400 francs per week.

needs she had for money. The wife of a wealthy alhaji¹⁹, although she said she did not have a trade, had a large number of cattle. She would not divulge how many, but others estimated that she owned at least 50 sheep and 10-20 cows, making her wealthy in her own right. The other two were divorced and were pounding millet for other people in exchange for millet to feed themselves and their babies.

Women say that there are several problems with having a trade. First there are too many women with trades and not enough demand, making it difficult to sell all of the product. A second problem is that many women have trouble getting a young girl to do the hawking for them. Even though the majority of women are not secluded, it is not considered proper for Hausa women of reproductive age to peddle in the streets or go to the market; instead they must depend on young girls in the household, usually a daughter or an adopted daughter, to do the selling of their product. A third, and perhaps the biggest obstacle is that of coming up with the capital to purchase the ingredients or the equipment necessary to get started. Women who weave sometimes claim to wait for several weeks before they can raise the capital to buy the splint and the dyes they need to get started. Women deal with this situation by doing something which requires a purchase of supplies only once, especially since many women seem to do their trade only

¹⁹ Title given to a man who has made the pilgrimage to Mecca, usually the wealthy men in the community

occasionally when the need for cash arises. They borrow 500 francs from friends or family, purchase a square plot of lettuce, for example, prepare it, sell it, and use the profit for the immediate need. Then they pay back the original capital and are done with the trade until the next wedding, baby naming ceremony, or other need arises.

Most trades involve cooking something, either food such as tuwo and sauce or rice and beans to sell as a meal at the street corner, or snacks which are delivered door-to-door. Some typical snacks are deep-fat-fried bean cakes, millet pancakes, piles of salad (lettuce, cooked cabbage, or cooked native greens with peanut oil, onions, salt, red pepper, ginger, and peanut flour), roasted peanuts, tiger nuts, or sesame seeds, boiled peanuts, Bambara ground nuts, homemade sesame candies or taffy. Some women make peanut oil from roasted peanuts. Most women weave mats at one time or another, usually to meet the family's own needs first and sometimes to sell. Some women sell used pots and pans.

Most women in Sabon Gari ask their husbands for the money that they need for everyday expenses, but for some women getting the money they need or want seems to be a problem. Some said that their husbands only give them food money and no extra money for themselves; others are given 150 to 300 francs per week. When the husband leaves the house in the morning he brings to the wife the millet for the day's food. He also counts out the money for either sauce ingredients or to buy tuwo for the evening meal, and

when appropriate, such items as school lunches and medical expenses. Hausa men accuse their wives of pilfering from the household food money and the millet rationed out each morning. When asked if they take a little of the sauce money for themselves several women indicated that they did. Those who do take a portion out of the food money vary on how they deal with it. Two mothers said "Oh, he knows that I take a little out of the food money; he figures it in." Others agree with their co-wives on how much will be put away for personal use so that both wives are taking the same amount and the husband will not notice.

Although women are not expected to provide the millet for the family, they have a need for millet from time to time. Whenever a friend is married or has a baby women make food to take to the biki (feast). Many of the payments which they are required to make require millet, such as paying the herder for the care of the animals, and payments to various healers and priests for magani (medicine). Women are routinely allowed to glean the fields (kala) after the harvest has been completed and to keep whatever millet they obtain from this. A few old women have their own fields which they hire others to cultivate. In talking to a group of men in the village about socioeconomic issues, the men asked me to intervene with the wives. They complained that the women take out a portion of the millet given to them in the morning for the family's food, hide it until it has accumulated, sell it, and then buy medicine from the priest

to prevent the husband from taking a second wife. When asked if the medicine worked, they replied, "Yes, even if you want to take a second wife you can't get one if your wife has medicine to prevent it."

This mistrust between spouses seems to be a part of the Hausa marriage. In some families the husband sells onions by the 100 kilo (220 lbs.) bag during the onion harvest, but he gives his wife 25 francs a day to buy onions for sauce at the corner table. When asked why they do this the men respond that if they gave the women a supply of onions for cooking the women would give them away or sell them. So in spite of the high cost of retail onions on a day-by-day basis, husbands feel that they save money by giving the wives money to buy them daily. Some men said that they keep a supply of onions for home use, but they are locked up in a storeroom and the day's supply is rationed out. On the other side of the coin women say that they would never share any of their money with their husbands, or have a "joint account the way Western women do", because the husbands would use the money to take another wife.

Most women say that they use their money for kayan daki (things for the room), gifts for the wedding or childbirth of friends, special clothes for themselves or their children beyond the obligatory outfit the husband buys, and animals. Kayan daki include bedspreads, blankets, and calabashes and enamel basins and dishes which are hung on the walls of the woman's room. When one enters a bride's room one or more

walls are hidden by huge pots and pans stacked carefully one on top of the other in columns from the floor to the ceiling. Stretches of blank wall are decorated with brightly colored enamel dishes stuck onto the wall with clay. In the 1960's these collections were mostly calabashes made from gourds. In Sabon Gari at the time of the study most women had enamel pans made in Nigeria, but fonctionnaires and city people are now collecting glass dishes and gilded china or glass. The wealthy wife of the alhaji (case #9) had three rooms of these dishes. She would not tell me what they were worth, but when she told me the price of the different pieces I estimated that she has from \$600 to \$1000 in her collection. When a daughter is married she will be given the pots and pans from her mother's wall to hang on her own. If the mother has another unmarried daughter she will begin the collection over again in preparation for the next marriage.

These dish collections, as well as the animals, serve as a sort of insurance and will be sold in times of hunger or misfortune²⁰. How the decision is made between man and wife to spend her money or turn her stocks into cash for the benefit of the entire family, is not clear. Some mothers told me that they sold all of their pots and pans during the famine of 1984 and men report that animals, beginning with the small ones usually owned by women, were eventually sold

²⁰ Durrah (1980) says that these pots symbolize the children that one hopes to accumulate.

to buy food.

Bikis (feasts) are usually wedding celebrations or the reception for friends and relatives after a child is born. Hausa women have special relationships with other women they call kawa (best friend or pal) which include reciprocal obligations requiring that the giver give more than or double what the receiver gave her when she was married or the last time she had a baby. Thus the size of the gift keeps increasing until someone can not go any higher, and then they begin over again. Baba (Smith, 1981, p. 192) explains how these obligations work:

I had completed the ceremony- there would be no further gifts to cement the friendship, it was made and thenceforth we would exchange ceremonial gifts with one another, if she had a ceremony in her compound or among her kinsfolk I would take her a little florin, if I had a ceremony she would bring me four shillings, next time she had one I would take her eight shillings - ceremony after ceremony, at each one you do that. When the money reaches ten or twelve shillings we divide; if I am due to give her twelve shillings and we are going to divide, I bring the twelve shillings and give it to her, she keeps six shillings and returns six to me, then I take out threepence and give it to her in addition, I say "We will start again". Next time one of us has a ceremony we start again at sixpence. We consult one another and discuss our affairs, her daughter is my daughter, her son is my son.

These social obligations to friends are of great importance to Hausa women and they will spend every penny they have to make the required gift or contribute the required food. Longhurst (1982) suggests that these obligations serve as an important source of informal credit for women.

Few Hausa women own land and investing in animals is a way for them to accumulate wealth. Many young women begin

marriage with a goat or sheep or a calf given to them by their mothers. With any luck this animal will provide her with milk to sell and trade for animal food, butter to eat and sell, and offspring which she can fatten and sell to meet social obligations. Eventually she will give the offspring to her daughter at marriage.

In the ideal, to which everyone seems to subscribe, the responsibilities of the man and the woman in regards to the support of the family are clear, but the woman who is married to a man who cannot provide for the family will sometimes pitch in and provide part of the support, although it is not talked about because of the shame involved for a man who has to depend upon his wife for support. Fatchima (case #1),²¹ the wife of a poor farmer, furnishes a large portion of the support for the family through her trades, as the field notes illustrate:

Fatchima is about 42 years old and has given birth to ten children, six of whom are still alive. One is a government clerk in far away Diffa and another is married to a well paid fonctionnaire in the capital city. Fatchima is married to a poor farmer who has a small field and was able to grow only 10 months worth of millet this past season. He has no other trade except a small onion contre-saison garden which he works himself. I learned that in 1989 he borrowed 3000 francs to buy the onion seeds and other supplies necessary to get the onions planted. He sells his onions and uses the money to purchase millet for his family (I estimated that he made only enough money to buy about one month's worth of millet). Each morning he brings his wife the millet for fura for the day, but he provides very little of the other food for the family. This family's strategy was to use their own

²¹ See field notes and diagram of Fatchima's home on pp. 89-93.

millet for the fura until the millet was gone (except for seed) and then to begin buying millet a month or two before harvest, when it is at its highest price of the year. In order to do this, the man will have to take odd jobs hauling things or working with mud brick.

Fatchima, in contrast, has established herself as a popular rice and beans seller in the community. Each day she prepares rice and beans in the late afternoon and sells them from inside her home. She sets the prepared pots of food just inside the entryway and customers come to the entryway with their empty dishes, make a purchase, and leave. She spends 3500 francs on the rice, oil, condiments, and fire wood for the rice and beans. In the evening she feeds her husband, her children, and often other people who live in the compound or neighbors, all from her rice and beans pot. When the rice and beans are gone she finds she often only clears about 375 francs per day, because she is giving away much of her profit. Fatchima also owns cows and so it is she who furnishes the sour milk and the butter for the family as well. In the morning Fatchima often buys koko, the hot, spicy, slightly fermented, semi-liquid millet gruel, for her son, paying a total of 25-30 francs. Throughout the day when snacks are hawked in the doorway she buys a small portion for her child. Fatchima is clearly providing a large portion of the support for this family through her rice and beans business and her animals.

During the fast and at other times when she needs money Fatchima also cooks rice and beans in the morning and prepares a kind of lemonade made from limes, tamarind, and sugar. She also braids other people's hair and from time to time retails such things as women's scarves and what are apparently vitamins from Nigeria. In the past she has managed to save enough from her profits to buy three cows and two sheep. Now these animals provide income through the sale of milk and butter and when she needs a lot of cash she may sell an animal. She is fortunate to have a teen-age daughter who has been promised in marriage but "has not been carried to her house yet" and this daughter does all of Fatchima's pounding which frees Fatchima to pursue her trades most of the day. This year Fatchima says she is using what money she can set aside to purchase pots and pans and other gifts for the upcoming marriage of her daughter.

Fatchima talks about her marriage as a happy one. She says that although her family was against her marrying a poor man, she loved him and was willing to make sacrifices in order to live with this man. She

seems to thrive on her many enterprises and is respected in the neighborhood for her achievements. When I asked her about women helping to support the family she said that sometimes when the man has nothing the woman helps out; everyone knows about it but no one talks about it because it would bring shame to the man. When I asked her husband how he felt about the difficulty of providing enough food for the family, he said, "Don't I furnish the millet, and isn't that what the man is supposed to do?"

Fatchima's son, Abdou, was about one year old at the beginning of the study and he had been suffering from diarrhea off and on for three months. In late December of 1987, he received a vitamin A megadose. Soon after that his diarrhea cleared up, he began to gain weight and became playful once again. Abdou has steadfastly refused to eat the cereals recommended by the PMI- "He doesn't like them", his mother says. But Fatchima buys koko and snacks such as Bambara ground nuts and macaroni for him daily with the cash she earns from her trades. He also demands and gets tea when it comes to the door because "He likes it".

Fatchima's cash flow from her trades is sufficient to allow her to provide a variety of fruits, vegetables, and protein foods in the form of snacks to offset the meager supply of food provided by the poor husband (case #1).

Because of the strict role definitions it is very difficult for a woman who is divorced to support herself and her children. Divorce rates are extremely high, but there are only a small percentage of women who are unmarried at any given time. The Koran urges men to take as second wives women who are unmarried and to treat them the same as one's other wives. When divorced, women usually go home to their parents' home. Every effort will be made through negotiations between the two families to patch up the marriage. But if the marriage is over the woman will be courted by prospective husbands. The woman who is not

fortunate enough to be remarried soon, often finds herself in a position of trading sex for the money to support herself and her children, although it is not called prostitution if the woman lives at home and uses some discretion. Resulting pregnancies are not seen as catastrophes as long as the woman accepts an offer of marriage when it is made. The women whose families reject them, possibly because the family stands to pay back money to the groom's family in the case of a divorce, are in a different situation. These women have no place to go and are almost forced into a situation of prostitution in order to support themselves until they find another husband. Mariama's story shows the difficulties for the divorced woman in this culture:

Aboubacar's mother, Mariama, is divorced and her parents died when she was young. Aboubacar is her fourth child and the other three died, one at seven of measles, one at five of whopping cough, and the last within a few days of birth of kai, an illness of the mother's milk. Mariama has come home to Sabon Gari and is living with relatives in a compound with about twenty five other people. Every day she tries to find work to earn her millet for the day. When first interviewed in February, she was going to the millet pounding area in the center of town and pounding the grains from the stalk for other people in exchange for a bowl of millet from which to make the day's fura for herself and Aboubacar. This pounding the millet off from the stalk is usually done in Sabon Gari by older women and young unmarried men, both of whom need to contribute to the family welfare in exchange for the food they eat from the mai gida's (head of the household's) grain supply. Women with children on their backs are seen much less often doing this job, but Mariama was desperate.

At this point Aboubacar's mother was also begging for food and small change with which to buy 5 francs worth of salad or cooked Bambara ground nuts hawked on

the street for herself and her child. She reported spending about 75 francs per day on food for her child, besides what she obtained as gifts and as exchange for work. Besides the cost of food, she spent money on various medicines. Aboubacar has been sickly, according to the mother, since he was born. He was almost two years old at the end of the study and unable to walk. In the spring of 1988 Mariama was spending 500 francs a week on kai medicine because she felt the illness kai was somehow contributing to the problem.

In May, Aboubacar's mother had begun to weave mats for a trade. She said that she spent 600 francs for the splint and 25 francs each for four colors of dye, making a total cost of 700 francs for the materials for one mat, which she could sell for 1000 francs. She sewed her own strips together, although other women have told me that they pay someone else 250 francs per mat to sew the strips together.

In the fall of 1990 I learned that Mariama was pregnant again, but apparently with no prospects of a husband to help support her and her children.

CHAPTER V

BREAST-FEEDING

This study did not focus on breast-feeding as such, but as the data was analyzed, some aspects of breast-feeding emerged as themes. Certain attitudes and practices related to breast-feeding provide understanding of practices in the areas of termination of breast-feeding, young child feeding, and behavior around diarrhea illness. First the reader is given an overview of breast-feeding practices. Then a detailed description is given of those practices which shed light on other areas of this study.

Children in Sabon Gari are always breast-fed unless the mother dies or is ill; it is very rare to see a bottle used even as a supplement to breast-feeding. Breast-feeding is traditionally delayed three or four days after birth because of a fear that the first milk will kill the child, but this practice is changing now as people come into contact with dispensaries or with government trained traditional midwives. Breast-feeding is generally successful, although some women complain of insufficient milk. Breast milk is given on demand until the mother decides to remove the child from the breast, usually at one and one half to two years of age, or when the mother becomes pregnant again. The only interruption of this pattern is the possible dwindling of breast milk in some mothers during Ramadan, the month-long Moslem fast.

Hausas in Sabon Gari do not practice exclusive breast-feeding, since drinking water, medicines, and sometimes animal milk are given. Because it has been found that extra quantities of low solute breast milk will be produced by the human breast in response to the child's thirsty sucking, it is now recommended that only breast milk be given during the first six months of life, since other liquids can unnecessarily expose the child to disease organisms and increase the risk of diarrhea at an early age (Jelliffe & Jelliffe, 1978). But mothers in Sabon Gari feel that their children need the extra water to drink in addition to breast milk from birth onward.¹

Except for the first childbirth, when a very young mother may be embarrassed by pregnancy, childbirth, and nursing, breast-feeding is taken for granted and occurs whether the woman finds herself in public or in private. Whenever the child cries the mother stops what she is doing long enough to give the child the breast. Children who are carried tied to the mother's back are pulled around to her front and allowed to sit or lie on the mother's lap to nurse. The older child may nurse standing beside the mother or between her legs as she sits doing some kind of work. Babies and children sleep at their mothers' sides and nurse freely during the night until they are completely weaned from the breast.

¹ This practice may be widespread across Niger as well as in the rest of the Sahel (Dettwyler, 1985; Rowland 1983).

Although nearly all babies are breast-fed, breast milk is not automatically assumed to be "good." Since the milk can turn "bad" and become dangerous to the child, it is watched for its quality, particularly at birth and as the child approaches the age of termination of breast-feeding. Bad milk (mugun nono) can have a number of causes, most of them related to the mother's behavior or health state and young mothers are counseled and guided by older women and to some extent by the community in their initiation and termination of breast-feeding. An examination of Hausa views of the influence of environmental and behavioral factors on the quality of breast milk is necessary to understand Hausa practice in the area of the termination of breast-feeding. The Hausa child's body is prepared in order to assure that the child will be able to properly consume breast milk, and later, other foods. This preparation takes the form of a series of medicinal solutions given at birth as well as scarification and Muslim rituals on naming day.

First Milk or Colostrum

Hausas value a fat "good looking" baby, a sign that the quality of the mother's milk is good, the quantity of breast milk is sufficient, and the baby's body is functioning properly, that is, the child is drinking to the point of getting full. The quality of the mother's breast milk is carefully monitored at birth and throughout the nursing period, both by examining the milk itself and by observing

the growth of the child; if the child starts to lose weight the breast milk becomes suspect. A woman explains, "if the child refuses to gain weight and his body refuses to look good, it is a sure sign that your milk is bad". Two types of bad milk are associated with childbirth: dakashi² (colostrum) and kaikai, an illness found in the milk. In certain aspects kaikai and dakashi appear to be the same thing and are used interchangeably in descriptions of bad milk. In other aspects they are dissimilar and appear to be separate phenomena.

Dakashi

Dakashi (colostrum) is viewed by Hausas as bad milk (mugun nono), which if given to children, will cause them to lose weight and die. Women in Sabon Gari have traditionally withheld the breast for 3-14 days or until they could see that the colostrum had been replaced by milk. During these first few days after birth the colostrum is allowed to drip onto the ground, so that it will pour away (dakashi ya tude). The words chosen by the informants suggest that there is a certain quantity of colostrum inside the breast and that it has to be emptied out in order for the real milk

² Abraham (1962) defines dakashi as animal colostrum and does not mention that it applies to humans, but many informants in Sabon Gari used it interchangeably with the term "first milk" to describe their own colostrum.

to "rise", or come into the breast³. Some informants express the idea that the dakashi has been in the mother's body and has been nourishing the child since the third or fourth month of pregnancy. Once a nursing woman discovers that she is again pregnant, her breast milk is viewed as belonging to the new fetus:

We say that when a child nurses from a pregnant woman, he is drinking the dakashi of the fetus...You know the milk metamorphoses [from the milk of the nursing child to the colostrum of the fetus], and when he drinks it he will keep on having diarrhea... If you squeeze some out you will see that it is like dakashi, the first milk. (Hadiza, the matrone who was a key informant)

According to this informant, the idea that a pregnant woman's breast milk turns into colostrum forms the basis for the nearly universal prohibition against giving the nursing child breast milk after the second or third month of pregnancy:

We say you have to take him (the nursing child) off the breast so that he won't drink the breast milk, so that the breast milk won't kill him...If you get pregnant then we say, he shouldn't drink the dakashi of the fetus...We say it kills the child on your back...Because you received a pregnancy from Allah, you have to take him off the breast, because the milk belongs to only one child, then we say it has become dakashi. (Hadiza)

Other informants did not say that the pregnant woman's milk becomes colostrum - they did not know why this milk is

³ The concept of having to empty an organ in order to allow something else to enter that organ, occurs elsewhere in Hausa thought. At birth, for example, Hausas intervene in the natural events by giving purgatives to "open up a hole in" the gut or stomach so that the child will be able to properly consume breast milk.

so dangerous and replied that "Allah made it that way", but all said that breast milk changes in texture and color when the woman becomes pregnant. Whether or not they make this connection between dakashi at the time of birth and the breast milk of the pregnant woman, all women agree that both dakashi and the milk of the pregnant woman are very dangerous to the child.

Kaikai

Kaikai means literally "itching" in Hausa, although the illness does not seem to have much to do with itching. The much feared illness occurs most often in the first two weeks after birth and is blamed for the large number of deaths during this dangerous period. Kaikai is often the reason given for withholding the breast for several days after birth but kaikai may also develop at any other time while the child is still nursing. Kaikai is found in the mother's breast milk, and is passed to the child through the milk; the treatment is for the mother to drink kaikai medicine, which "follows" the milk into the child, expelling the kaikai from the mother's milk and protecting the child. Sometimes the child is also given medicine to drink. The medicine serves both to prevent the illness if the mother's breast milk does not have it and to cure the illness if it is present. As a preventive measure mothers begin taking the medicine immediately after childbirth, delaying the initiation of breast-feeding until they are sure the

medicine has had time to take effect, and continue to take it for as long as they still fear the illness.⁴

There are a number of symptoms of kaikai in the newborn, the most common of which are sores or a rash that erupt on the child's body (perhaps the origin of the name kaikai, meaning "itching"). Sores, pimples, pustules, and rashes are represented by one word in Hausa, kurji. Any kind of skin outbreak is a concern to Hausas as rashes and sores are outward signs of something seriously wrong inside the body where it can not be seen. One informant said that you worry about skin outbreaks because they "touch the internal organs and can damage them". In the case of kai-kai, the skin eruptions are the visible manifestation of the greatly feared "kaikai that is inside the child's stomach".

Other common symptoms seen in kaikai victims are the following: loss of weight, turning yellow or white, becoming languid or apathetic, muscle spasms, crying all night, and becoming emaciated to the point of "being only veins". Sometimes women say that "the babies' stomachs swell up in a thick lump" as this woman describes:

In the past we said that the milk that he drank, it filled up his stomach. His stomach swelled up until it was hard. Then we said it was kaikai. He would swell up, he wouldn't urinate, he wouldn't defecate.

⁴ This medicine costs 100 CFA every day or every two days and is used from one to five weeks, or even up to as long as a year. Some of the ingredients are cediya, maigi, danya, and birgu, all wild plants gathered in the area. For more information on plants indigenous to Niger, see the following excellent references: Adam et al., 1972; Ikhiri et al., 1984; Peyre de Fabriques, 1979.

Babies have to have a bowel movement. If he didn't defecate we would say it was kaikai.

Newborns with kaikai generally are expected to die during the first week or two of life, although nowadays some people say that kaikai can be cured by a series of shots given by the dispensary nurse. Women explain, "If the child dies on or before naming day (the seventh day after birth) then you know it's kaikai". It is not unusual to find a woman who has lost more than one child before one week of age to the illness kaikai, and these women are said to have kaikai in their milk. The kaikai medicine woman in Sabon Gari came upon her gift of healing because she lost all ten of her children to the illness: "One day Allah told me that I could help others because I lost my children that way, and he told me which herbs (she would not share her secret recipe) to put in the medicine".

Both colostrum and milk with kaikai are described as more yellow and thicker than regular milk, so after childbirth women anxiously observe the color and texture of the milk for several days to see if the milk has the dreaded illness kaikai, or if it has changed from colostrum to milk⁵: "When we see the milk is coming in white, then we know it doesn't have anything". Besides observing the color and texture of the parturient's milk, there are traditional tests which older women perform on the breast milk to see if

⁵ One informant said that if the milk has kaikai the milk will not come in and the breast milk is only water.

it yet safe to give to the newborn. These tests are mandatory for the first two or three births and thereafter if the woman has been found to have bad milk with a previous birth.

The Knife Test

To determine if a woman's milk is good an older woman helps the mother perform the knife test⁶ after birth as follows:

You cook (gasa) the knife in the fire until it is red hot; then you take it out. Then you squeeze some of the breast milk onto the knife. If there is kaikai in the milk, then the milk will lie there like a piece of pancake, but if there is no kaikai, it will jump off from the knife or scatter. Then you know your milk is healthy. It doesn't have the thing (the older co-wife of one of the sample mothers).

The knife test may have its basis in the Hausa practice of cooking goat or cow colostrum to make a sort of cheese for human consumption. Dakashi is defined by Abraham (1962, p. 174) as "first milk from a camel, goat, or sheep after giving birth." Abraham continues that this first milk is considered harmful to offspring, and is therefore fried (toya) and eaten salted as a kind of cheese. The word chosen to describe the cooking process, toya, in the dictionary definition of colostrum, and the word used by the informant describing the knife test, gasa, both suggest that the cooking process used is very hot frying, and that the

⁶ Some informants also described an ant test, in which ants are placed in a puddle of the mother's breast milk. If the ant crawls out of the milk alive, the milk is good. If the ant dies in the milk, then the milk is bad.

purpose of the knife test is to cook the human colostrum in a manner similar to the way in which animal colostrum is cooked. This allows the woman to observe whether or not the human colostrum behaves in the same way as the animal colostrum when fried, and therefore whether or not it is still colostrum or has now changed and become real milk. An informant⁷ explains the link with the animal cheese:

If it's good the breast milk doesn't stay on the knife, but if it's bad it just lies there on the knife like animal dakashi, as if you were cooking animal dakashi. When you take milk and fry it...it just lies there... milk that is not good. (Hadiza)

If the milk is determined to be healthy, breast-feeding is initiated on the third or fourth day after birth; if the milk is found to be unhealthy, some women give the breast after the third day, but only if they have already taken kaikai medicine for two or three days. Others found to have kaikai wait several days longer while they take medicine; meanwhile the child is given cow's or goat's milk. There is evidence that in the past women waited longer before initiating breast-feeding: Older women report that they used to wait six days before giving the child the breast and the dispensary nurse sees rural village women who have walked several miles to the dispensary with their sick newborns who have already gone seven to fourteen days without breast milk. The important thing seems to be to withhold breast milk long enough for the kaikai medicine to

⁷ Many informants did not seem to be aware of the comparison of human first milk and the animal first milk cheese.

pass through the milk and take effect before putting the child to the breast. Even the mother who follows the modern practice of giving the baby the breast "at birth", often waits at least over night after having started the kaikai medicine, before she puts the child to the breast.

Many of the women in Sabon Gari do not perform the test after the first or second birth, or after their milk has been proven good by virtue of the previous child having done well on it. All women, however, take kaikai medicine for at least two weeks after every birth. A woman who had kaikai with a previous birth is very cautious, as described by this woman:

[She begins by telling about the first baby who died.] When I gave birth to him, it wasn't right. Then he died. There was breast milk, but it wasn't good; it was yellow. His body was limp and he moved like this [she gestures]. Then they said it was kaikai. I didn't give him my milk when I saw that it wasn't good; I gave him goat's milk...

This baby...[Now she is talking about her second birth, the child who is living] I tested the milk. You know we put a knife into the fire until it turns red... This time the milk was not yellow and it was good. I gave it to him on the fourth day. I kept on taking medicine. I kept on buying medicine; I kept on drinking it, the traditional Kaikai medicine, and sabara as well. I bought 100 CFA worth of medicine at a woman's house over there. I kept taking it in lalame [the millet drink consumed by the parturient after birth]. I stirred it in. And I gave it to the baby as well (a neighbor of the researcher).

Adoption of the Practice of Giving Colostrum

In the sample of 22 mothers, 13 gave the breast soon after the birth. When I asked mothers why many have now begun giving colostrum to their newborns their first

response was "rashin illimi" (we lacked the knowledge). But the women's conversations suggest that the rewards for adopting the new behavior are greater than the rewards for keeping the old behavior: Women suffer physical and emotional pain by withholding the breast milk; there is less work and less expense involved in giving the breast rather than animal milk substitutes; there seem to be immediate positive results that are visible and attributable to the child having drunk colostrum. If a child is not put to the breast soon after birth and the breasts emptied, (the women in Sabon Gari do not express the milk), the breasts become engorged and swollen to the point of being very painful.

Hadiza describes this period as one in which:

...the mother feels so ill that all she can do is lie down. Her head hurts; she gets a fever; the breasts hurt; and when finally put to the breast, the child can't even grab hold of the breast because it is so swollen. (Hadiza)

Moreover mothers say that it worries them to hear their newborns cry of hunger while at the same time they don't like giving them animal milk, which is thought by some to cause allergies and vomiting. Growing numbers of women seem to feel safe in giving colostrum, as long as they take the preventive medicine, as this woman explains:

In the past we used to test; now we just take the medicine. We keep on giving them the breast, the nurse improved us [meaning that they have adopted the modern practice of giving colostrum, advised by the dispensary nurse]. We take the medicine for three months; we don't stop until we see that the baby doesn't have the illness (a neighbor of case #5).

In the past there seemed to be no awareness that if

nursed, the breasts will reach full milk production sooner. One old woman explains, "Your milk doesn't come in until your breasts swell up and that brings the milk." But now some women are repeating the dispensary message that the milk is "pulled" or made to come sooner by the baby sucking on the breast. A young mother explains, "In the old days we used to let the dakashi drip before breast-feeding. I didn't do that with this baby. I washed my breast and gave it to him before the milk came. That pulled the milk out" (case #21).

Some informants have interpreted the new message to mean that colostrum prevents the illness kaikai, because they see the baby gaining weight, as this woman explains:

"When you give birth, you wash your breast, you give it to the baby so that he won't get kaikai. You don't wait three days. In the past we waited three days without drinking; then he deteriorated and all you could see was veins." (A neighbor of case #22).

Another woman added, "Now that we give dakashi we can see that the baby doesn't lose even one tiny bit of weight during the first week of life!", implying that she is used to seeing children lose weight during the first week of life under the old practice. Another woman expressed her understanding of the new message to initiate breast-feeding earlier:

Now that they told us to go ahead and give him the breast there is only healthiness! If he drinks the dakashi he will be stronger (A neighbor).

Vitamin A and the Adoption of Colostrum

In 1987, Helen Keller International chose the district in which Sabon Gari is located as one of the sites for the distribution of vitamin A megadose (200,000 IU) capsules. The dispensary staff trained the matrones to distribute the Vitamin A megadose to women in the village after they give birth. Now when the matrone is called to the birthing, she explains that she will bring the new mother her vitamin A capsule. The mother is told that the vitamin A will go through the mother's milk and into the baby, so the mother should wash her breasts and give the child the breast as soon as she has taken the capsule. This idea is completely compatible with the Hausa idea that medicine passes from the mother to the child via her breast milk. One often hears, "They gave him (the baby) vitamin A" or "He drank vitamin A". This should not necessarily be construed to mean that the matrones gave the megadose capsule of vitamin A to the newborn instead of the parturient mother. What is meant is that the baby received vitamin A through the mother's milk, the same way the baby receives kaikai medicine.

Because of the way it is distributed and the message which goes along with it, the Vitamin A megadose seems to have assumed the role of modern kaikai medicine or medicine which allows one to give the baby colostrum safely. A matrone explains the function of the vitamin A megadose given at birth in her view:

So now that you said it [colostrum] is vitamin A,

we wash the baby; then we say to the mother, she should give the child the breast. We tell her dakashi is vitamin A. We have always said that drinking dakashi can make the baby so sick that he will deteriorate, but if he drinks it now [now that vitamin A is given to the mother] that's better. You understand...what we put aside in the past, we didn't give it, but now we give it (dakashi) [Hadiza].

The matrone seems to be saying two things. First colostrum has vitamin A in it or colostrum is vitamin A, and secondly, now that the vitamin A megadose is available to the mother at birth, mothers can give the colostrum at birth without fear. Other regions of Niger report a similar trend in the adoption of the practice of giving colostrum, without the coincidence of having vitamin A capsules distributed. The giving of colostrum is apparently being accepted without the help of the vitamin A capsule, probably because of the advantages to the mother over withholding the breast as described above.

We have seen that the mother takes certain precautionary steps to prepare herself for successful breast-feeding. The Hausas also take steps to prepare the newborn's body to consume food properly so that the child will grow fat and healthy.

Preparing the Child to Consume Breast Milk

Bauri (dauri in other parts of Hausaland) is the general name given in Sabon Gari for a number of medicinal solutions given to babies soon after birth. These solutions are viewed both as purgatives to rid the baby's body of the impurities associated with pregnancy, and as tonics which

enable children to eat enough to get full and "make them grow fat, good looking, and fun to hold". The child's body is interfered with at birth so that it will function properly: The intestines are believed to be "tied up" with impurities and in order for the child to eat and digest properly the stomach and guts must be "opened up" or "untied", and "washed out". The various bauri solutions serve this purpose. There is particular concern about removing pollutants from the baby's body which have been accumulating there since conception (Darrah, 1980). The pollutants are thought to be both the wastes from the child's consumption of colostrum, and male ejaculate which has accumulated in the fetus from the mother's sexual relations.

There are several solutions which qualify as bauri in Sabon Gari, but the most important one is the baurin itatuwa, or the solution made from "trees". The ingredients form a long list of wild plants, usually their roots, their bark, and often the branches and leaves as well. Potash⁸ is almost always added and is used by Hausas as a multipurpose medicine to sweeten the stomach, wash the stomach, increase milk production, regulate sperm

⁸ Kanwa is sometimes defined as potash, sometimes as natron, and sometimes as saltpeter. Durrah (1980) cites two other sources: 1) Buchanan and Pugh as citing a 1934 geological survey of Nigeria which found kanwa to be a compound containing roughly 20 percent Na_2CO_3 , 27 percent Na_2SO_4 , and 31 percent CaCO_3 , and 2) Bargery (1934) defines kanwa as saltpeter (sodium or potassium nitrate) and potash.

production, and to purge the body of excess mucus, as well as a purgative in the case of constipation. The word bauri (dauri) means both "infant's tonic" and "bitter" or astringent taste, as in potash" (Abraham, 1962).

A woman describes how the baurin itatuwa is prepared:

You take all of these plants and the roots and the bark. You put in potash, and you put them in a cooking pot and cook them. You let it boil quite a while. Then you add one sugar cube. Everyone who has a baby learns to cook her own. Then you give it to the baby to drink. When it is gone, you make a new one. You give it to him for the full forty days⁹ (case #2).

Often nowadays, sugar and lime juice are added to the recipe in small quantities. Some women described taking one sugar cube and breaking it into two or four pieces, one for each batch of solution. This probably reflects the belief that sugar in large quantities can cause the illness zahi, one of the symptoms of which is severe diarrhea. This finding and its implications for oral rehydration solution, which calls for eight sugar cubes, will be discussed in the diarrhea section.

A second traditional bauri is made by soaking millet grains, tsaba, in water and potash overnight, until it turns red (or brown). Then it is strained and the liquid is given to the baby to drink and adults eat the soaked wheat grains which have been strained out. The women admit that this solution tastes terrible, but the astringent taste is

⁹ Forty days refers to the period of sexual abstinence required by Moslem law after childbirth. Hausa women are required to stay in the house during this period and to perform the ritual hot baths.

apparently an important part of the medicine. An old woman describes the process:

Traditionally when one gave birth to a baby one didn't give him anything. When morning came, in the past, we villagers, then we brought in a little millet grain in a basin, then we soaked it... We threw in a little potash. When the grain had soaked, then we strained it with the thing that we strain koko with. When it was strained, then we would give it to him. Then the child would have a bowel movement (grandmother of case #2).

A third bauri, which seems to have originated with the advice of the dispensaries and the PMI's, is made by taking a "little water, putting in lime juice, and a little sugar. You divide the sugar into four doses, you mix it with this little bit of water and the lime juice, you strain it carefully, and you give it to your baby". When the matrones recite this recipe the mother is told to boil the water first.

Some mothers use all three of these solutions, the herbal brew, the soaked grain water, and the sugar and lime juice solution; others use only one or two. Of the ten schedules of solutions collected, one mother's combination and sequence of solutions serves as a typical example:

Day one-

The first day the malam (Moslem priest) puts Allah's name in the child's stomach. [This is the rubutu na Malamai, or the ink washed from a tablet of Koranic writing.] Then you give the baby goat's milk. Then you put the tsaba (grain) to soak and you add potash. You gather the wild plants or you can buy them to make the baurin itatuwa (herbal tea).

Day two-

The next day you wash your breasts and give the child the breast. Then you put the plants on the fire

to cook when you have given the breast. Then you strain the tsaba, or millet and potash water and give some to the baby on this day. What is left over you give on the third day. On this day you also give the lemon and sugar water.

Day three-

On the third day the child drinks the last of the tsaba water. And you give him the herbal tea, several spoonfuls in the morning and several spoonfuls at night until the full forty days have passed. When it is two days old you throw the solution out and make a new batch.

When asked why they give the bauri, the women first explain the purgative function of the solutions:

The purpose of the bauri is to make the child defecate (zawoce) the dirtiness from the stomach. So that his stomach will open and his gut will open... The lime juice and all of the bauris dip the remaining liquids out of the gut (kwarakware hanji), and wash the stomach, so that the child will kai (arrive or suffice). They take the dirt out of the stomach. Then he will keep eating food and get fat (case #21).

The Hausas believe that if the gut is not purged, the child will not be healthy and will not have an appetite or be able to consume food properly. When asked what would happen if one didn't give the baby bauri, the women explain:

If one doesn't do it then the stomach will sit there every day with dirt; then he will be sick. And he will not get bigger. Then he will keep on having bowel movements every day, because of the dirtiness in his stomach. But if you do give him bauri he only has a bowel movement every two or three days (case #21).

The main idea seems to be that if one does not get the impurities out of the stomach and gut the child will not be able to eat and get bigger. But there is also the idea of controlling when and where the child will have bowel movements:

If a child is taking bauri medicine, he won't

defecate in his sleep...His gut will tie up...When you go to bed, then he has a bowel movement in his sleep if there is no bauri in his gut. But if he has gotten tied up (in ya dabru¹⁰), he won't defecate until morning...Until you put him on your feet, then he will do his thing. It's not pleasant to be awakened in the night by him defecating on you (case #21).

The Hausa word dabru can mean to tie up, or to untie something formerly tied up. It also has the sense of controlling something, such as tying up or stopping diarrhea. One of the traditional ways of protecting the child against diarrhea is to buy a necklace from Fulani medicine sellers for the child to wear around the neck or hips. The necklace is made of tiny white beads, each separated by a knot in the string, and is thought to aid in "tying up the diarrhea". In the case of the bauri the gut is untied when it is not yet functioning properly, as in the newborn baby, enabling the child to have a proper appetite. Ironically, the purpose of bauri is to untie the gut, but once untied, it is then said to be "tied up" or under control.

In the passage above, when the mother says, "Until you put him on your feet... Then he will do his thing.", she is referring to the Hausa way of toileting small babies. The mother sits on the ground with her legs outstretched in

¹⁰ The root word, dabra, is used as well in talking about controlling other kinds of situations in life. For example, women in Sabon Gari save their money to go to the Moslem priest when they suspect their husband of having a sexual affair with another woman. For a certain sum the jealous wife can "tie up" or put a stop to the husband's affairs with another woman by buying a charm.

front of her, with the child in a sitting position, facing her, its bottom positioned in the gap between her legs. Holding the child in an upright position and cradling its head in her fingers, she talks to the child, makes hissing noises, and coaxes the child to go to the bathroom. When the child has defecated, the mother stands up, washes the child's bottom, and returns the child to her back with a cloth tied around the child's back. This is done by pushing sand around the stool until it rolls into a sand covered ball. Then it is picked up on a leaf or an old mat or between two sticks and carried outside of the compound where it is thrown on the garbage heap or to the side of the walking path.

This controlled process of toileting, i.e., coaxing the child to have a bowel movement when the mother is ready to deal with it, rather than allowing the child to have a bowel movement whenever his or her bowels dictate, is preferred by Hausa mothers to having the child defecate in bed during the night, while on the mother's back, or at other inconvenient times. So the child is purged during the first ten to forty days of life, in order to clean out the digestive system of impurities and prepare the child to consume breast milk as well as to control the child's bowel movements.

On the day of birth the Moslem priest is called to the birth and puts Allah's name in the child's stomach. He does this by writing an inscription from the Koran on a tablet, washing the ink from the tablet with water and collecting it

in a bowl, and giving this liquid to the newborn to drink. On naming day, the seventh day of life, the priest comes to the house and whispers the baby's name into the baby's ear first, before announcing it to the parents, so that the child is the first to hear its own name. Then the barber comes and performs scarification and other rituals to ensure the health of the baby. In Sabon Gari this involves snipping a tiny nip from the hymen of the female child. This is only done if the hymen appears to be prominent, to prevent future swelling of the hymen to the point of interfering with sex and reproduction. The barber also makes a design of knife cuts on the bodies of both male and female children on the stomach and chest and on the back. These cuts allow the bad blood to escape, preventing the stomach from swelling up and ensuring that the child's digestive system will function properly.

Other Findings About Breast Milk

There are a number of environmental and behavioral factors which are viewed as having the potential to affect the quality of the breast milk and thus the health of the child, since, in the Hausa view, medicines, illnesses, kinship, pollutants from the mother's sexual activity, personality traits, and witchcraft, as well as heat and cold can be passed from the mother to the child through breast milk.

Breast Milk and the Sexual Activity of the Mother:

Sweet Milk

If the child is not getting fat, mothers will sometimes say that their milk is sweet. They are not referring to the taste of the milk, but to a state of the breast milk which is caused by the state or behavior of the mother. Darrah (1980) elaborates the metaphorical parallel found in Hausa songs, proverbs, and rituals, between the human reproductive system and the alimentation system, based upon the Hausa verb ci, which means both to eat and to have sexual intercourse. Within Hausa symbology sweetness is equated with desire, sex, and the menses, and is symbolized by the color red. Lactation, abstinence from sex, and birth are associated with the color white and non-sweet foods. I participated in conversations between groups of women in which they discussed eating sugar, candy, or even saccharine tablets before having sex with their husbands. One woman instructed a group of younger married women to eat something sweet themselves before having sex: this would enhance the man's sexual pleasure and then he would become so excited that he would forget himself and "tell you to take the money out of his pants pockets and keep it". At marriage the bride is given red candies to eat to enhance her sexual desire and desirability.

In contrast, starting in the seventh month of pregnancy women avoid sweet foods and eat milky, white foods to clear their bodies of sweetness and sexual desire before birth, so

as not to harm the new baby. During the 40 days following birth the mother abstains from sex as required by Islamic law. She eats non-sweet, milky, or white colored foods and drinks, to enhance lactation and decrease her sexual desire.

Darrah suggests that "sweet milk" is caused by the lactating mother having sex before the nursing child is completely weaned from the breast. In the past the Hausa woman remained at the home of her parents for up to two years or until the child was completely weaned, facilitating birth spacing and improving the child's chances for survival. Not only is sexual desire itself thought to taint the milk, but Hausas believe that during intercourse, the man's seminal fluids remain in the woman's body and accumulate. When there is an accumulation of these "pollutants" in the woman's body, they can get into the woman's breast milk and cause the milk to go sour or turn bad. This bad milk can keep the child from getting fat and can give the child diarrhea and even cause its death.

When asked whether or not sweet milk is related to the woman's sexual activity, women in Sabon Gari did not seem to be aware of a direct relationship. Sweet milk, they explain, means that the milk does not make the child fat. Nevertheless when a woman becomes pregnant before the nursing child has reached at least one year of age, other women talk about her having sex "all the time" with her husband. This suggests that there is a conflict between sexual desire and satisfying the husband on one

hand, and meeting the needs of the nursing child on the other. Some informants also said that when a woman says that the reason she weaned the child prematurely was because her milk was sweet, she means that she has learned that she is pregnant.

Hot Milk

Older women say that when women worked in the fields they sometimes worked so hard that they would forget to nurse their babies, causing the milk to change within the breast and giving the child diarrhea when he or she did finally drink. This is referred to as "hot milk". One matrone describes the situation:

When the mother gets hot; she didn't eat. The breasts get hot by the time she stops to nurse him. She keeps on working, she muddles up (dame) the breast milk. The women of the bush suffer during the farming season; they make the child go a long time suffering without nursing; they keep on working; they don't give the baby the breast. So when he does drink, his guts churn, then he has diarrhea¹¹ (Hadiza).

The idea seems to be that environmental factors can make the milk inside the breast change in consistency or color, and that drinking this milk will make the child sick. In the above quote the mother working hard in the hot sun without eating muddles up the milk. In other instances women talked to the researcher about "stirring up a sediment" in the

¹¹ Since large numbers of women in Sabon Gari do not work in the fields nowadays, this phenomenon of not stopping to nurse immediately was not observed. This description may seem to conflict with the descriptions of breast-feeding on demand, but it can also be seen as the informant's statement of how serious a violation she finds not feeding on demand.

breast milk, whenever the breast is left not nursed for a long period of time. This idea appears again in the discussion of early removal from the breast in the situation where the mother has been separated from the child and therefore has been unable to nurse for several hours or a whole day. In this extreme case the mother feels forced to remove the child from the breast permanently because she fears that allowing the child to resume nursing after not nursing for a day, will make the child ill and perhaps lead to its death.

Wet Nursing

Wet nursing is rarely done in this culture. If a woman does not have enough breast milk, it is unusual for her to find another woman to nurse her child; she will try instead to substitute other foods or animal milk. There are several reasons for this reluctance to let someone else nurse one's child. Hausas are concerned about the quantity of their bodily fluids, including breast milk, and they are afraid that if they give their milk to another's child they will not have enough for their own child. A nurse explained that people will not give blood unless it is for a brother, and then it is rare because of this fear of depleting their own supply. There is also an idea that the milk belongs to only that child. When women talk about giving the child the breast they say "I gave him his thing", and as in the discussion above on colostrum, when the breast changes

ownership and belongs to the fetus as soon as the woman becomes pregnant. The same idea applies to a woman who is already nursing; she cannot share her milk with another child.

The nursing woman is thought to have great power over the character of the nursing child because of the transfer of character traits through the breast milk. Several informants said that there is so much jealousy between co-wives that a woman would never nurse a co-wife's baby because the women seldom trust each other and would fear that the co-wife might turn the child into a witch or otherwise cause the child harm through the power given to the woman who nurses. Finally there is the concern that children nursed by the same woman become as blood siblings. If a woman nurses her daughter on one breast and her friend's son on the other breast, for example, because the children are drinking the same milk, they become as brother and sister and can never get married.

When a woman dies in childbirth, the baby is in very serious danger. The child will be given to the maternal grandmother if possible and she will put the child to her breast and usually will re-lactate. But in the two cases observed by the researcher, the grandmothers did not have enough milk to sustain the children. They were also penniless, so they were forced to wander the streets begging for animal milk to supplement their meager supply of breast milk.

Galactagoques

Hausa mothers are very concerned about the quantity of their milk and say that they are aware when their breast milk decreases for any reason. Mothers are aware that they need to drink liquids, especially milk, at childbirth. At childbirth the husband traditionally gives four to five kilograms of millet to the parturient so that large calabashes of fura can be made for her to drink, "to make the milk collect". Soon after birth neighbors and friends come to the house to pound millet. A huge calabash of lalame, a special drink of millet and water with spices and medicinal ingredients is prepared for the new mother. Every woman who comes to the biki or reception for the new baby and mother, is offered a ladle of lalame. The new mother is encouraged to drink as much as she wants of this drink and a large bowl is kept next to her bed to sip whenever she is hungry or thirsty, often for the full forty days she stays at home after childbirth.

In Sabon Gari lalame is green in color because of the addition of sabara (*Guiera senegalensis*) a wild grey green shrub which grows abundantly around the village and is highly prized by women as a medicinal plant. Some of the main uses of sabara are to protect against and expel kaikai, to perfume the ritual hot baths performed after birth by the mother, to increase the production of breast milk at birth and during the fast, and to protect the weanling child during the first week after termination of breast-feeding.

During the fast, or when someone in the family has just given birth, children are seen coming into the village carrying huge armfuls or wagons full of this plant for the mother.

It is considered important that the mother eat as much as possible after birth to regain her strength. One informant said, "The parturient eats until her guts swell up. Then she cuts back on her eating." The food most commonly thought to increase milk production in Sabon Gari is beans, and mothers, if they can afford them, will eat as many beans as possible following child birth or at anytime during lactation when they see that their milk is decreasing. During the last few months of pregnancy and especially during the forty days after childbirth, women in Sabon Gari also eat large quantities of kanwa (potash, p. 123) to increase their milk production. This substance is purchased in the market in fist-sized chunks and mothers can be found nibbling it as they work around the house.

Breast Milk and the Muslim Fast

The fast of Ramadan is one of the five pillars of the Muslim faith and is obligatory for adult Muslims. During the month-long fast adults abstain from food, drinks, and coitus during the hours from dawn to sunset. This partial fasting is considered to be good for one's health and trains people to control their needs and desires. The fast is prescribed for Muslims so that they may remain conscious of

Allah, earn Allah's pleasure, learn to appreciate the hunger of the poor and needy, and as some interpret the Koran, have their sins erased (Sakr, 1975).

There are several circumstances under which women are exempted from fasting: 1) During menstruation and during the forty days following childbirth women are forbidden to fast. 2) Women who are pregnant or lactating are exempted from fasting, especially if they perceive that fasting is causing harm to themselves, the fetus, or the nursing child. 3) Anyone who is ill or who becomes ill during the fast is exempted from fasting. In all of these situations the women must keep track of days missed and must ramco (pay back a loan) or make up the same number of days by fasting at another time, preferably during the month following the fast. Even though exempted from fasting many pregnant women¹² and over half of the lactating women in Sabon Gari fast for the full month¹³ and over half of these reported that their breast milk decreased and that their nursing

¹² Villagers report that it is acceptable for pregnant women to fast if it is early in the pregnancy "when your stomach isn't so heavy", but women often told the researcher that they stopped the fast early because they gave birth, indicating that they fasted during the last month of pregnancy.

¹³ Studies in the Gambia found that even greater numbers of women (all lactating women and 90% of pregnant women) fasted (Prentice et al., 1983). In Mali (Dettwyler, 1985), much smaller numbers of women were observed fasting. The percentage of women who fast may be much smaller among other ethnic groups in Niger, according to reports from Peace Corps volunteers working in other areas.

child lost weight.

Perhaps one reason pregnant and lactating women perform the fast rather than "put it aside" is that it may be difficult to find times during their reproductive years when they are neither pregnant nor lactating. Certainly it is much easier to fast at the same time as the whole community because of the community support and a common schedule for eating and resting. During Ramadan other activities may be given a lower priority, allowing women more time to rest during the day,¹⁴ whereas women fasting at other times of the year might be expected to carry on household chores as usual. If they are prevented because of childbirth or illness from fasting during Ramadan, or the "fast of the whole village", women usually wait until cooler weather¹⁵ or until the child reaches a later stage of development (can sit up or can eat food).

The most frequently given reasons for fasting were so that "In samen gobe" (I may receive tomorrow) or "in samen

¹⁴ This would depend on the wealth of the family and the season of the year in which the fast fell. The dates of Ramadan on the Gregorian calendar change from one year to the next. If the fast fell during the weeding of millet, and the woman was expected to work in the fields, then the fast could mean all of the usual work for her, plus farm work, along with the special dishes prepared for Ramadan.

¹⁵ During the years of this study Ramadan or "the fast of the whole village" (Azumin garin duka) occurred during April and May, the hottest months of the year in Niger. Another fast, which begins 40 days before Ramadan, is called "old people's fast" (Azumin tsofoffi), and is used by some to make up for missed days. Some people fast during both of these months, with a ten day break in between.

lada" (I may receive my reward from Allah), "because everyone else is fasting", and "because my husband (or husband's family) wouldn't allow me not to". During the fast there is a sense of shared difficulties; nearly everyone in the community is fasting and suffering together, and those who are discovered not fasting are teased and ridiculed for not having a strong character. The pressure to fast is very strong, particularly, women report, from their husbands and the Muslim priests. Some women say that they fear that their husbands will divorce them if they do not fast and a few say that their husbands will beat them.

Part of the reason for this pressure may be the interpretation by many Koranic scholars that missed fasting days are a "debt" which can be paid back for elder family members who died before they were able to pay back owed fasting day (Sakr, 1975). One man explained that if an unmarried man or woman fasts he or she helps older family members get to heaven; if a married woman fasts she helps her husband get to heaven. Viewing the fast as a kind of family bank account of grace, each individual's contribution becomes a kind of insurance for the rest of the family.

Since large numbers of fasting nursing mothers in the present study reported a decrease in their breast milk and a loss of weight in the nursing child, it was thought that fasting during lactation may contribute to high malnutrition rates. Women are aware of how much breast milk they have and whether or not the child "gets full". When asked if

their breast milk has decreased a majority of nursing fasting mothers in Sabon Gari respond (in typical Hausa fashion with another question), "When you go all day without food and water, what keeps your breast milk from decreasing?", meaning "Yes". When asked if the baby has lost weight large numbers of nursing mothers respond with yet another question, "Wouldn't he (or she) lose weight if I went all day without food and water?", meaning "Yes".

On the other hand, fasting people talk about the hardship they are undergoing by performing the fast. Azumi, akwai wuya (fasting is difficult) was heard hundreds of times, as was babu nono (literally, I don't have any breast milk). I soon realized that babu nono did not necessarily mean that the woman had no milk, but that she had less than before. So when women in large numbers during the fast said that their breast milk decreased and that their nursing child lost weight, it was impossible to know to what extent this talk was a kind of exaggeration associated with the shared hardship of fasting, or perhaps a kind of competitiveness about who was sacrificing more.

It is not clear from this research whether nursing mothers' total milk output decreased. Although their breast milk quantities may decrease to some extent during the day, they may more than make up for it during the night, by producing milk and giving the child a chance to stock up during the night (Prentice et al., 1984). Unfortunately I took the women's words at face value to mean that their

total milk output had decreased and did not think to ask about night time milk production. The possibility that the total milk production in any 24 hour period might remain the same, was not understood until I had left the field.

Some people felt that women could begin the fast immediately after the forty days following childbirth, because the very young infant could be given animal milk. A greater number of people in the present study, however, felt one should wait to fast until the nursing child had begun to eat foods, so that alternatives to breast milk could be provided to the child if the quantity of mother's milk decreased. Sabon Gari women are concerned when they see their breast milk decrease and most try to provide alternative milk or foods for the child so that he or she will not suffer from the fast. Koko, which is made in nearly every home daily during the fast, is given to every young child who will eat it. Often mothers make or buy extra beans or meat or other foods for their nursing children daily. A few women and their children manage to maintain weight and even gain during the fast. Two possible factors may be at work here. As the fast progresses people often reverse their hours of sleep so that they sleep several hours during the day and stay awake most of the night, when they can eat, drink and socialize. The result is that they may be eating the same total amount of food as usual. Some families, especially in cities, actually seem to consume more food and a greater variety of foods during

the fast than at other times, sometimes spending much more money than usual on food. Also some nursing women may do a better job of rehydrating themselves during the night than others. This research, however, observed that large numbers of adults, especially poor people, do lose weight during Ramadan.

The criterion used by Moslem priests in the village for legitimately stopping the fast is this: if the mother perceives cuta (illness or injury) to herself, the fetus, or her nursing child as a result of fasting she should stop. For a pregnant woman cuta is defined as in ciki ya motsi (if the stomach is queasy) or in ciki ya motsa (if the stomach moves). The data is not clear which of these interpretations is correct, and it was never learned how women were to distinguish between ordinary morning sickness and a queazy stomach, or between the fetus moving and the movement the priest is talking about.

In regards to the nursing child this is more difficult; for many, a decrease in breast milk and perceived loss of weight in the child are not considered cuta. Men and women alike say that the milk will return after the fast and the child's weight will return after the fast (over 4/5 of the mothers who said that their child lost weight reported that the child regained the weight after the fast). When asked if they were worried about the child losing weight many people responded like this mother, "Oh, it's nothing; it won't hurt her. You can give her other foods, cow's milk or

koko. The fast will soon be over and then she will be fine."

Women may say that the child losing weight is nothing to worry about, but their actions belie this calm facade - women try hard to provide extra foods for their young children and they buy medicine to protect them. The fast seems to present a double bind for mothers; although few younger women would talk directly about it, remarks by older women and those having difficulties fasting, suggest that women are caught in a position of having to do the fast because of pressure from the priests and their husbands and families, while at the same time worrying about injuring their young children. Hadiza talks about this issue:

Hadiza: Mata, suna ta wahala (Women, they go on suffering troubles.)

Nana: What can they do?

Hadiza: If you see that your child is deteriorating you turn in the direction of looking for medicine. There are people who sell medicine.

Nana: Who sells such medicine?

Hadiza: Isn't it the Muslim priests who prevent you from setting the fast aside?

Nana: The priests have medicine for children who are suffering from the fast?

Hadiza: Umm.

Nana: Do their husbands know that the baby is losing weight?

Hadiza: They know. But they will not allow the women to stop fasting even if the baby is suffering. Don't we have to (fast)? Didn't we inherit the fast (by virtue of being

Muslim)? Some priests say that even if the child dies you should not stop fasting.

Hadiza's words suggest that women suffer when their children's health deteriorates during the fast, but their choices are few. Many feel that they can not stop fasting so they resort to trying to remedy the situation by seeking protection and medicine from the Muslim priest. It would seem from Hadiza's remarks that the Muslim priests exert a tremendous pressure on everyone to participate in the fast, while at the same time providing therapeutics to counteract the ill effects.

The message heard during the fast in the mosques and on the Hausa radio station from Nigeria is that if one is ill one should stop the fast, that if one dies from neglecting oneself during fasting the benefits are lost. But some women continue fasting even though they or their children become ill. Some people said that if the child is ill or dies during the fast it is not because of the fast: "The fast does not kill people. Only Allah can decide whose time has come". The act of personal and group sacrifice greatly pleases Allah and provides great rewards and strength to the practitioners; if a child or an adult becomes ill or dies in the process, some people say, it was preordained by Allah.

All minor illnesses which occur during the fast are said by the women to be due either to the fast itself or to anago, which is defined by the Abraham dictionary as

follows: "Yana anago- he's suffering hunger as he cannot enjoy fura without milk and there is no milk to be had."

People in Sabon Gari define the term as follows:

If you are used to eating something, and tomorrow you don't eat it , the next day you don't eat it, until a week has passed, then you see sores come out on your body. That is anago. The medicine for anago is to eat what you are used to eating (Ali).

Many mothers say that they are experiencing anago during the fast and consequently their nursing babies experience it.

Diarrhea or any illness (including conjunctivitis, stomach aches, etc.) experienced by the child during the fast will be blamed on anago. When asked why a child is crying during the fast mothers most often respond, "It's azumi" (the fast), or "It's anago". Diarrhea in nursing children during the fast¹⁶ is seen as related to hunger caused by the decreased food consumption of the mother and the subsequent decreased frequency of nursing in the child. Hadiza explains the relationship between diarrhea and the fast:

It's all the work of hunger, of anago. It comes with being hungry. If the mother doesn't eat right away he gets diarrhea- we say anago. Zahi comes up in him. Zahi is caused by anago. Anago is like Azumi (the fast). Now you fast, you have a child you're feeding. He drinks milk, then he gets diarrhea, then he suffers. If he goes a long time without drinking, then he has diarrhea- that's anago.

Going without food or breast milk at the usual times or in

¹⁶ During the fast nursing children are probably exposed to more solid foods than they are used to, and more leftovers, hence more diarrhea causing pathogens. Freshly prepared food is served only after dark (except for special dishes bought or prepared for young children) and children are often allowed to eat the leftovers the next day.

the usual quantities causes zahi to rise up and gives the person digestive problems and diarrhea. Anago seems to be a catch-all term for illnesses which occur in connection with Ramadan¹⁷, and when anago is blamed, treatment seeking may be delayed because it is thought that the illness is caused only by the fasting and that it will go away after the fast.

¹⁷ The concept of anago is not relegated only to the fast; the word is used in Sabon Gari in connection with zahi symptoms and with other situations which cause diarrhea (p. 233).

CHAPTER VI
THE TERMINATION OF BREAST-FEEDING

According to the Koran, "Mothers shall suckle their children two years completely, for such as desire to fulfill the suckling. It is for the father to provide them and clothe them honorably.... But if the couple desire by mutual consent and consultation to wean, then it is no fault in them."¹ When asked at what age children should be removed from the breast, mothers in Sabon Gari respond by giving the ideal age as it is stated in the Koran, "Two years", and then they qualify it by adding, "unless Allah gives you another pregnancy", in which case it would be as soon as the woman knows she is pregnant. But the ideal of two years is attained by only a fraction of mother/child pairs. The preliminary survey found that the average age at which breast-feeding stops is around 15 months and the range is from 10 to 27 months. Termination of breast-feeding which takes place earlier than two years may be because of a number of reasons. Often the mother becomes pregnant and equally often the mother makes the decision to terminate breast-feeding after carefully considering a combination of factors having to do with the mother's estimation of the child's readiness and health, her own body state or health, and other factors.

¹ Arberry (1955), p.33.

The termination of breast-feeding is viewed as a dangerous time in a child's life. The Hausa have learned from experience that many children who were fat and healthy in their earlier months, get sick, waste away, and eventually die after termination of breast-feeding. When the mother decides that it is time to terminate breast-feeding she seeks protection through medicines and protective rituals from Muslim priests as well as traditional healers. Termination of breast-feeding takes place in one day so that the child will suffer less and will forget the breast more quickly than if the process were prolonged. Efforts are made on the day of termination to provide the child with enjoyable distractions and to surround him or her with relatives who will cater to the child's every whim.

The following is a series of conversations between the researcher (Nana) and a mother about the termination of breast-feeding:

- 1 Nov. 11, 1987 (The mother talks about the ideal.)
- 2
- 3 Nana: How long do you plan to breast-feed her?
- 4 Balira: She will drink breast milk until she is two
- 5 years old.
- 6
- 7
- 8 Aug. 27, 1988 (The mother is making the decision.)
- 9
- 10 Balira: I want to forbid her the breast, Nana; she's
- 11 old enough.
- 12 Nana: She can't be. How old is she?
- 13 Balira: One year and ten months.
- 14 Nana: Why do you want to take her off the breast
- 15 now?
- 16 Balira: This nursing here that she does, she grabs

17 the breast to drink; she grabs the breast to
 18 drink. You know now I don't have any breast
 19 milk, I have less milk than I used to.

20 Nana: Have you been sick?

21 Balira: I'm fine!

22 Nana: Is she well?

23 Balira: There is nothing wrong with her.

24 Nana: Does she eat everything now? All kinds of
 25 foods?

26 Balira: Everything! She eats everything! You see
 27 just now she drank fura and she ate tuwo.

28 Nana: Does it seem to you as though she is tired of
 29 breast-feeding?

30 Balira: No, she isn't tired of breast-feeding. That's
 31 the problem; I feel pity for her because she
 32 wants the breast. At the same time her
 33 sucking wears me out; she wants to nurse all
 34 the time. You know, I feel I shouldn't take
 35 her off the breast because I'm afraid she'll
 36 get skinny.

37 Nana: I'm afraid of that too. Because you don't
 38 have all different kinds of food in your
 39 house.

40 Balira: We don't. Just fura. That's why I'm afraid
 41 to take her off the breast - because we don't
 42 have different kinds of foods that I could
 43 give her to make her grow big.

44 Nana: She might get skinny.

45 Balira: Get skinny is what she will do! That's what
 46 I'm afraid of. I know that if I take her off
 47 the breast, she will get skinny.

48 Nana: Did she get her vitamin A (The megadose from
 49 Helen Keller International distributed by the
 50 PMI)?

51 Balira: She got it. It's two months until she's
 52 supposed to go back.

53 Nana: I think she's only one and one half years
 54 old. (At this point I had calculated her age
 55 and found that she was only 1 1/2 years old.)
 56 Is she hurting you when she nurses?

57 Balira: Um. I'm going to take her off the breast.
 58 Don't you see how much weight I have lost
 59 from all this nursing?

60 Nana: One doesn't have to get skinny from nursing;
 61 you aren't eating enough, probably. There's
 62 not enough fat medicine (maganin kiba) in
 63 fura.

64 Balira: You're right.

² Fura consists of about one third water, one third skimmed milk, and one third partially cooked grain, and it is the researcher's belief that it is relatively low in calories.

65 Nana: Did you tell your husband?
 66 Balira: What would he say?
 67 Nana: Is it his decision?
 68 Balira: It's not his affair.
 69 Nana: What if I talked to him?
 70 Balira: What would you say?
 71 Nana: I could tell him that fura is not enough for
 72 her.
 73 Balira: No, don't tell him that. He knows that fura
 74 is not what one should give the children. He
 75 doesn't have any money. He'll get mad.
 76 He'll just say that I told you. When he does
 77 have money he buys all different kinds of
 78 foods and we eat them. Right now he doesn't
 79 have any money.
 80 Nana: Are you eating tuwo nowadays?
 81 Balira: We eat it whenever we prepare it.³
 82 Nana: Fura is not enough for you or for her.
 83 Balira: Nana, I'm going to take her off the breast.
 84 Nana: Why don't you wait until you have a little
 85 money, until after the harvest so you can get
 86 a little extra food for her?
 87 Balira: We finished the harvest already, Nana.

88 Nov 24, 1988 (The mother has terminated breast-
 89 feeding.)

90 Balira: Nana, I weaned her. And nothing bad
 91 happened! She could walk. So I weaned her.
 92 Nana: She didn't get skinny?
 93 Balira: Look at her, she didn't get skinny, you see?
 94 Nana: She didn't get diarrhea?
 95 Balira: There's nothing wrong with her; she just eats
 96 food!
 97 Nana: Great! What did she eat today?
 98 Balira: This morning she drank fura and she ate bean
 99 cakes. And every day I buy her some yams.
 100 Last night she had tuwo.
 101 Nana: What kind of sauce did you put on it?
 102 Balira: Jute leaf sauce. You see now when she eats
 103 yams, her stomach will not get skinny.
 104 Nana: You have really made an effort to keep her
 105 from getting skinny!

³ This can be two or three times per week for this family or not at all if the father is out of town. The family is too poor to buy tuwo or an evening meal sold in the street if the husband is not there to ration out millet for the preparation of tuwo on a given day. So the family will drink fura and possibly eat little else on that day.

106 Balira: I did try hard to keep her from getting
 107 skinny. I buy her meat, yams, bean cakes,
 108 and peanuts.
 109 Nana: How long since she ate peanuts?
 110 Balira: She even had them today.
 111 Nana: How long since she ate meat?
 112 Balira: Since market day (two days ago). She ate it
 113 all afternoon. Then the next morning she ate
 114 what was left.
 115 Nana: What about liver?
 116 Balira: Every market day, once a week. When he comes
 117 back from the market,⁴ then he fills her up a
 118 paper full of liver.
 119 Nana: On the day that you weaned her, what did you
 120 do?
 121 Balira: I gave her beans, and I bought her meat every
 122 day for a week. Then I stopped. I bought
 123 her 75 CFA of lungabu (head meat). Then the
 124 next day I bought her 75 CFA again of head
 125 meat, to keep her from getting skinny. I
 126 could see then that she was not getting
 127 skinny, so I stopped.

128 April, 1989 (Six months after termination of breast-
 129 feeding)

130 This child had measles in April, 1989, and
 131 lost one of her eyes (ulcerated cornea) soon
 132 afterward as a result of a Vitamin A
 deficiency precipitated by the measles.

In the above case study when the child was six months old (November, 1987) the mother was asked about her plans for the termination of breast-feeding. She responded that the child would be removed from the breast at two years, reflecting the ideal age as it is taught by the Koran. In the second dialogue (August 1988) the child has reached one

⁴ Once a week the father buys her liver, probably 50 to 100 CFA worth or two to four ounces. According to Helen Keller International staff a child who eats this much liver once per week would probably be safe from vitamin A deficiency, but the father did not continue this practice on a permanent basis, as witnessed by the fact that she lost her eye a few months later.

and one half years of age and the mother wants to remove her from the breast. The mother is not pregnant so she is not feeling pressured to remove the child immediately. She has mentioned the child's chronological age as a rationale, but she is not blindly following the Koranic guideline since she is planning to terminate breast-feeding before the child has reached two. Instead the mother has considered a number of other factors and is carefully weighing the pros and cons of this particular child's case, as listed in the table below:

Child's Readiness For Removal From the Breast

- | | |
|------|---|
| Pro: | 1. Child is old enough: one year and ten months according to the mother's calculations. (lines 10-13) |
| | 2. Child eats all adult foods. (lines 26-27) |
| | 3. Child can walk. (line 91) |
| Con: | 1. Child still wants the breast. (lines 31-32) |

Mother's Situation or Other Environmental Factors

- | | |
|------|---|
| Pro: | 1. Mother losing weight from nursing. (lines 58-59) |
| | 2. Mother tired of constant sucking. (lines 16-18) |
| | 3. Mother has less milk than she used to. (line 19) |
| Con: | 1. Father too poor to buy special food for child. (lines 73-79) |

The two main reasons why this mother was hesitating to terminate breast-feeding were that the child did not seem to be psychologically ready to give up the breast, and the mother's fear that there was not enough food in the house.

As pros for terminating breast-feeding now she points out three factors having to do with the child's readiness: the child can eat all kinds of food, she has reached an appropriate chronological age, and she can walk.

The reasons for termination which seem to be the most compelling for the mother, and those which eventually outweigh her hesitations, are those having to do with her own health and tiredness. Even though she felt that the child was not yet emotionally ready and she was worried about having enough food in the house, the mother terminated breast-feeding soon after this conversation. But she waited until she found enough money to buy special foods for the child to get her through the transitional period - for this mother, one week was judged a sufficient transitional period as shown by the regular purchasing of extra food during only the first week (lines 121-125). This extra food assuaged her concern about not having enough food in the house. We do not know from the conversation how she dealt with her concern about the child's psychological readiness, but the reader gathers that the mother decided to take the chance that the child would adjust because she did meet other important criteria such as being able to eat all kinds of adult foods.

Principles Used in the Decision to Terminate Breast-feeding

This study found that women make conscious and carefully considered decisions about the termination of

breast-feeding, using as guidelines principles⁵ which have been learned from oral tradition. Although younger women may be told by older women when to terminate breast-feeding, after the first child women say they make the decision themselves⁶. The women studied in Sabon Gari do not follow these principles rigidly: They consider each child's situation separately, identifying the principles which apply to this child, weighing the strength of conflicting principles, and basing the decision to terminate breast-feeding on a careful examination of these principles in the light of the biological and psychological state of the child and the mother. In their conversations with the researcher the women in Sabon Gari revealed the following principles which guide their decisions to terminate breast-feeding:

Principles concerned with the child's physiological and psychological readiness

1. The child should be two years old, but if the child must be removed from the breast earlier, it is best if the child is at least one year old.
2. The child must be able to eat solid foods, must be eating the adult staple food as a major part of his or

⁵ Millard and Graham (1985c) derived principles from Mexican women's statements about breast-feeding, revealing the logic of weaning decisions. The Mexican women were not found to follow the principles blindly, but to use their own judgement, often in consultation with others, to decide the course of weaning for each individual child based on the child's biological and psychological maturation and the mother's health state. The term principle is used here as Millard and Graham used it.

⁶ These is born out in the above case study in which Balira says that it is not her husband's affair (line 68), but this seems to differ from what is suggested in the Koran (p. 147).

her diet, and must be "getting full" on the adult staple or eating enough to grow and maintain health.

3. The child must no longer have his or her "heart in the breast".
4. The child must not be sick.
5. Biting the nipple or refusing the breast are probably signs that the child is ready to be removed from the breast.

Principles concerned with the quality of the breast milk

6. The child should not be breast-fed too long⁷, as too much milk will make the child unable to learn to read (the Koran).
7. If the child is sick because of the breast-milk, the breast-feeding must be terminated to see if the child gets well.
8. If the mother is pregnant the child must be weaned immediately.
9. Failure to gain weight or chronic diarrhea may be caused by bad milk, requiring the termination of breast-feeding.
10. Separation from the mother for a whole day requires termination of breast-feeding.

Principles concerned with the mother's health state of situation

11. If the mother is sick, tired of nursing, working in the fields, or fasting, the child may be removed from the breast, providing other factors are taken into consideration.
12. If the mother wants to become pregnant again, and other factors in the child's life are favorable, breast-feeding may be terminated.
13. The family must have the ability to provide alternative foods if the child is to be removed from the breast.

The discussion which follows examines more closely some

⁷ As this was not heard too often, no information was obtained about how long is considered to be too long, but it was rare to find a Hausa child nursing after 28 months.

of these principles in an attempt to understand how this period in the child's life is viewed and the potential impact of these factors as the mother sees them.

The Child's Readiness

Reporting after the fact, about half of the mothers say that they terminated breast-feeding because the child was "old enough", and when pressed to say how old that is they say that the child has reached two years of age⁸. Of the many women who said breast-feeding was terminated because the child was two, when their ages were verified at the dispensary they ranged from 16 to 27 months. In the case study above the mother has counted and found the child to be one year and ten months or 22 months, but when the researcher looked it up she was only 18 months old. Calling a child two years old when he or she may only be one and one half is very common, partly from miscalculation, perhaps, but also because people tend to count age in terms of the number of rainy seasons or other memorable events the person has lived through. When the mother says, "Ya isa" (He is old enough) she may be counting the number of rainy seasons the child has seen. The word isa used in this form is often translated to mean "old enough" in the chronological sense, but a better translation of the phrase in this instance is

⁸ This is said as follows: Ya cica shekara biyu (He has filled two years or he is at the end of the second year). Once they reach two years, the mothers say ya cica biyu, vanzu na uku (the child has filled two years, and is now starting the third).

"equal to, fit for, or worthy of" (Abraham, 1962, p. 405, 406). It is this sense of having reached the point of being capable of something, I would suggest, which women consider the most important when making the decision to terminate breast-feeding.

When a mother says "Ya isa" she means that the child is ready in physiological and psychological ways. Besides being two years old there does not seem to be one particular stage of physical development which mothers look for in Sabon Gari as a signal that the child is ready to terminate breast-feeding. Being able to walk is mentioned fairly often. But the more important signs that the mother wants to see in her child are the ability to eat adult food independently, a certain degree of emotional independence, and the acceptance of adult food to the point where the child will be able to "forget the breast" within a short time after termination of breast-feeding.

Hadiza explains the idea of the child being ready:

Sometimes when one has taken a child off the breast, he resigns himself to the loss, he just keeps on eating food. If he has truly resigned himself to the loss, then he drinks his fura, and he doesn't care about the breast. He won't suffer wahala (troubles) Thank God!, since he was ready.

But a child who is not ready to be taken off the breast; like he's only one year old; whenever he sips fura, he, indeed, his heart is still in the breast. When one has removed him; Well, at that moment he is not ready to be removed; he's the one who will suffer; because it will cause him to have diarrhea. Or if you give him the breast milk when the mother is one or two months pregnant.

For Hadiza, being ready has two components: 1) being able to eat adult food to the point of getting full, and 2) no longer having one's "heart in the breast" or being capable of resigning oneself to the loss of the breast. If a child has not yet acquired the physical skill and the psychological willingness to eat adult food he or she is not ready to be removed from the breast. Perhaps "having one's heart in the breast" is the mother's way of saying that the child is still too emotionally dependent on the mother to give up access to this source of comfort without experiencing trauma. In Hadiza's view, the child who has diarrhea as a result of being removed from the breast is sick, not because of pathogens or an illness but because the child was not psychologically ready to be removed from the breast. Those children who lose weight or become marasmic (suggested by the use of the word wahala) after termination of breast-feeding, are viewed by the informant, Hadiza, not as having a nutritional problem, but as not having been psychologically ready to give up and forget the breast.

Some children signal their mothers that they are psychologically ready to terminate breast-feeding by gradually decreasing the frequency of nursing or sometimes by just refusing the breast and terminating breast-feeding themselves. Occasionally a child injures its mother by biting the nipple or the breast so badly that the mother cannot nurse temporarily on that breast. If the child meets other criteria for being ready, breast-feeding may be

terminated when these events occur.

Some informants give the impression that there is a limit to the length of time that a child should drink breast milk, although this idea is not heard often, perhaps because most children are removed from the breast before they reach this limit. One mother who stopped breast-feeding at 19 months said that if they drink too much milk their head will rot and they will not learn how to read (the Koran). More often when asked why they removed the child from the breast mothers say Ya koshi da nono (He got full of breast milk), or Ya ishe shi (He had enough [breast milk]). These phrases suggest that there is a point at which the amount of breast milk which the child has drunk or the amount of nursing the child has done is sufficient to meet the child's needs (perhaps both psychological and physiological) and the child can now leave nursing behind. When pressed about when the child reaches this point, some informants said, "After they have filled two years and are beginning the third".

If the child is ill, termination of breast-feeding will usually be postponed until the child is well and happy. A sick child is one who often refuses all other food except breast milk, according to Hausa mothers, so a sick child might consume little food if the breast were not available. The sick child also cries a lot and needs the extra comfort from the mother offered by the breast. Mothers usually try to make the termination of breast-feeding as pleasant as possible for the child because they do not like to see them

suffer, so the termination of breast-feeding would not be scheduled when the child is ill. The exception to this principle is when the cause of the child's illness (especially chronic diarrhea and marasmus) is seen as related to the quality of the breast milk.

The Quality of the Breast Milk

The quality of the mother's milk is monitored throughout the period of breast-feeding, not only by watching the milk, but more importantly by observing whether or not the child is growing satisfactorily. Behavioral and environmental factors can turn the milk bad and render it dangerous to the nursing child and when children do not gain weight satisfactorily and another explanation is not obvious, mother's milk will often be blamed. This study found a number of mothers of 14-24 month old malnourished children who had terminated breast-feeding to see if their children's health would improve: The mother of a child who was having chronic diarrhea and losing weight was urged by relatives and neighbors to remove the child from the breast to see if breast milk was causing the problems. Two other mothers stopped breast-feeding because they thought their milk was "bad". One said, "The child was getting skinny so I took her off the breast. You should remove them if they are getting skinny because it might be your milk." Another said, "My milk wasn't good so I stopped giving it to him." Several mothers of marasmic children said that they

terminated breast-feeding because they thought it might be the milk which was making the child "dry up and lose his body" (dehydration and wasting). Kaikai is thought to occur in some children at this age, and it is usually treated by giving both the child and the mother kaikai medicine. More common reasons for the termination of breast-feeding, in the older child are the conditions "hot milk," "sweet milk" and milk that just does not produce growth in the child.

A small percentage of women report that they terminated breast-feeding when they were forced to stay overnight in another village or go to the hospital, causing the breast to go for a whole day without being nursed, leading to hot milk. To allow the child to nurse again would stir up the sediment in the milk, causing the child to have diarrhea, and could lead to death. So a nursing child separated from its mother for a whole day will often be removed from the breast to protect it against the dangers of breast milk left too long without being nursed.

One of the greatest dangers for young children in Hausa thinking is the newly pregnant mother continuing to breast-feed the nursing child beyond the first three months of pregnancy. Hausas believe that the breast milk belongs only to one child at a time. If a child is nursed after the mother has become pregnant, the nursing child is taking the milk which belongs to the fetus, called by some the colostrum of the fetus. Women say that drinking the milk of the pregnant woman gives the nursing child diarrhea, and

that this kind of diarrhea will continue no matter what kind of medicine you give the child, until the child dies. When the mother finds out that she is pregnant again, she is urged by the family to stop breast-feeding immediately. If after termination of breast-feeding the weanling becomes ill, emaciated, or dies, this condition is often blamed on the fact that the child remained on the breast too long into the new pregnancy.

Women are very worried about this danger; they explain, "If his days are over, drinking the milk of a pregnant mother kills him immediately!", but in practice the mother is given a few months leeway to make sure that she is really pregnant, and some informants said that one cannot really know until the fourth month. Hausa women are very embarrassed about pregnancy and will not verbally admit to being pregnant, sometimes right up to childbirth. Termination of breast-feeding is tantamount to publicly admitting that one is pregnant, so the decision is stalled as long as possible⁹. Even in a polygamous household a woman may sometimes be able to hide the fact that she has not menstruated and even if suspected by others the pregnancy may not be officially declared by the other women until the woman begins to look pregnant. Hausa women say that it is not good if the woman becomes pregnant before her

⁹ Trevor (1975) found in interviewing traditional sultans' families in Sokoto that talking about the pregnancy before the fourth month is dangerous to the fetus.

menses return, because then she can not truly know if she is pregnant.¹⁰ Sometimes the fetus beginning to move is used as the sign that she is pregnant, meaning that she would have been nursing as long as the fifth month. Once everyone around her is sure she is pregnant, there will be great pressure to terminate breast-feeding. When pressed to say at what point further nursing becomes dangerous women say that during the fourth month the milk goes bad and changes in color and consistency, but others add that the milk doesn't go bad until you know you're pregnant.

It should be added here that many times when a mother gave a reason such as bad milk for termination of breast-feeding, it was found later that she had been pregnant at the time. When challenged "Are you pregnant?" women often answer "No" with a straight face, making it very difficult to know whether or not the woman is really pregnant¹¹. When other women are around the woman in question will giggle or look embarrassed, and her neighbors or co-wife will provide the information that she is pregnant.

A child who must be removed from the breast too early,

¹⁰ A woman whose menses do not return before pregnancy are called, gunku. Gunka is defined by Abraham as follows: " ta gunka ruwa she inverted small calabash on larger one full of water to prevent it spilling" (Abraham, 1962, p.343). The idea here may be that the pregnancy catches and stops the flow of menstrual blood, as the calabash catches and prevents the water from spilling.

¹¹ This becomes significant in health care centers, for example, when distributing vitamin A megadose capsules. Large doses of vitamin A given during certain stages of pregnancy can cause an abortion.

at less than one year of age, because of pregnancy or sweet milk is in danger. As Hadiza explained in the passage above, the child is not emotionally ready to give up the breast, and this makes the child very vulnerable to illness, malnutrition, and death. Traditionally the woman went to the home of her parents at childbirth and stayed there for six months and longer, sometimes until the child was weaned, allowing the child to get a good start in life and providing an effective method of birth spacing. Baba (Smith, 1981, p. 148) explained to her biographer in 1949 the practice as she knew it and the strong fears which supported it:

A mother should not go to her husband while she has a child she is suckling. If she does, the child gets thin, he dries up, he won't get strong, he won't be healthy. If she goes after a year, the child won't get strong; but if she goes after two years it is nothing, he is already strong before that, it does not matter if she conceives again after two years. If she sleeps with her husband and does not become pregnant, it will not hurt her child, it will not spoil her milk. But if another child enters in, her milk will make the first one ill. If she must go to her husband, she should take a kolanut and sew it up in leather into a charm and wear it round her waist; when she weans her child that is that, she throws away the charm and does as she wishes, then there is another child.... But if her husband desires her, then in the day she carries her child, at night she carries her husband - this is what pleases Allah. He does not like argumentative women. But it is not right that she should sleep with her husband for two years; if he insists she should wear the kolanut charm. As you know, there is medicine to make the pregnancy "go to sleep", but that is not a good thing.

This practice of abstinence for two years has disappeared and the Muslim rule of forty days of sexual

abstinence¹² is now usually followed by all except the youngest wife in a polygamous household when she has her first birth. Although the women in Sabon Gari did not talk about it and men would not admit that there is a problem, Baba's explanation suggests that the nursing woman finds herself in a double bind in her role as provider of sex for her husband and provider of sustenance for her nursing child. This can sometimes lead the woman to take desperate action, such as taking medicine to "put the pregnancy to sleep"¹³.

Durrah (1980) points out that this paradox is represented in the allegory between reproduction and morbidity by the word ci, which means to eat, to have intercourse, and to kill; during the period between conception and weaning, intercourse is seen as a threat to the child's life, as it can lead to a new pregnancy. Rurrutsa (kwanika in other parts of Hausaland) means conceiving before the previous child is weaned (Abraham, 1962, p. 586), and dan rurrutsa (child of a rurrutsa) is the child conceived before the mother has weaned the previous child. When asked to define rurrutsa Hadiza said that it is when a woman spends all day with her husband.

¹² Trevor (1975) reports a devout Muslim as saying that a good Muslim man should sleep with his wife as soon as she is ritually clean, to express his pleasure that she has given him a child.

¹³ For an explanation of the sleeping pregnancy and other strategies used by women to manipulate time, see Last (1979).

Although the practice of sexual abstinence has changed, there remains in the psyche of the Hausa woman a conflict between sex and its potential to lead to pregnancy and the subsequent death of her nursing child.

The Mother's Health or Situation

The principles having to do with the mother's health or situation are much less clear than those based on the child's readiness and the quality of the breast milk. Perhaps this is because, as Millard and Graham found in Mexico (1985b), the child's needs and health come first in the decision to terminate breast-feeding. This study found that when a woman terminated breast-feeding because she was tired of it, but without the child being ready, she was ridiculed for having behaved in a selfish way, possibly at the expense of her child's health. One mother berated her neighbor¹⁴ who had removed her child from the breast when the child was 14 months old:

Nana, she's not pregnant and she removed her daughter from the breast, and there is nothing wrong with her. She isn't even pregnant! And now look! Her daughter is getting skinny and deteriorating. It was too soon to take her off the breast. She had no reason; she was just sick of the child's sucking! (case #21 talking about her neighbor)¹⁵

¹⁴ She did this scolding indirectly, in the Hausa fashion, by directing her words towards me.

¹⁵ I never felt that I knew the real reason for termination of breast-feeding in this case. When I talked to the baby's grandmother, she said that her daughter's milk was sweet, and that they had decided that the milk was harming the child. So the baby's grandmother was advising to terminate breast-feeding, while the neighbor women were adamantly against it

In this case the child lost weight after being removed from the breast, proving to neighbors that the early termination of breast-feeding was a mistake. In Case Study #5 at the beginning of this chapter, the mother's strongest reasons for deciding to terminate breast-feeding were her own tiredness and health, but she was not criticized, at least to the researcher's knowledge, for her decision. Several factors may have been at work here: 1) Balira was an older woman and was therefore accorded some respect for her decision. 2) She was having difficulty maintaining her weight and may have had other health problems which she did not discuss with the researcher. 3) She considered carefully the age and the ability of the child to eat adult foods. 4) She made an effort to give the child extra food during the week which followed termination of breast-feeding. 5) The child did not lose weight immediately after termination of breast-feeding so the decision did not arouse criticism.

Sometimes women say that they terminated breast-feeding because they were ill, although it is not known whether these mothers thought their illness would adversely affect the child's health or they were mainly concerned about their own health deteriorating. This reason for terminating breast-feeding was relatively rare, and usually involved women who had a serious illness and had been forced to go to

and felt that the young mother was behaving selfishly.

a hospital to seek treatment.

A number of women said that they terminated breast-feeding because they were going to fast or they were starting a new endeavor such as working in the fields. The women in these situations, although they were not frequent in Sabon Gari, were probably aware that their breast milk would be likely to decrease and that it would be difficult to maintain breast-feeding while working all day in the fields or while undergoing the hardship of fasting. Breast-feeding was terminated in these situations because the child was ready, in the mother's estimation, to end breast-feeding and the time coincided with the beginning of fieldwork or the fast.

Sometimes women say that they terminated breast-feeding because they wanted to become pregnant again. This factor would be carefully evaluated in light of the perceived readiness of the nursing child, and it was not observed except in children who were at or near two years of age and who seemed to the mother to be ready to end breast-feeding. Children are viewed as good fortune and the woman who has many is highly valued. The number of children a woman has can become a point of competition between co-wives, motivating younger women to have as many children as possible.

The family must be able to provide alternatives to the breast milk. This is not an idea which is heard often, but it is certain that it enters into the decision making

process. In the case study of Balira at the beginning of this chapter, available food was a key issue, although it is difficult to tell how much of this emphasis occurred because the researcher introduced the idea initially (line 24) or because of the PMI educational activities for mothers. The concern usually expressed is about the child's ability to eat and get full on the family's staple diet. In most cases the ability of the family to provide food becomes an issue only if the mother becomes seriously ill or is forced to terminate breast-feeding prematurely because of pregnancy or some similar reason. This situation is seen as a crisis, and one in which there is no choice but to terminate breast-feeding, whether or not the family has the means to provide alternative food. For a family of little means, the provision of food, at least verbally, may be placed in the hands of Allah. Grandmothers were sometimes seen to take on the responsibility of finding goat's milk in the case where the child had to be removed from the breast early because of pregnancy.

The Day on Which Nursing Ends Forever

Once the mother has decided to terminate breast-feeding she chooses a day, often Friday, as this is considered an auspicious day. Three or four days before the appointed day she takes the child to the Muslim priest where the child will be given rubutu, the water resulting from washing the ink of Koranic verses from a wooden tablet. This may be

done on two or more consecutive days if the mother is worried about the child not being ready for breast-feeding to end. Women also go to the bokas (traditional healers), especially to seek protection for babies who have to be removed from the breast early because the mother is pregnant. In apparent contrast, some informants said that there is no medicine if you have to wean early; only Allah can decide to protect the child's health if he wants to. But upon further questioning these informants also used the protective medicine of both the Muslim priests and the bokas.¹⁶

On the chosen day the mother typically gets up, puts on a tight one piece dress or top which prevents the child access to the breast, and refuses the child the breast. The mother tries to purchase or prepare special or favorite foods to distract the child and mothers say that they give the child anything he or she wants to eat for the first few days. Throughout the first day the child tries to pull the mother's breast out of her dress, but each time the mother gently turns the child away from her and offers something else to eat, tries to goyo (tie on one's back with a cloth, allowing the mother to jiggle or rock with her body) the child to calm or rock the child to sleep, or asks an older sibling to take the child someplace else so that the mother

¹⁶ This is another example of verbally putting one's life and fate in the hands of Allah, while at the same time taking steps to manipulate the outcome.

will no longer be in the child's sight. Children usually cry and express anger by swatting their mothers' hands or chest for the first day and night, but for many this ends by the second or third day. Some children try to take the breast and nurse again a few times after this, but after a few weeks they often refuse the breast even if it is offered.

This practice of terminating breast-feeding in one day has been criticized by researchers as traumatic and cruel to the child and leading to malnutrition of the child (Albino & Thompson, 1956). Hausa mothers, however, are horrified at the idea of gradually reducing the number of times the child nurses per day by separating oneself from the child or by refusing the child the breast or stalling to make the child wait longer and longer periods of time before nursing. For the Hausa mother the abrupt termination means that the child only suffers for one day and then the breast is forgotten, a much kinder and gentler process, in their view, than gradually reducing access to the breast. In many cases the Hausa child spends this first one to three days visiting the grandmother, which has the potential of making this period one of fun for the child.

Traditionally children were sent to the grandmother's house to help the child "forget the breast", sometimes for several weeks or months. Baba (Smith, 1981, p. 46) recalls to her biographer her own removal from her mother's breast:

When I was two years old and it was time to wean

me from my mother, Zetanku my father's old slave took me to live with her until I forgot about the breast. She said I cried a lot, I was with her for three months. She liked her master's baby and when it was time to wean me she came and said she wanted to take me. Father said "Yes, you may take her". Then she took me to her compound in the rinji where she lived with her husband... After three months Zetanku took me back to my mother.

Perhaps this is a practice which is dwindling nowadays, as only about one quarter of the mothers in this study sent their children away for the termination of breast-feeding. Out of 30 women, one mother remarried and moved away, leaving the child with the grandmother, one sent the child to the grandmother in another village for two months, and one sent the child to the grandmother for two weeks. All the rest either removed the child from the breast themselves or took the child to the grandmother's for only one or two days. If the child is taken to the grandmother's house she is given money to provide extra food for the child. In this study, in the case where the child was sent to the grandmother's for two months the child came back much pudgier than she had been when she left. In the case where the child was sent away for two weeks the mother said that the child didn't lose any weight, but the PMI clinic showed that a weight loss had occurred.

Men informants told the researcher that the reason women send their children away is that they cannot bear to hear them cry. One young mother explains why she sent the child to the grandmother's for two weeks:

I took her to my mother's house because I knew she

would forget. I got up early in the morning and we went to my mother's house. She didn't drink (breast milk) before we left. She didn't cry. They gave her whatever she asked for. I gave my mother money so she could buy her butter. My mother cooked food for her and put sabara in it. She didn't cry at all... I didn't worry because she was with my family (Ali's wife).

A few women say that they put something bad tasting on their nipples, tell their child that the milk has turned bad, or in one case that the milk had worms in it, so the child would not want to drink it anymore. The majority of women in Sabon Gari "did their own thing", as they put it, meaning that they did not send the child anywhere. They removed the child from the breast themselves, and simply covered up the breasts and refused the child the breast until the child "forgot".

Some women say that the child should be given special foods at the time of removal from the breast, although the foods they named were the usual fare of tuwo, fura and beans. Special foods on the first day or two after termination are said to distract the child and keep his or her mind off the breast which is being denied. Butter is a food often mentioned as something purchased especially for the child at the time of removal from the breast. Besides being a luxury, butter is said by some to help the child sleep at night, the time when the child's demands for breast milk may be the hardest for the mother to deal with. Sabara is often given to the child as are herbs with soporific properties to aid in sleeping through the night.

Hadiza's explanation of why children should be given special foods at the time of removal from the breast,

(You give him special foods) because you removed him. So that he will keep on eating, to the point of getting full, so that his gut ties up. So that he will keep on eating and getting full, before he gets used to (saba) fura.

underlines the Hausa ideas that the child must learn how to eat to the point of getting full and that the bowels must be controlled. As the case study in the beginning of this chapter illustrates, the concept of special foods does not include an idea that certain nutrients are needed by the child on a long term basis. Balira gave her child special meat every day as well as beans and yams which the family might not otherwise have purchased. But her effort to provide these extra foods was intense during only the first week after termination of breast-feeding, or until she could see that the child was not losing weight.

CHAPTER VII

SUPPLEMENTARY FEEDING

The issues addressed in this chapter are crucial to the development of nutrition education interventions and are central to the treatment of diarrhea. Supplementary feeding practices as they were observed and documented in the in-depth study form a coherent system which allows the child control of its own food intake out of respect for the child's rights, views food's main purpose as that of making the stomach feel full in a country where food scarcity and hunger are familiar, and requires the child to learn to eat the adult staple food independently.

The first part of this chapter will examine closely Hausa ideas about food and eating and the ways in which these ideas shape the introduction of solid foods and the feeding of young children, both in health and during illness. The second part will describe the young child's eating patterns and the kinds of foods children consume on a daily basis, including traditional supplementary foods. Finally the way in which Hausa views of foods and eating affect the use of PMI recommended supplementary foods will be examined.

The Hausa Child Learns to Eat

By way of introduction, the Hausa family meal and how people eat will be described. Then the way in which Hausa

children learn to eat will be shown through close examination of the actual words used by mothers in discussing both medicine to "make then get fat" and supplementary foods. A matrone's¹ description of the government recommended first food as a bauri (purgatives and medicines given at birth to prepare the child's body to consume food properly and get fat), will be examined for the ideas that it suggests about how Hausa children learn to eat and what is expected of them in terms of independent eating. Then the Hausa view of the role of food and its relationship to being fat and healthy will be explored. The way in which these views and practices play themselves out in the situation of the anorectic child will be examined.

The Hausa Family Evening Meal²

The following segment from the field notes describes the family evening meal:

In the Hausa family women and young children eat together inside the compound near the food preparation

¹ The French word matrone is used to distinguish between the traditional or lay volunteer midwife chosen by the village to assist at births and the formally educated and salaried functionary mid-wife, called a sage-femme. The matrones are usually uneducated and post-menopausal women who were practicing traditional midwifery before the government incorporated them into the Village Health Teams. Their government training consists of participation in one or more workshops of a few days on proper care of the umbilical cord, how to record births, identification of birth complications which should be referred to a medical facility, and some familiarity with oral rehydration therapy and the PMI recommended baby cereal recipes.

² This description is typical of many meals the researcher observed and sometimes participated in.

area or near the women's rooms. The men eat in the entrance room to the house or outside under a tree, where the food has been carried to them by an older child. Eight to fifteen-year-old boys and sometimes younger male children will be invited by the men to eat with them. Older female children may eat with the women, or male and female children may eat together. Each of these groups has its own large dish that is shared. The woman who prepared the food pours the tuwo (the heavy millet porridge which forms the main staple dish in most of Niger) into the large serving dishes, one for each of these groups; then she pours a portion of the sauce on top of each dish of tuwo. If there is meat in the sauce she divides it between the different serving dishes. Each group sits in a circle, usually on a mat on the ground, with the pot of food on the ground in the center. When everyone has washed his or her hands with water and sat down, the cover is removed from the pot, someone says "bismilla" (an Arabic formula said at the beginning of an undertaking), and everyone begins to eat silently until satisfied.

Eating is done with the right hand only (The left hand is not used in eating or to offer something to others, as it is reserved for toilet functions.) Each person dips the right hand into the part of the dish that is the closest to where he or she is sitting. Tuwo is a very thick paste, which once it has been poured into a pan and allowed to sit for a few minutes, solidifies into a heavy cake and can be scooped out in bite-size chunks. A bit of food is dug out with the fingers making sure that some sauce is included and then it is folded or squeezed in the hand by closing the fingers down around it and mashing it with the thumb until it forms a sort of ball. The ball is popped into the mouth and scraped off from the hand against the tongue and lower teeth and eaten. A young child of five or six months who is able to sit up is usually placed on the mother's knee where she offers the child food from her fingers, that is she puts sauce on her finger and holds the finger up to the child's lips. If interested the child licks or bites the food off from her fingers. A child sitting on the mother's lap and depending on her to offer food, will sometimes grab the mother's hand every time that she picks up food and tries to bring it to her mouth, so that she barely gets to feed herself.

From the age of about seven months, when the child can sit up and is just beginning to grasp things with

its hands, the child will often be placed sitting on the ground. For the beginning eater the mother scoops out a serving from the family pot and puts it in a small enamel bowl which she places between the child's legs on the ground so that the child will get something to eat even if the child eats more slowly than the older family members. If there is meat in the sauce or something which the mother thinks the child will have difficulty chewing, she will take a small piece and tear it into tiny pieces and either put the pieces one at a time into the child's fingers, hold them up to the child's lips, or place them in the child's personal dish. When the child uses its left hand the mother or another caretaker will cuff the hand or hold it gently behind the child's back, forcing the child to eat with its right hand. Children who have learned the skill of eating with their hands will feed themselves as much as they can manage or want from the family pot.

Drinking water is passed around after most people have finished eating. Usually the water is scooped from the water jar in the corner into a large bowl, or nowadays, into a large plastic juice pitcher. This vessel is passed around and each person drinks as much as he or she wants and then passes it on to the next person. The mother holds the drinking vessel for young children. The vessel is held up to the lips and tilted gently so that the child can drink until satisfied. When the child makes a motion to drink by moving its lips, the mother tilts the vessel; when the child stops drinking and starts to pull away from the vessel, she takes the vessel away. If there is fura, the watery sour skimmed milk mash, this is brought out in a large bowl and placed in the center. Adults may pour a smaller bowl (one or two quart) and pass this around so that everyone can have a drink from the same bowl, or the large gourd ladle is passed around and each person drinks from the dipper. The mother scoops up a ladle of the liquid, holds it up to her young child's lips and watches the cues given by the child to know when he or she has had enough.

When the family members feel satisfied they will stand up, go get a scoop of water from the water jar, and wash their hands by pouring water over the hands. The men often have water brought to them in a bowl to wash their hands where they are sitting. If the young child is still eating after everyone else has finished the mother will often stay to assist or she may ask an older girl to stay with the child a few more minutes to make sure that the child has the opportunity to eat. If, however, the child begins to throw food or make a mess at any point in the meal, the mother will remove

either the food or the child and wash the child's hands.

Hausas exhibit a modesty toward food and talking is generally not part of the meal. In fact it is thought that food loosens the tongue (santi)⁴ and makes people say things that make little sense or that have hidden meanings which others may interpret in such a way as to embarrass the speaker. Eating is therefore done quietly and the food is not praised nor the cook thanked for the preparation. Loud burping and the Arabic phrase "Alhamdu lillahi!" (Praise be to God!) when one feels full are the only expressions of satisfaction that are expected or appropriate.

Bauri: Preparation of the Child for Solid Foods

In the breast-feeding section bauri and its role in opening up the stomach and the gut to prepare the child to consume breastmilk were described in detail as at least a dozen mothers explained them to the researcher. The matrones in Sabon Gari also call the bouillie légère (first baby cereal recommended by the PMI) "baurin zamani", which means modern or progressive bauri. The matrones worked closely with the Peace Corps volunteer (PCV), encouraging women to come to the PMI activities, clarifying when they thought that the PCV was not making herself understood in Hausa, and assuming some of the teaching and demonstration

⁴ Durrah (1980, p. 244) explains his theory of the concept, santi: "The metaphorical equation between eating and intercourse cannot help but strengthen the modesty which adults must exhibit when engaged in a meal. Eating, as befits the consumption of a sacred symbol, is conducive of contemplation and inspiration as well as a heightened sense of modesty. Meals are a context which nurture, in the full sense of the word, reflection and commentary on latent or hidden meanings in spontaneous statements. When sharing food, an individual does not fully control the meaning of his own statements for his audience can turn the most banal of statements into a window into his unconscious."

responsibilities delegated by the PCV. In their self-assigned roles as interpreters for the PCV and the health education program, the matrones often couched the health message as they understood it, in terms or metaphors which made sense to them, and presumably to the village women with whom they worked. By calling the first food a bauri they are using a familiar idea, bauri, as a metaphor for the PMI recommended cereal. The resultant health message is that the PMI recommended first cereal helps one's child learn to eat and prepares the child for the consumption of solid foods in the same way that the bauri solutions at birth prepare the child to consume breast milk⁵. A matrone explains the connection between the idea of bauri and the first bouillie in the following passage:

⁵ I did not hear mothers in large numbers refer to the government recommended cereals as bauri. Nor did they call the traditional liquid first foods bauri. Many mothers, however, talked about both traditional and government recommended first foods as training the child to eat and as "making him want food" and many women used the phrase, "look for food" and "put his hand to his mouth". So when the matrones used the metaphor of bauri to describe the purpose of the first cereal, it seemed to explain much of the women's behavior and tie these ideas together. The matrone's bauri metaphor is used here because of its explanatory value and because I have a lot of faith in the matrones' ability to grapple with the principles of two seemingly different health systems and come up with an explanation which fits logically into both, rather than because the first food as bauri idea was heard many times in the community.

1 Once children have eaten the bauri⁶, they will
 2 eat food whenever they see it. When they eat bouillie
 3 légère their gut opens up and then they eat what they
 4 see. They start eating and keep on eating. Their gut
 5 opens up. They get used to [saba] eating.
 6
 7 Whenever they see food, they start going crazy
 8 [hauka]. They keep on eating...Bouillie légère opens
 9 up the gut and makes the baby keep on getting bigger.
 10 It makes him look for food. It makes him put his hand
 11 to his mouth ...He keeps on looking for food to eat.
 12 He grabs people's hands and puts them into his mouth.
 13 He looks for food" [Hadiza at the dispensary after a
 14 baby cereal demonstration].

This passage illustrates several key ideas that Hausas have about how young children eat or get fed. The next several pages will discuss these ideas and will refer back to this passage. The educational implications of the matrone's role in interpreting the health message will be discussed later.

Initiation and Termination of Eating

Hausa mothers watch for their children to exhibit an interest in food and signal their mothers through gestures that they want the food. In the above passage the informant describes the child learning to eat in terms of the child's physical behavior towards the food:

...then they eat what they see. They start eating and keep on eating... Whenever they see food, they start going crazy... It makes him look for food. It makes him put his hand to his mouth ... He grabs people's

⁶ Durrah (1980) found that dauri (the same word as the Aderawa bauri) was given at the time of the introduction of first foods, both for the purpose of changing the child's stool from yellow and soft to darker and firm, and to make the child grow fat and strong. The solution included locust bean water, also used to make plaster strong, which would probably tend to stop up the bowels.

hands and puts them to his mouth. He looks for food.
[underlining is the researcher's]

When asked how they know children are old enough to begin to eat food, mothers say that they look at the food when other people are eating, opens their mouths towards the food, stretch their heads toward the food or reach for it. With these gestures the child indicates to the mother when it is hungry or wants food and the Hausa mother responds to these cues by offering whatever she perceives that the child wants.

Providing food on demand begins with the mother's role as the provider of breast milk and extends to the intake of non-breast milk foods. As the child begins to eat non-breast milk foods, food is given (if it is available) whenever the child signals the mother that it is hungry. Mothers say that they feel pity for the child and could not deny the child the breast at any time during the breast-feeding period. They also report having a hard time refusing their children when they ask for food, even when it involves buying something they can't afford, as the following passage illustrates:

The young child who cries, he's the one you buy something for and give him. These older children know there isn't any. They know if there is money we will buy (snacks) for them. They don't cry. But this little one it's not his problem. He doesn't know if there is money. He doesn't know if there isn't. He doesn't have patience because he can't talk. Everything he sees, you buy for him. But the one that can talk he knows there is no money so he doesn't say anything (case #1).

In the above passage the mother is talking about

prepared food being hawked by 7-12 year-old girls who enter the front door of the house with trays of food on their heads. In the Hausa culture there is a saying that food that is seen is food that is shared, so care is taken in meal preparation to keep the food out of sight until family members have arrived and are ready to eat. In the above instance, once the girls have entered the door the child can see the food and if he recognizes it he may cry until his mother buys him some. The words "Everything he sees you buy for him", suggests that once the child sees the food the mother or other family members cannot say "No" or deny the child food which has come into view and is desired.

As Hausa children receive food on demand, they also determine for themselves when they are full or have eaten enough, and they will signal this by not eating any more. Hausa mothers follow their children's signals and take the food away, saying, "He is full" (ya koshi). If the child turns its head away when offered something to eat the mother will say "She refused", or "She doesn't want it" and remove the food. Darrah (1980, p. 243) cites Salamone (1969-1970) as offering a reason why children were traditionally not given millet or sorghum until the seventh month:

...Older informants insisted that millet and sorghum should not be given before the seventh month...The reason offered... is that the child should be old enough to make his own choice. Very holy people do not like to eat these two grains; therefore, it is good to wait until the infant is able to reject them and thereby expose his saintly nature.

The mothers in Sabon Gari did not talk about the child

exposing his saintly nature in refusing food, but they clearly accorded their young children the right to refuse food: the child itself is viewed as knowing when it is hungry and when it is full.

This is not to say that the mother does not initiate eating by offering the child food. She often tries to entice the child to eat while the food is fresh or while the rest of the family is eating by holding food up to the child's lips on her fingers. But if the child is not interested in the food the mother will often not urge the child to eat or continue to hold food up to the child's mouth. She will wait until another moment or another day or until the child decides that it wants the food. The Hausa child is often sitting on the mother's lap as she eats, watching every bite of food that she puts into her mouth, so the child's curiosity about the food eventually leads to the discovery of and demand for food. A child refusing to eat adult food is not cause for worry at first. Mothers seem to feel that the child will start to demand adult food when the child is ready. But when the child is ill and refusing all food, or when the child is 10-12 months and still steadfastly refusing to eat, the mother begins to worry, especially if she perceives that her breast milk is dwindling or because of pregnancy or some other reason she is beginning to think about terminating breast-feeding.

Becoming an Expert at Eating

An analysis of Hausa mothers' descriptions of their children progressing from consuming breast milk and water only, to eating the family food by themselves, reveals a series of developmental stages that they see their children pass through in the process of learning to feed themselves. Arranged roughly in chronological order they are as follows: crying of hunger as a small baby, staring at other people's food and opening one's mouth toward food, licking from someone's fingers, acquiring a taste for food and gesturing towards it to indicate that one wants to eat it, grasping food with one's own hands, squeezing it into a ball and putting it into one's own mouth, looking for or going after food, eating whatever is available with one's own hands without wasting food and making a mess, and finally, at an older age than this study addresses, being able to get food by gathering it, buying it, and even preparing it oneself.

The first non-breast milk foods are the liquid foods, fura or koko, which the mother must help the child drink by holding the ladle up to the child's mouth and allowing the child to sip. As the bauri metaphor passage (p. 181) indicates, it is important that the child experience the taste of the food so that each time the food is offered the child will want the food and get excited ("go crazy") enough to demand some. These first liquid foods teach the child to associate seeing food with the taste and pleasure of eating it, so that the child subsequently wants food every time it

is seen.

When the child begins to show an interest in what other people are eating by staring at their food, opening its mouth, and gesturing towards the food, the mother begins to offer the child little tastes from the family pot on her finger or she may make a special purchase for the child, as the following passage describes:

"At noon, I try a little, I buy him a little tuwo, I allow him to lick a little sauce off from my finger. Like he can't really eat tuwo. I let him lick a little sauce. Since he isn't an expert at eating food yet."
(case #15)

Hausa children progress from licking from other people's hands to grabbing other people's hands, to using their own. Once they have acquired a taste for solid foods and as soon as they are able, they are expected to put their hands to their mouths, or feed themselves. Mothers say, "She knows how to eat; she squeezes it", meaning that not only can she scoop up food and get it to her mouth, but she has begun to shape it in her hand before placing it into her mouth. When the child is able to sit up, reach into the pot, grasp food between its fingers, put the food into its mouth, and then let go of the food, the child is usually given its own dish. In this way the child is gradually becoming more and more independent in the acquisition of food.

Next mothers watch for their children to "look for food". A ten month old child was crawling towards her mother and whining. The mother explained to me, "She is looking for food. She is saying that I should get her some

food for her to eat." The mother then called the eight year old brother and told him to bring a ladle of fura which the mother held to the child's lips for her to drink. The emphasis in the mother's words is not that the child is feeling "hungry", a word that tends to be reserved for the fast of Ramadan or times of famine, but on the child's role of "looking for food", and of signaling the mother when she wants to be fed. If the researcher said to a mother, "She's hungry", speaking about a child, or "I'm hungry" speaking about the researcher's own need to go home and eat, it usually elicited embarrassed laughter. Hunger is associated not being able to get enough to eat, not being able to provide adequately for the family, and with a lack of shame and modesty about food. Losing control of one's emotions is considered childish in Hausa, and adults do not use an emotionally charged word like "hunger" loosely.

Eventually the child is expected to become an "expert at eating" food, able to eat to the point of getting full, and without making a mess. Learning to eat with one's hands is not an easy skill to learn. It takes a lot of practice to get enough food into one's mouth to get full without having sauce running down one's elbows and dripping all over one's lap. Being "aware" is equated with having enough maturity to eat with one's own hands. A mother explains:

She can drink koko [a liquid], but one doesn't give her food until ta yi wayo", [she has become aware] [case #21].

Children are generally not allowed to play with food. Once

the child starts to make a mess or toss the food around instead of putting it into his or her mouth, either the food is removed from the child's reach or the child is removed from the food. Being physically capable of feeding oneself is a necessity before one is given a quantity of food of one's own.

Although special food may be made or purchased for a child during the early stages of supplementation, as soon as the child can feed itself, it is expected to eat whatever the family eats. One mother explains this process:

We give her koko until she is more aware. She licks, any old time, we must buy her her thing. Then she gets used to eating. If it's this tuwo that we are preparing, we offer her some. If today we are eating beans, we offer her some. Perhaps she can't eat with her hands, and so it goes on until one day she puts her hand into the food and she eats. (case #2)

At first this mother bought the already prepared liquid food, koko, until her child got used to eating. Then she gradually learned to eat whatever the family was eating. Once this is achieved the mother will not have to make a separate preparation and the child will have a better chance of surviving because she conforms to the every day diet of the family and the village. When I asked one mother if her daughter was eating certain foods she reassured me that the child was eating all kinds of foods:

She eats koko, and tuwo, and mangoes, and guavas, and limes, and lettuce, everything! If she sees it she eats it! and squash. She eats everything we eat; she doesn't rebel. (case #16)

Although my concern in asking the question was whether she

was consuming certain nutrients, the mother's response suggests that she is not worried about her daughter not eating well because she is content to eat everything the family has to offer, without complaining.

Children are assumed to have bad taste and learning what is good to eat is one of the social skills older children are expected to acquire before becoming an adult. Mothers say that children eat all kinds of things that adults would not eat, such as dried fish, rats, mice and eggs, all of which are considered by some to be smelly or otherwise not fit for adult consumption. One mother explains, "Only children eat fish, but we (adults) can't eat them. They aren't good." In another instance, "Now that the weather is cold we only eat tuwo and kunu. It's too cold for fura. Only children eat fura now", the implication being that children don't know when it is appropriate to eat certain kinds of foods. One woman explained, "A child, you know, doesn't know what's good, but an adult knows what's good." When pressed to say what is good mothers cite the main staple dishes based on millet, while laughing at the adult who had to ask this question.

It is considered appropriate for the older Hausa child to forage or scrounge for itself. Children love eating for breakfast the crunchy tuwo that burns onto the dinner cooking pot; the seven or eight-year-old children will often be seen scraping last night's tuwo cooking pot and sharing the potato chip-like pieces with the younger children. The

mother will often provide salt and other flavorings (sometimes butter) to stir into this snack, but it is the children who prepare it. Boys roam freely in the village asking people for coins to buy bits of street food such as greens, fruit, or peanuts, or bringing home eggs, birds, grasshoppers, and rodents which they cook for themselves⁷ and eat. During the farming season the father is often seen walking into the compound carrying a large rat or mouse by the tail. When asked what he is going to do with it he replies that he killed it near the granary⁸, and that the children like to eat them. The children will grab the prize and excitedly begin to look for wood or millet stalks to light a fire in the compound. The animal will be skewered on a stick and roasted and eaten by any children who are around.

This does not mean that there is nothing prepared for children to eat, as the foods that the children have scrounged on their own are considered to be snacks. Except for the month long fast, when there may sometimes be little to eat in the house during the day, there is usually something prepared by the women in the compound, even if it

⁷ Once boys reach puberty they avoid anything having to do with food preparation; adult males provide the food and consume it, but it is a great shame for a man to find himself in a position of having to prepare his own food.

⁸ At one point during the study a two-week long national rodent killing campaign was held, as it was reported that in some places the rodents consumed as much as one third of the grain crop.

is just fura, the sour skimmed milk and millet drink. In the typical household, children and adults go to the fura calabash whenever they feel hunger, any time of the day or night. In all but the poorest households there is usually something prepared or purchased for the family to eat in the evening besides fura. Usually this will be some form of tuwo, or beans, or something from the garden or fields prepared in season, such as greens, onions, or yams. The older children then have the opportunity to eat a regular meal with the family, although sometimes they may not be present when this meal is served because they are wandering from house to house with other children. Often the mother will set aside a dish of food for the child who is sleeping or not at home when the food is eaten.

The Meaning of Food Getting Enough; Getting Full; Getting Fat

For Hausas the word "food" is often synonymous with millet. Hausas do not feel they have eaten if they have not eaten millet, and they do not feel full if they have not eaten tuwo⁹. All other foods are relegated to the realm of snacks in the Hausa's eyes. When asked what a child has eaten today, a mother will often respond "nothing", but after probing one learns that the child has indeed put many things into its mouth or the mother has given the child things to eat, but to the mother they do not count as "food"

⁹ See Richards (1951) for an interesting theory about of the sensation produced in the stomach by the staple food.

or as having eaten because they were not tuwo. Or if the mother is asked "Is she eating food?", the mother may respond "No, she doesn't eat food", because the child has not yet reached the point where she is eating the adult staple on a regular basis and as a major part of her diet. The child who has to be assisted by the mother may also be said not to have eaten because the child did not feed itself.

The Hausa word ci, means to eat in general. When talking about specific foods, however, one must know which things are drunk and which things are eaten. The word sha means to drink and any food which is somewhat liquid and some other foods and substances are drunk, including fura, koko, and all of the recommended PMI supplementary foods as well as all fruit and tobacco. The word ci pertains to non-fruit foods which are more solid. So if a mother is asked if the child "ate" something the negative answer may be misleading because the child "drank" something.

One mother expresses an idea often heard by the researcher:

He can't eat food. He drinks breast milk and water. Only koko, if I buy it, I give it to him. But he can't eat food (a mother who stopped me on the street).

This passage illustrates all of the points explained above. First, because the child cannot eat the soft koko by himself but depends upon the mother to give it to him, or to hold the ladle up to his mouth, she does not consider that he is

able to "eat". Second, he consumed koko, which is a liquid in the Hausa language, so he drank it as he drinks breast milk and water; he did not eat it. Third, although he consumed koko, a food consisting of millet and water the same as tuwo, since he did not eat tuwo, he did not eat ("But he can't eat food").

Hausas often complain that they are unable to "eat enough" and spend time and money seeking medicine to remedy the situation. This inability to eat enough, especially during the hot season, is associated with an illness called zahi (heat), the symptoms of which are diarrhea, constipation, the stomach being "tied up" and congested with impurities, and a loss of appetite. Untying the stomach and cleaning out the gut, by taking purgatives and by drinking soapy water, enable the adult to again be able to eat enough. As we saw in the discussion of bauri, cleaning the gut and the stomach are linked, in the Hausa view, with the child's ability to eat enough food and get fat. In the bauri metaphor (p. 181) opening up the child's gut prepares the child to eat what it sees, to start eating and to keep on eating, thus assuring that it will eat enough.

Hausas eat to get their stomachs full. One often hears, Na ci; na koshi (I ate; I got full). The happy healthy child is one who is eating what is provided and getting full. When asked if their child has had any illnesses recently, Hausa mothers will often reply, "Nothing's wrong with her; she just eats food!" (sai cin

abinci). A mother sings a spontaneous song to demonstrate to me how healthy her child has been in the past month:

She eats her tuwo; she drinks her water; she sits herself down! (case #2)

The assumption seems to be that if the child "sits herself down", she has gotten full. If she has gotten full she has eaten enough food. If she has eaten enough food she will grow and be healthy.

Getting full is equated with weight gain and not getting full is equated with weight loss. When asked why she gave her child koko during the fast, a mother replied, "So that she wouldn't lose weight. Because during the fast she didn't get enough breast milk to drink until she got full." When asked how they know their breast milk decreased from fasting, mothers respond, "I know my breast milk decreased during the fast because he didn't get full from breast milk, until I gave him cereal". Another mother explains why her child did not lose weight during the fast: "She hasn't lost weight because she eats until she gets full." A mother of a child who had been ill reassured me that he would recover: "He will put his body back now (get fat again) since he's eating food and getting full". In the bauri metaphor (p. 181, lines 8-9) the bauri opens the gut, which leads to the child getting bigger. Informants explained the connection: "If you open up the gut, you can eat enough to get full, and what makes you get fat is to eat until you get full."

Getting Used to Eating

The word saba, to become accustomed to something, (p. 181, line 5 of the quote) represents a very important idea in Hausa therapeutics, that people have to get used to new things or they will suffer. When people complain of diarrhea, stomach aches, and headaches, they will often be told that they have done something that they are not used to doing. Doing things the way they have always been done and eating foods that one has always eaten, prepared in the usual way, is better for one's health, in the Hausa view, than eating or doing things one is not used to. When people come home after traveling with a case of diarrhea or some other illness, they are told that the illness came about because they were in a place they were not used to, or that they ate or drank something to which they were not accustomed. This does not necessarily mean that the place, the water, or the food was bad in some way, just that it was not the place, water, or food with which one was accustomed.

In the section on the termination of breast-feeding, the informant takes the idea of saba even a step further by saying that being used to fura means that the child has become so used to it that he has accepted it as a substitute for breast milk. In the informant's view, the child who has not truly become accustomed to adult foods is the child who may suffer the most from the termination of breast-feeding and may die in the process. In the Hausa process of learning to eat food, the liquid foods such as koko and kunu

are seen as helping the child to get used to eating food. Once the child has begun to eat tuwo, the child is considered to have become accustomed to eating food so the introductory foods are no longer necessary. Since the advent of the PMI recommended baby cereals, the Hausa mothers often readily prepare them to introduce the child to the idea of food. But once the child has begun to eat tuwo the PMI cereals are discontinued because the child has become accustomed to eating adult food.

Feeding the Sick Child

The mothers in Sabon Gari were not found to withhold food, liquids or breast milk, either during diarrhea illness or in any other situation; As the earlier discussion suggests, the maternal response of feeding on demand is very strong. This research did find, however, that Hausa mothers, much like the Malian mothers in Dettwyler's (1989b) study, do not force or aggressively encourage their children to eat or drink when they are weak with illness or anorectic¹⁰. As with healthy children, ill children are viewed as knowing when they are hungry and when they are full. It is children who regulate their own food intake, so when sick children refuse food or show no interest in food, they are often not compelled by their mothers to eat.

The following example is one of dozens of similar

¹⁰ Force feeding by holding the nose and pouring food down the child has been reported by Peace Corps volunteers elsewhere in Niger, but was not found in this research.

situations the researcher observed in which the mother expressed her helplessness in the face of the child who was too weak to eat or seemed uninterested in food. A mother showed me her anorectic child who had already visibly lost weight (but was not yet marasmic) and was not interested in eating. I suggested that she make soft foods for him and feed him a little at a time to help him get his strength and appetite back. Her response implied that I did not understand - it was the child who was refusing to eat, and there was nothing she could do:

You see his bowl over there waiting for tuwo? Even if I put sauce on the tuwo, he doesn't squeeze it in his hands and eat it. He doesn't even eat to take away the hunger! Even when I took him to the dispensary, he was like that. That's the reason why he doesn't eat; he has no desire (a mother who called me in to see her child).

This mother is portraying a food bowl waiting for someone to ask for the bowl to be filled. The bowl has been put before the child and the food has been offered. Now it is up to the child to demand food and to feed himself. Just as mothers give food when their children ask for it, the mother above does not continue to give food because the child is not asking.

Hausas often say or imply that they are leaving the entire situation up to God (Allah), but further probing and observation reveals that mothers sometimes go to great lengths and sometimes great expense to seek treatment for their children and to manipulate fate. This mother goes on to tell me that she has already tried several things: She

put sauce on the tuwo to try to entice him to eat and she took him to the dispensary to see if dispensary medicine would improve his situation. But the dispensary treatment did not have the effect of making the child want to eat, and in spite of the sauce the mother put on the tuwo, the child still did not feed himself. She has done all that is within her purview to do; she hopes that he will soon feel well enough to want and ask for food.

Mothers seem to feel that children should not be forced to eat against their will, even if they are severely malnourished. One of the children in the study had a swollen throat. The father left town for three weeks to seek work and left only enough money to pay for half of a penicillin treatment, so the child started to get better and then she got worse again when the penicillin was discontinued. Her throat swelled shut and then she could no longer nurse because sucking was painful. The mother let her breast milk drip on the ground until "it got tired of dripping and so it stopped because she didn't drink it". When I asked the mother if she tried to force the child to drink, she replied that the child couldn't drink unless the mother "squeezed her mouth". The child died one week after she stopped nursing. The mother was still offering the child small spoonfuls of sour skimmed milk up until the last day, by holding the spoon to the child's mouth and allowing the child to sip what she wanted. It should be noted here that contrary to what many Western observers seem to

believe, the Hausa mother is terribly distressed when she knows her child is seriously ill and anorectic precisely because it is the child who regulates its own food intake and she feels helpless to do anything to get the child to eat. In the above case of the child with the waiting food bowl, the mother knows that the child is in trouble when not only does he not eat enough to get full (the sign of a healthy child), but he does not even eat enough to take away the hunger. In the case of the child with the swollen throat the mother knew that her daughter of one and one half years was going to die. At every mention of medicine or feeding, the mother would almost chant "She doesn't eat, Fatimatou, she doesn't drink", as if to say, "I don't know why you keep telling me to do these things. It doesn't matter what one does, she doesn't eat or drink, so she is going to die". This mother truly seemed to feel powerless to get any food down the child both earlier when it hurt for the child to suck, and later in the illness when the throat was no longer painful but the child had become too weak to eat or drink by herself.

No special foods are prepared and there is no dish which is considered to be appropriate for a sick or anorectic child. Indeed the sick child's lack of interest in eating seems to be viewed as caused by illness¹¹, and

¹¹ Initially anorexia is usually brought on by illness, but prolonged anorexia is thought to be caused by the complex interaction of malnutrition, deficiency in certain nutrients, malabsorption of nutrients in the gut, infection, and

medicine rather than food is sought as a possible solution, although medicine often does not work in producing the desired effect of returning the child's appetite and interest in food.

The Use of Supplementary Foods

When asked when one should start non-breast milk foods mothers in Sabon Gari say seven months. According to Salamone (1969-1970) the child at that age is old enough to choose whether or not to eat the food. Seven seems to be a special number in Hausa¹². But perhaps the reason the common wisdom has settled on seven months is that most normal children are able to scoop up things at that age, place them in their mouths and then let go. This means that they can begin to feed themselves with their hands. But upon further probing, many children begin tasting adult foods at five or six months. The foods most often cited as the first food offered to the child are, in order of most frequent to least frequent, koko, the fermented, hot, millet and water liquid gruel, fura, the cold sour skimmed milk and cooked millet mash which is the most common meal of adults, and the millet tuwo (or just its accompanying sauce) usually eaten for the evening meal. Fruit juice and PMI bouillies

dehydration (Dettwyler, 1989a; Mata et al., 1977).

¹² Children begin to eat "food" (or are given the opportunity to reject millet and sorghum) at seven months; babies are named on the seventh day; the fetus becomes a child at seven months; boys are circumcised when they are seven.

are now among the first foods offered to many children of mothers who attend the baby weighing clinic regularly, but they are usually dropped after a short time in favor of traditional Nigerien foods. This section will look at young children's pattern of eating and the use of both traditional and PMI recommended supplementary foods.

Traditional Supplementary Foods

Koko is very often cited as the first food given to children when they begin to taste foods other than breast milk. A woman describes how koko is made as follows:

First you wash the millet, then you pound it and add spices and water and leave it to soak over night. Then in the morning, you wash it and spread it out to dry. Then you carry it to the mill and have them grind it. Then you put it in the mortar and you pound. Then you strain it through a cloth and let it soak again. You strain it again and put it in the cooking pot. When it boils you stir in the water from the bottom. Then you cook it in this water until it thickens. (a grandmother)

Koko takes at least 12 hours to make from start to finish. It utilizes a flour which is much finer than the flour used for tuwo, and the bigger pieces of grain are strained out through several straining steps. The grain is allowed to soak in water overnight or during the day if it is to be served at night. This produces a hot, liquid gruel which is both very fine in texture and lightly fermented in taste.

Koko is the preferred first drink after sunset during the month long fast because it is warm and soothing and does not hurt the empty stomach when the fast is broken. This means that koko is made every day in almost every home

during Ramadan, the way fura is during the rest of the year. During the fast the koko in Sabon Gari is made spicier by the addition of dill, cayenne, cloves, ginger and sugar. Breast-feeding children are often given koko daily during the fast to make up for the fasting mothers' dwindling breast milk, as a mother explains, "Now that my breast milk has decreased, koko is what I offer her". After the fast, people no longer make koko in their homes and in some villages it is no longer sold by street vendors. But in Sabon Gari each neighborhood has its koko seller during much of the year to provide for the men who drink koko every morning for breakfast. Because it is associated with Ramadan and is fairly complicated to make, it is not something mothers are willing to add to their daily chores throughout the year. Those who can afford to buy koko already prepared and who are convinced that it is necessary for their children, buy it for their youngest child¹³ throughout the year.

Milk and millet form the most commonly consumed dish in Hausaland, fura. Fura takes the entire morning to make and can involve one to three hours of arduous pounding, depending on how much fura is needed that day (during farming season large quantities are sent to the fields for

¹³ For a child under one year they usually buy 15 francs CFA of koko and 10 francs worth of sugar, for a total of 25 francs for the child's breakfast. For an older child they would buy koko for 25 francs and add 15 francs worth of sugar.

the workers). The process involves pounding millet into flour, adding water, and forming softball-sized balls of dough. These balls are boiled in a pot of water, then pounded again. Then the dough is placed in a large calabash, skimmed sour milk is added and mashed into the dough, and water is added to reach the correct consistency.

Fura is said to make one fat and women sometimes pat their tummies after taking a large drink of fura to illustrate this idea, but this reputation seems to be based upon the resultant protruding stomach and the temporary feeling of fullness from consuming a lot of liquid at once, rather than an increase in body fat from consuming a lot of a high calorie food. There are two things which may limit the amount of nutrients that anyone actually receives via fura. The first is that the milk in fura, at least in Sabon Gari, is always skimmed, meaning that it is low in calories and devoid of vitamin A (World Health Organization, 1976, p. 35). The milk is allowed to sit overnight; in the morning the cream is skimmed off and used to make butter. Butter is very expensive, about the same price that one pays in the refrigerated grocery store in Niamey for French creamery butter. So those who have a cow or goat sell the butter to get money. Even when told that a child needs whole milk, mothers will rarely pay the extra money it would cost to buy whole milk¹⁴. The second problem is that there is so

¹⁴ Whole milk was seen being sold only to orphans and foreigners.

little actual milk in most people's fura. Villagers say that if you buy your milk from Fulani women, you get the amount of milk that you pay for. But everyone insists that Hausa women who sell milk in town always water their milk down so that the milk is already diluted with water when it is purchased. Most families buy 25 CFA worth of milk per day, about two liters. This is stirred into a huge calabash with the cooked millet balls, and another liter or two of water is added. The mixture is at its best at noon when freshly prepared, but as the day goes on the natural thickening process requires that more water be added and stirred in. When one figures that several people are drinking from this one calabash of fura, it becomes clear that one person, especially a tiny person, is not getting very many calories, even though the drink may be proportionately high in protein.

Fura is considered to be a meal at noon time when it is fresh and somewhat thick. After the noon meal the fura is thinned with water and sipped as a refreshing drink by all family members at any time of day or night. Mothers say that their small completely weaned children wake up once or twice during the night hungry and drink fura, especially if there was no tuwo or other heavy food for dinner the night before. Children who have begun to eat non-breast milk foods are offered fura several times per day, and they learn to love the taste and go to the fura calabash whenever they are hungry.

Tuwo involves pounding millet to make flour and then adding different batches of flour (some finer grained and some heavier) to boiling water by stages, so that very large quantities of flour are incorporated into a small amount of water, making a very heavy porridge which fills the stomach. It is significant that tuwo is said to be "eaten", while kunu and koko are said to be "drunk", even though the ingredients are the same (flour and water) and the preparation of all three involves stirring flour into boiling water. Tuwo is considered an adult food, in fact, the adult food, and the only food which fills the stomach. It is every child's developmental task to learn to eat and become satisfied by tuwo.

Kunu is a traditional porridge which is easier to prepare than tuwo because it simply involves stirring a small amount of fine millet flour into boiling water. The result is lighter and softer than tuwo. According to Abraham (1962, p. 558) the epithets for kunu are "Kunu, mai bata uku (Gruel, waster of flour, water, and wood!) and Kunu na ciki, ku kwana da yunwa (With kunu in your stomach you go to sleep with hunger)". In these epithets kunu is portrayed as a poor substitute for tuwo for the sake of speed and economy of millet. People in the area of Sabon Gari talked about kunu being a substitute for fura among women who didn't like to drink fura all the time, presumably when they were pregnant and the sour taste of fura was difficult for them. Other women talked about making kunu at

the house when their husband was out of town. This means that there would be no millet given by the husband in the morning for his dinner (or theirs) in the evening. If the women and children wanted anything to eat besides fura they would have to use their own supply of millet or their own money to fix something for themselves to eat. Relieved to be freed from the work of preparing tuwo for the husband, but still wanting to eat something more than fura, the women would often take a little of their own millet and prepare the more quickly prepared kunu for themselves.

In many parts of Niger some version of kunu may be the preferred first food for young children, but in Sabon Gari koko seems to fill that role and women did not often say that they had made traditional kunu for their child as an introductory first food. Kunu is the Hausa word used to describe all of the PMI bouillies, apparently because of the preparation, that is, a small amount of flour being stirred into boiling water. When mothers talked about kunu for their young children they were usually referring to one of the PMI bouillies.

The Young Child's Typical Day of Eating

A child of less than six or seven months is given breast milk on demand, drinking water whenever the mother thinks the child is thirsty, sips of fura throughout the day, and tastes of soft food at mealtime or whenever it is available. Most mothers in Sabon Gari begin to offer sips

of fura at six or seven months and as soon as the child gets used to the taste (stops making faces) this becomes a regular part of the child's diet. There is always a calabash of fura sitting in the house and the child goes to it or gestures toward it any time of day when hungry or thirsty, much as the rest of the family, except that the young child must be helped to drink.

Very young Hausa children are often held on their mothers' laps during meals. In this position the child can see and smell every bite of food the mother puts into her mouth. The mother waits until the child shows an interest in the food; then she offers small licks or tastes of sauces and soft foods from her finger whenever she is preparing food or eating a meal. Once the child has begun to taste soft foods the mother may buy a small portion of koko in the morning, add sugar, and begin to give it to her child in sips from a ladle or from a spoon. If the mother attends the PMI clinics she may make the PMI recommended cereals for her baby a few times or for a few weeks until the child is used to eating tuwo. Besides this special soft food in the morning, this small child is still being given tastes of adult food during the day.

Eventually the child moves from the sauce which is on the tuwo to the tuwo itself, first in small bites from the mother's finger, and finally in fistfuls which the child itself digs out of the family pot. Once the child has reached this stage of being able to feed itself from a bowl,

the child will be fed small portions of the adult diet every time the family eats. This would typically be leftover tuwo and sauce for breakfast, fura for lunch, and tuwo and sauce or rice and beans for the evening meal. In addition small children are handed bits of food to eat all day long by other family members. When the child is able to walk around, practically no food is out of reach, and the child spends the day dipping its hand into the mortar and grabbing handful of partially pounded flour or dough, crying and having temper tantrums when snack foods come through the doorway being hawked by neighbor children, and asking for and getting tastes of whatever anyone is seen eating in the household. The snacks eaten depend on the season, as some of the fruits and vegetables are available in the village during only three or four weeks of the year. A few other foods are available to those who can afford them, but those listed below are the frequently mentioned snacks eaten by the children in the study in addition to fura and tuwo and sauce. Typically a child would have a serving of two or three items from this list per day.

Starches:	macaroni with oil
	cassava
	yams
	millet fried cakes
	wheat flour fried cakes or
	doughnuts
Legumes:	bean flour doughnuts
	beans
	Bambara ground nuts
	boiled or roasted peanuts

Nuts and Seeds:	sesame seeds cooked with oil and sugar tiger nuts roasted
Fruits:	mangoes bananas limes oranges guavas <u>Magaria</u> - small native fruit like crabapple tamarind and lime juice drink
Vegetables:	greens of all sorts, cooked and garnished with oil and spices ¹⁵ lettuce salad garnished with oil and spices and sometimes peanut solids tomatoes
Meats:	dried beef cooked beef, mutton, or goat liver head and organ meat

These snacks, when combined with the family staples form the day's food consumption. The following is an example of a day's food for a one year old child in a very poor family at the end of February:

Morning: millet tuwo with indigenous leaf sauce, and butter

Noon: fura

Evening: beans

Snacks: lettuce salad (case #2).

All of the foods in this child's day were probably produced by the family, except for the condiments such as oil, salt, pepper, and garlic. The lettuce was grown by the father in

¹⁵ See Keith (1990) for list of vitamin A rich green leaves (both wild and cultivated) eaten in Sabon Gari.

his dry season garden plot; the beans and millet were grown in the family's fields and the milk produced by the mother's goat. The butter, though usually a luxury, was probably produced by the mother, and was dribbled melted on the tuwo. Considering that the indigenous leaves had been sun dried months earlier, this child's intake on this day is very low in some vitamins and minerals.

The following is an example of a day's food at the same time of year for a one year old child in a family with greater resources:

Morning: corn tuwo and tomato sauce (canned tomato puree)
koko (purchased) with 3 sugars

Noon: fura

Evening: rice and beans (rice must be purchased)

Snacks: cassava
 meat
 lettuce salad
 carrot (case #1).

This family has purchased both rice and corn with which to make tuwo, both considered a luxury to the poorest rural family. The cassava, tomato sauce, and the meat were all purchased, as well as the already prepared koko and sugar. The ability to buy what the Hausas consider snacks, can make the difference in the variety of foods and the nutrients a child receives in a day. This child received four different between meal snacks, cassava, meat, salad, and carrots, all of which were purchased by either the mother or the father, and provide additional calories, protein, vitamins and

minerals.

PMI Recommended Supplementary Foods

The PMI's encourage mothers to give children fruit juice at four months of age. The mothers in Sabon Gari who went regularly to the baby weighing clinic said that they gave their child juice when the PMI staff told them to. When asked if they still give the child juice at an older age, some women responded, "He doesn't need that any more; he's eating food now". The sugar, lime juice, and water solution recommended by the PMI is similar to the bauri solutions the mothers give at birth, and is probably perceived to perform a function similar to that of bauri, that is, as a purgative and stomach cleaner which prepares the child to eat food. Women seem to think that if they give the child juice over a period of two or three weeks, that is all the child needs. It is not seen as a nutritional need that the child has, beginning with the fourth month and continuing on indefinitely.

Sabon Gari is a village with both a dispensary and a Peace Corps volunteer nutritionist. Many women go fairly regularly to the PMI baby weighing clinics, where the nationally developed cereal recipes (Appendix B) are taught to mothers when their children reach the appropriate age. Fruit juice is recommended at four months. The bouillie légère is recommended from four to six months, the bouillie kuli-kuli from six to eight months, etc. The main aim of

these cereals is to use local ingredients, but to increase the calorie density by adding oil and sugar, and to increase the protein density by adding, peanut flour, bean flour, eggs, and milk.

When the child reaches a certain age the mother is told to come back in the afternoon with a pan, flour etc., to learn to make the appropriate cereal for a child of that age. Mothers follow the instructions of the PMI to attend the cereal demonstrations, where they prepare and feed the recipe to the child with a spoon. Then they are expected to go home and make that cereal for the child daily until they are told it is time to learn a new one. Many women report that they made the bouillie légère for their baby and some report making the bouillie kuli-kuli and the purée d'haricots (Appendix B), but very few women make them at home on a regular basis over a long enough period of time to make a nutritional difference.

When asked why they stopped making the cereal mothers say, "She eats food now", implying that the recommended supplementary foods are only to aid the child in learning how to eat. Once the child has begun to eat adult foods (tuwo and fura) the recommended supplementary food is no longer prepared and the child is expected to eat whatever the family is eating. Several mothers said that they made the cereal at the dispensary under the supervision of the Peace Corps nutritionist and the matrones, but they have never made it at their own house. Some women said that they

didn't know that they were supposed to make the cereals at home. Others think that when they are missing one ingredient there is no value in preparing the cereal. When the CARE PL 480 distribution flours¹⁶ were first discontinued, many women stopped making cereals, claiming that either they didn't think the cereals had any value without the PL 480 flours, or that their children had gotten used to the taste of the PL 480 flours and wouldn't eat cereals made with millet.

Often women told me that their child did not like the PMI cereal. When the mother prepares the recommended PMI bouillies, if the child sticks out its tongue or turns its head away, the mother takes that to mean that the child doesn't like it. Then she reports to the PMI staff that "He didn't like it", or "he refused, so I didn't make it for him anymore". In this culture the process of learning to like a food is a very gradual one, with the child in a position to watch the mother carry food past the child's face several times per day, until the child shows interest. Because there is no extra preparation there are no leftovers to throw away even if the baby doesn't like the taste after weeks of exposure. When the child does decide to eat, the food is already there. It only makes sense that if the food is not consumed daily by family members and therefore not

¹⁶ These were American aid powdered milk, wheat, soy, and corn flours and oil distributed by Care International to malnourished children following the drought of 1984, and discontinued at the beginning of this study.

seen by the child, it is not likely that the child will acquire a taste for the food.

Perhaps one reason that the child (or the mother) does not like the PMI cereals is that they are made from non-fermented flour, so that they have a nutty granola-like taste. Nigeriens, however, seem to prefer the fermented taste of koko. The slightly fermented grain taste occurs very often in Nigerien foods; the process of turning grain into flour which begins every morning and takes until noon to complete, involves a number of steps in which water is added to grain, or grain is washed and allowed to sit for a certain period of time with moisture in it.

Government recommended supplementary food is not viewed as meeting an ongoing nutritional need. The case study of the mother who was worried about her daughter losing weight when she terminated breast-feeding (p. 151, lines 121-127) is a good example of the way in which mothers view the recommendation of a special food for nutritional reasons. Balira bought her daughter head meat and other extra foods daily for one week. Organ meats are seen by Hausas as valuable in making a person strong when they are in a vulnerable body state; hence the head meat was undoubtedly chosen for its "strengthening" properties. But when she saw that her daughter was not losing weight, she discontinued the extra foods. This instance illustrates, as did dozens of similar instances observed by the researcher, that even if a food is thought to have special properties of value to

the child's health, it is viewed as a one time prescription; it is not understood that these properties are needed on a long term basis by the child's body.

To some extent the PMI bouillies are viewed as medicine, and some women make the recommended cereal only when their children are sick or losing weight. Then they stop as soon as the child seems to be over the crisis. Hausas put great stock in medicine¹⁷ and will try all different kinds, but medicines are only given when someone is ill and are usually continued only as long as symptoms are still perceived. One of the sample mothers made the PMI cereals in addition to the family food on a fairly regular basis since the child was four months old. This child's situation is different from others in some ways. She gave birth to this child at Galmi Mission Hospital, where she was advised to have the birth if she wanted to save her own life and that of the baby. So the child was treated in an exceptional manner since birth; the mother gave the baby breast milk immediately and she never took any kaikai medicine. When asked why she followed certain modern practices the mother replied, "She's a Galmi baby. They don't do that there", implying that because the child started life under the care of Western doctors, it is appropriate to continue following Western practices with this child. The rules which apply to most Sabon Gari babies

¹⁷ See discussion of magani in Chapters IV and IX.

don't apply to her. She has also had a prolonged case of chronic diarrhea and has been moderately malnourished for months. The mother seemed to view this child's illnesses as Western, since she started life under Western circumstances. Therefore she can only be treated by Western therapeutics.

The most compelling reason why mothers do not make the bouillies recommended by the PMI in the findings of this study, is that children are expected to learn to eat the adult food that is provided by the family daily for its survival. The most commonly heard reasons mothers have given for not making the recommended supplementary foods are some version of the following:

1. "She eats now", meaning she feeds herself with her own hands, implying that she therefore has no more need for the food that has for its purpose to teach her to eat by herself.
2. "He eats food now", meaning that he eats tuwo, implying that once he is living off from our staple food, he has achieved that important developmental step which will help him to survive in our society.
3. "She eats our food now", meaning that she eats whatever we have at the house to eat and therefore she no longer needs to have other special things prepared.
4. "He eats; he gets full", meaning that he gets enough to eat with what we have, implying that the family is meeting its obligation to the child by providing enough food for the child to get full.

CHAPTER VIII

DIARRHEA ILLNESS AND TREATMENT

Diarrhea illness among small children is very familiar to people in Niger; PRITECH (1989, p.81) reports that children have an average of 6.9 episodes of diarrhea per year. Hausa mothers classify diarrhea illness according to the perceived cause, using symptoms, the age and health state of the child and the situation of the mother to identify the cause. This chapter will discuss how diarrhea and dehydration are viewed by the Hausa. Each type of diarrhea will be described in terms of its causes, symptoms, and the traditional treatments specific to the particular cause or diarrhea type. Then both traditional diarrhea treatments and oral rehydration therapy will be discussed, along with the use of liquids and feeding practices. Mothers' treatment decision-making and patterns of treatment will be examined and several case studies will provide examples of how diarrhea episodes are perceived, talked about, and dealt with.

Hausa Views of Diarrhea

Zawo is the Hausa word for diarrhea and tutu and bayan gida (behind the house) mean human excrement in general. But zawo is also used for any kind of bowel movement and sometimes it was difficult to know whether the woman was talking about diarrhea or just normal bowel movements; the

context of the word had to be considered and sometimes further probing was necessary to clarify her meaning. But Hausa women know when their children have diarrhea, usually naming the frequency or consistency of the stools as the telling sign: "He squats all of the time", "He spends the whole day squatting," Bai da musali (There is no limit to it), "If the child has a lot of stools you know that he's sick", and "His stools are like water." Some kinds of diarrhea are recognized by other symptoms: the color and texture¹ of the stool, vomiting, fever, eye infections and skin eruptions which accompany the diarrhea, and the behavior or situation of the mother. Another symptom commonly mentioned by mothers is the idea that the child is limp or weak. The Hausa words used are langube (drooped, flaccid) and lakaikai-lakaikai² (languidly, apathetically). Mothers often say "He just sits there" or "She just lies there", "She has no heaviness (ba nauyi)", or "He is no fun to hold (babu dadin dauka)", describing the weak, limp state of the child.

Mothers are immediately aware of changes in the frequency, consistency, and color of their children's stools because of the way in which a baby's toileting is handled. The mother whose child has diarrhea spends a lot of time

¹ Hausas use words whose sounds suggest the texture and consistency of the stools, such as katup katup and tsalala tsalala, but these are only descriptive and are not used as ways of classifying diarrhea.

² Lakai-lakai in other parts of Hausaland.

cleaning up not only the stools but must also repeatedly wash and dry the piece of fabric used to tie the child to her back. As one woman said, "Mothers suffer when their children have diarrhea".

Diarrhea is seen as a serious health problem and many women identify it as the cause of death of one or more of their children. When asked if diarrhea is a cause of concern women respond that Yana kashewa, (it kills) or Zawo mugun ciwo ne, (diarrhea is a bad illness). Although Hausa mothers see some kinds of diarrhea as less dangerous than others they say that there is no kind of diarrhea which cannot kill "if the child's days are up":

If the diarrhea corresponds with the end of his days the child will die. One whose days have not ended, he, instead (of dying), he will suffer wahala (troubles) if Allah allows him to live (case #1).

Wahala (line 3 above), which Abraham (1962) translates as "troubles", is often used by mothers to describe a child who is really sick with diarrhea, has had diarrhea for a long time, or has become malnourished, as well as to describe people suffering starvation in a famine situation. Wahala in this context seems to suggest a struggle to stay alive, a struggle which can include loss of weight, loss of appetite, chronic diarrhea, and a loss of hope. Sometimes the word is used as a verb to describe the kind of suffering that diarrhea caused the child, Ya wahalashe ta (it gave her trouble or made her suffer). Children often "refuse to eat" when they have diarrhea, worrying the mother because the

child who will not eat wastes away rapidly. "Diarrhea is bad", one mother explained, "because it prevents the child from thriving; it makes the child deteriorate", suggesting that mothers see diarrhea as interfering with the growth of their children. Then informants add "Baka ji dadi" (You are not happy), expressing the mother's distress and feelings of helplessness.

Some kinds of diarrhea are viewed as less serious than others. When asked if there is a kind of diarrhea that one does not worry about women answered "teething diarrhea", and "the small baby kind" referring to the stool of a child who has not yet started solid foods. Most episodes of diarrhea, if they occur during the teething period in the child's life, and if there are no clear symptoms suggesting other diagnoses such as blood in the stool, are first assumed to be caused by teething and are thought to be a normal part of a child's life. Diarrhea blamed on teething is such a common occurrence that it is often not treated until it worsens or until the diarrhea has continued for a long time. The types of diarrhea deemed most dangerous by mothers were dysentery and diarrhea caused by the child drinking the breast milk of a pregnant woman.

Little is known about the Hausa's view of the physiology of diarrhea. Hadiza explains her view:

Because the body has deteriorated the intestine have moved. Diarrhea kills the intestines; the intestines, in turn, they too have deteriorated.

Diarrhea makes the intestines exhausted. Treatment, on the

other hand, seems to involve untying the intestines and freeing them.

Dehydration³-How Is It Perceived?

When asked how they know that their child is really sick with diarrhea mothers respond with some of the following phrases: Yana ramewa, yana lalacewa, yana bushewa, or yana zubewa. Rame means to become thin or emaciated so the phrase translates "He becomes emaciated."⁴; lalace is used for food which has spoiled and has the sense of deterioration, so the phrase becomes "He deteriorates". Bushe and zube have special meanings which may shed light on the Hausa view of dehydration. Bushe means to dry up or to become thin. Women often use the phrase, Jikinshi yana zubewa (His body is pouring out) or Yana zubewa (He is pouring out). When pressed about the meaning of this they insisted that it had nothing to do with the biomedical idea that the child is losing liquids through the diarrhea stools. The image of the body pouring out seems to suggest, rather, that the child's flesh seems to disappear before one's eyes and that the mother feels unable to control what she sees as the rapid disappearance of the child's jiki (body). One informant said, "No matter what the mother does the child's body pours out like water

³ For a biomedical description of dehydration see Chapter II.

⁴ All translations are from Abraham, 1962.

pouring out of a jar." Abraham translates zube as "poured all", "poured out", "leaked or flowed out entirely", "collapsed (wall) or finally as "become emaciated". So diarrhea causes the body to collapse, dry up, pour out, or become emaciated, all of which convey the same idea to the Hausa mother, a loss of flesh. One informant described the loss of flesh this way: "You no longer resemble a human being." Clearly diarrhea has a very strong association for Hausa mothers with the rapid disappearance of the flesh from the body.

Mothers sometimes mention other signs which they notice in their children with diarrhea such as sunken eyes, dry skin "He doesn't sweat!", sunken fontanelle (madiga ba ya motsi [the fontanelle doesn't move] or madiga yana surfi [the fontanelle is sunk]), and decreased urination, although they do not associate these symptoms with a loss of body water. The illness kai (head), is sometimes associated with diarrhea. The kai victim's skull appears to be swollen⁵, the fontanelle stops moving and the illness is thought to be accompanied by headaches. When a mother suspects that her child has kai, she has the child's head shaved so she can observe the skull carefully. If the fontanelle has stopped moving and she can see the three divisions of the skull bone she has the child examined by the kai medicine woman, who

⁵ A nurse theorized that the head appears larger to the mother because the child has become dehydrated and the rest of its body looks smaller by comparison.

presses a finger on the child's forehead; if the impression of the finger remains in the forehead the child has kai. The kai medicine woman then sells the mother a salve made with a secret recipe of medicinal bark powder mixed into a base of mentholatum or similar market salve⁶ and the mother is instructed to rub it on the fontanelle area every day.

Hausa Classifications of Diarrhea: Their Symptoms and Treatments

The Hausas classify diarrhea into several types, according to the cause. This diagnosis is made based upon the symptoms, the age of the child, and the other circumstances surrounding the diarrhea episode, including the body state and behavior of the mother. Each of these types has a set of symptoms and treatments which are related to the cause, although these vary somewhat from one informant to another. There are also herbal teas which are used for any kind of diarrhea, and will be discussed later under treatments. Often one cause is diagnosed and treated without success; then another diagnosis may be made and the appropriate treatment applied. This taxonomy of diarrhea types is an attempt to understand how Hausas view diarrhea and how they attempt to treat it within their own framework of causation.

⁶ A variety of aromatic petroleum jelly salves in small tins are imported from Nigeria.

Teething Diarrhea

Over half of all diarrhea episodes are labeled as teething diarrhea (mataunai or hida hakora), at least until another reason is found. "If we see a child with diarrhea we say it's because he's teething, that is, if the child hasn't yet cut all of his teeth". The symptoms most often given for teething diarrhea are as follows: the stool is described as kamar ruwa (like water), balge-balge (yellowish) or kamar doruwa (light yellow like the locust bean tree), yegwe-yegwe (rope-like) and wari gare (it smells bad). Sometimes it is described as green with yellow ropes or strings or yellow with lighter yellow striations. One woman described these ropes or striations as kamar hatsi ciki (like grains of millet in the stool).

Teething is the most commonly named cause of diarrhea and is viewed as something every child has. When asked if it is dangerous women respond, babu lahani, (This is not a distressing occurrence), An saba da shi (One is used to it). Sai hito (There is nothing to be done except wait until the teeth have come out). This suggests that if the diarrhea is perceived as the kind associated with the cutting of teeth, it is considered somewhat normal. One woman said "A child has to have diarrhea, since the teeth come in one by one". Another mother explained that teething diarrhea may last only for one or two days; then the teeth (wait" and the diarrhea stops. When the teeth start (to move again" the diarrhea starts up again. So there may be several diarrhea

episodes before the teeth finally appear.

There is no medicine for teething diarrhea: Babu maganin wannan, (There is no medicine for this one), except to wait until the teeth appear. One mother explains, "You know what the cause is and you know that it will go away when the child's teeth come in, so there is no treatment necessary." Often when a mother is asked why she has done nothing to treat the diarrhea, her response is to tap her front teeth with her index finger nail and say, "It's because of these". Another mother explains why she doesn't worry:

Teething diarrhea is not so bad. When all of the teeth have come out the diarrhea will stop. Teething diarrhea is red⁷. The child keeps right on growing when he has it (case #1).

Teething diarrhea is not a cause to worry because the stool does not change color, one feels confident that it will go away when the teeth emerge, and the child does not stop growing with this kind of diarrhea.

Although women's first response is that there is no medicine for teething diarrhea they actually take a number of precautions soon after birth to protect their children from the dangers of teething diarrhea. Upon further probing informants continue, "Sai tawada boka", "You have to buy an

⁷ Ja wur is translated as scarlet, although red is often used to mean various shades of brown. This suggests that these women who describe teething diarrhea as red see it as a normal colored stool, and therefore not one to worry about.

amulet from the traditional medicine person". A tawada⁸ is a folded up or tied up white string inside a leather pouch on a leather belt, karho, which is tied around the child's buttocks. This amulet works because the medicine person ties up a string and in doing so Yana darma zawo (he ties up or stops the diarrhea). This is accompanied by incantations or special words which in this case come from the animist tradition, rather than the Moslem tradition. Usually these amulets are purchased before the child begins to cut teeth and are worn until the last teeth have appeared. Many mothers buy their tiny babies a necklace made by the Fulanis. This is a string with tiny white beads alternating with knots in the string, and is worn around either around the buttocks or the neck. The principle here is the same: the knots in the string protect the child by tying up the diarrhea.

One informant describes the roles of the traditional medicine person and Allah in stopping teething diarrhea as follows:

"If the tawada does not stop the diarrhea, in that case Allah alone can stop it by making the teeth come in. Then we say Allah healed him. If the teeth come in aren't we happy? If you have tied on leather belts with amulets sometimes Allah in that case cooks us

⁸ Tawada is translated by Abraham as "ink", which is usually used in amulets made by priests, but is probably extended here to include any leather encased amulet. The cost of this service can be 25, 50, or 100 francs.

(dafa)⁹ until the diarrhea stops. The diarrhea begins to stop. Allah makes it stop. Then there isn't any more diarrhea" (Hadiza).

The idea here is that one first tries the traditional treatment; if that doesn't work then it is up to Allah to stop the diarrhea by making the child's teeth come in. Another informant said "We keep our eyes on the diarrhea until Allah ends it. Sometimes if you wear the belt Allah will stop the diarrhea". Another woman reinforced this idea that if the amulet doesn't work then there is nothing else to be done, "The karho that you buy early in the child's life, is the only real medicine for teething diarrhea. There isn't any other".

Teething sometimes manifests itself in conjunctivitis. During the windy dry season women often point to a child with an eye infection and say that the child is cutting teeth. One woman explains that sometimes teething "comes out as diarrhea and sometimes it comes out as eye illness".

On the one hand teething is a very threatening time in a child's life and precautions are taken to protect the child from its dangers. On the other hand teething diarrhea is considered normal and requires no treatment. Many women report waiting a week or more into the diarrhea episode before seeking treatment because they waited to see if the

⁹ The use of heat in treating diarrhea is explained in the next section on zahi. Heat, in Hausa thinking, is therapeutic for young children and symbolically protects them, as applying heat signifies that they are not yet cooked and therefore not yet ready to eat (kill) (Darrah, 1980).

teeth would "come out". When the child showed no signs of cutting teeth, they searched for another explanation and sought another treatment.

Diarrhea Caused by Zahi

Zahi, meaning "heat", is the name for a vague Hausa illness which has a long list of symptoms including diarrhea, especially that containing mucous or blood, dysentery¹⁰ (diddira), constipation, swollen stomach (kumburi), heartburn, hemorrhoids, stomach ulcers, stomach aches, and other burning sensations originating in the stomach and lower abdominal area. Although this illness is often associated with the hot season and can be provoked by a person working too long in the sun or not getting any fresh air; it is not heat from an outside source that makes one sick. Heat is thought to be in people all of the time because the production of heat by the internal organs is what leads to the digestion of food, first by dissolving and then by rotting the food (Darrah, 1980). Digestive problems occur when something in the stomach does not dissolve and forms a lump, and constipation, according to Darrah, is caused by eating several foods which are not compatible with each other. So heat causes digestion; not enough heat causes indigestion and constipation; and too much heat causes diarrhea. When someone has some of the above

¹⁰ Gudun dawa (running to the bush) is another word for diarrhea associated with zahi.

symptoms it is said that "zahi ya taso mai", the zahi rose up in him. Zahi can rise in the young child from being left on the mother's back all day without getting enough air or from being on the mother's back in the sun for long periods of time. Zahi is also provoked by eating too much of the following foods: fats, meats with fat, oils and anything oily, peanut products, sugar and anything sweet, certain deep yellow (or red) fruits such as mangoes, and red pepper.

In Darrah's findings ashes were applied to the stomach, providing heat "in the caustic sense", causing the congestion to dissolve, the idea being that heat causes digestion and more heat is needed to remedy indigestion. The traditional treatment in Sabon Gari for the various symptoms of zahi usually include drinking soap (sabunin¹¹ salo), which consists of tennis ball sized black lumps made from millet ashes (the caustic "heat" element) and animal fat. These are dissolved in a bowl of water and the bubbly mixture is drunk, both to apply heat and to cleanse the stomach or the gut of "dirtiness". The other approach to the treatment of zahi caused problems is to counteract the heat by drinking foods which are considered to be "cooling" and which diminish zahi, such as water, limes or oranges, milk and fura made with sour skimmed milk. A plant called nonon kurciya (*Euphorbia hirta*) or nonon tsuntsuwa, (the climbing plant *Alchornea cordata*) (Abraham, 1962), is used

¹¹ Sabulu in other parts of Hausaland.

as an antidiarrhetic for adults and is thought to be very effective against dysentery. Other plants used for zahi medicine are tsa, oua, and Kirya (the tree *Prosopis oblonga*), all barks sold by traditional medicine people.

Hausas believe that if the person has too much zahi, then the diarrhea becomes diddira (dysentery); in other words dysentery is caused by a really bad case of zahi. Mothers are very frightened by diddira because young children so often die when they have it. In two of the three deaths of children in the sample, diddira symptoms appeared as a secondary illness just a few days before death. For one child this followed cerebral malaria and the other probably initially had strep throat. The diddira stool is described as very hard to pass, "you squat a lot but there is very little stool", with mucous and blood, and accompanied by stomach cramps and suffering. During the rainy season children seem to have a lot of diarrhea, especially diarrhea with the above symptoms. Nowadays mothers in Sabon Gari are aware that diddira requires Western medicine and if they can afford the shots they will seek them.

Diarrhea Caused By The Cold

Cold is thought by the Hausas to take away one's vigor and to kill blood in the body and can cause swelling and death (Darrah, 1980). Diarrhea during the rainy season can be the result of the mother sleeping on the cold damp ground

at night. This makes her breast milk cold which gives the nursing child diarrhea. The main symptom of diarrhea caused by cold is "frothiness" or foam, "like soap bubbles" in the stool. Hausas say that when "sanyi ya rika zuciya", (the cold grabs your chest), you have phlegm or mucous in your chest, your nose, sometimes in your eyes (this results in conjunctivitis) and foam in your stool, all caused by the cold. "If you see foam in the stool, in that case you say mucous has entered the intestines", one woman explained, suggesting that the phlegm entered the intestines from the chest.

The first treatment for this diarrhea is to stop sleeping outdoors in the cold with the child. Other treatments involve purging the excess mucous from the body (usually by consuming potash in food or adding it to herbal teas), applying heat to remove congestion as in the treatments for zahi, washing the stomach and guts of impurities by drinking medicinal soap, and drinking various teas with guava leaves, lime juice, and numigin goro (Abraham calls this "false kola nut"). These teas tend to be made with hot water when the cause is the cold. Sometimes a katala, or antidote, is purchased from a traditional medicine person and made into a tea.

The cold is removed from the body through excretion or vomiting, which means that if a person sees mucus in his or her stool or starts vomiting the treatment is working. Pimples or sores are also a sign that the medicine is

working, as the illness which was inside is now coming out to the exterior where it can be seen and dealt with. One informant describes the role of these medicines in healing the person with diarrhea as follows:

You have to take hot water and lime juice if cold has grabbed your chest. You put in a little potash and guava leaves and false kola nut. Then you let it soak. You give it to them.

If the baby vomits and has diarrhea, then in that case you say that Allah has healed him, he has gotten relief. The chest loosens up. If you see that he vomits then you say that he is relieved and is getting better.

If he doesn't stop the diarrhea and vomiting then we say that it has become an illness.

If he only vomits and has diarrhea once then his intestines have started to be at ease. His chest has been relieved. His intestines have been relieved. They have received their head [One informant translated this as, "They have been liberated and they can now do what they want "].

The idea here seems to be that phlegm is congesting the chest and the intestines and needs to be expelled in order to get relief. Vomiting will clear the chest and diarrhea will clear the intestines. It is interesting that in this case vomiting and diarrhea are viewed as a sign that the body is cleansing itself of the illness and are not a cause to worry unless they continue. The elimination of unwanted phlegm in the body is also done by drinking such things as boiled animal urine, and vinegar. Animal urine given in small amounts is thought to eliminate the mucous from the chest or stool and putting urine in the nostrils will help to "blow out the mucous" from a head cold.

Diarrhea Caused By Pregnant Woman's Breast Milk

One of the most dangerous diarrheas in Hausa thinking is that caused by the newly pregnant mother continuing to breast-feed the weanling beyond the first three months of pregnancy. The symptoms of this type of diarrhea are white stool (the color of breast milk) and rapid weight loss. Usually this kind of diarrhea is diagnosed only after the child becomes ill after the cessation of breast-feeding. Then if the child has chronic diarrhea and becomes emaciated, it will be said that the mother left the child on the breast too long into the pregnancy.

Some traditional treatments for the child who has drunk mugun nono (bad milk) are roots of the sabara and dusushiya plants made into a tea. Much attention is given to preventive measures such as Koranic writings and charms, however, especially if the mother knows she has gotten pregnant too soon and she feels the child is not emotionally or physically ready to be taken off the breast.

Diarrhea Caused By Anago

During Ramadan, the month long Moslem fast, adults and consequently nursing children of fasting mothers are said to experience anago, meaning that one is used to eating or drinking something every day and then goes without it. Diarrhea or any illness, including conjunctivitis and stomach aches experienced by the child during the fast will be blamed on anago. The symptoms of anago-caused diarrhea

are milk-colored watery stools -- again the color of the diarrhea is related to the cause of the diarrhea or the missed breast milk. Presumably there is also no medicine for anago-caused diarrhea, except to wait until the fast is over and the mother begins to eat and drink again. When asked what she intends to do about the diarrhea, the mother often responds, "When we are eating again".

Another instance of anago-caused diarrhea, it was explained to me, can occur during the months of cultivation, if mothers are working in the fields and are so busy working that they forget to stop and nurse the baby. When the baby finally nurses, the sediment is stirred up from the bottom (gurbacewa) of the breast, causing the child to have diarrhea. Thus anago appears to lead to zahi because when the child has waited too long to drink, lumps are stirred up and the child gets indigestion from lumps in the milk. This apparently is related to the indigestion caused by the lumps in the gut of undigested food which result in zahi. Hadiza explains the relationship:

It's all the work of hunger, of anago. It comes with being hungry. If the mother doesn't eat right away he gets diarrhea- we say anago. Zahi comes up in him. Zahi is caused by anago. Anago is like Azumi. Now you fast, you have a kid you're feeding. He drinks milk, then he gets diarrhea, then he suffers. If he goes a long time without drinking, then he has diarrhea- that's anago.

Not eating things one is used to eating every day can cause diarrhea as can eating things one is not used to.

Diarrhea Caused by Eating Things One is Not Used to Eating

Women often said that a child's diarrhea was caused by eating beans or some other seasonal food that the family had not eaten for a long time. This often happens when mangoes come in season and when meat is eaten in large quantities at Muslim holidays by people who usually eat very little meat. In the case of meat and mangoes, the type of diarrhea which occurs is the type associated with zahi. Unfamiliar foods, foods cooked by someone different, and water from another village are all things which can cause diarrhea because the person is not used to them.

Diarrhea Caused By The Swelling Of The Uvula

Being able to eat enough food is a major health concern of the Hausas and many of the rituals and therapies involve manipulation of the body in order to prepare the stomach or the intestines to properly receive and digest food. The uvula, called the "hakin wuya", or "grass of the throat" is believed to swell up at some point in a person's life and prevent proper consumption of food if not removed. In some regions of Niger, it is apparently removed on the baby's naming day, when other surgical procedures are performed by the barber. In Sabon Gari the mother waits until the child has an episode of diarrhea and vomiting before removing the uvula.

The symptoms of this kind of diarrhea vary but everyone agrees that vomiting is a symptom. If the mother suspects

that it is the uvula which is causing the diarrhea she will take the child to the woman who diagnoses uvula problems. If this woman says it is the uvula which is causing the diarrhea, the mother will then take the child to the barber. For a tiya of millet, the barber removes the uvula. A special curved knife is pressed against a stick (like a tongue depressor) and clips off the fleshy pouch. One of the 24 sample mothers lost a child when this operation was performed, although barbers say that if the child dies after the operation, it is from another cause.

Because of the metaphorical parallel in the Hausa belief system between the human reproductive system and the alimentation system, there is a parallel between the uvula and the hymen and their perceived functions. The Hausas believe that in order for the female child to mature to adulthood and be able to have babies, the hymen must be examined and if it is deemed to be too large at birth, clipped¹². In Sabon Gari this is done on naming day. If the hymen is not clipped, the Hausas believe, it may some day swell up and prevent the woman from having intercourse and becoming pregnant.

Similarly, the uvula is seen as an impediment to the proper functioning of the digestive system. If not removed, it may swell up and prevent the child from properly consuming food and becoming fat and healthy. If the uvula

¹² This study found no evidence that the Hausas do any kind of clitoral circumcision of the female.

begins to swell up it is feared that the inflamed uvula can burst and drain and if the pus inside is swallowed by the child it will cause death. Everyone believes in the necessity of removing the uvula for the proper development of the child and that its removal stops a certain kind of diarrhea. Barbers, villagers, and mothers all said that as soon as the uvula is removed, the diarrhea goes away. When asked how long after the operation the diarrhea continued, mothers gave a range of from one to three days.

People in Sabon Gari do not seem to be aware that everyone is born with a uvula and do not seem to look inside the throat to see if the uvula is really there or if it has really swollen. Hausas believe that only witches, who often prey upon little children in their search for tender young souls to eat, can know what is inside the human body. Instead of looking inside the throat, the woman who specializes in this diagnosis touches the forehead of the ill baby with her finger. If the finger leaves a depression in the forehead the uvula has come in or started to enlarge and needs to be removed. One mother said that Allah did not give her daughter a uvula. Barbers said that there are people who reach adulthood not having had problems with their uvulas. Then, even at age 30, they can develop a severe case of vomiting, signaling that the uvula has swollen and must be removed. In Sabon Gari, most children have their uvula removed between the ages of three to eight months, usually during an episode of vomiting and diarrhea.

The barbers said that they would not perform the operation while the child was sick, but many mothers said that the uvula was removed while the child was having an episode of vomiting, diarrhea, and sometimes fever.

Diarrhea Caused By Stepping Over Pot Black

Another kind of diarrhea not often mentioned is called gulbi or gurbi, (depression in the ground). This is caused by the mother with a baby on her back stepping over the depression left in the sand by the cooking pot. Women say that when you take a cooking pot off from the fire and place it in the sand you should always take care to invert the pot - otherwise it leaves a round depression in the sand that is black from the charred outside of the pot. If the mother unknowingly steps over this black depression with the new baby on her back, the baby will have black or very dark green watery diarrhea which forms a round puddle resembling the charred depression in the sand. This kind of diarrhea is said to be accompanied by stomach pains and a lot of crying. One treatment is to take the baby's stool, put it in a little depression in the ground and then set a very hot cooking pot on top of the stool to "remove the gurbi".

Diarrhea Classified as "Na Allah"

Some diarrheas are classified as those "na Allah" (of Allah), which signifies that there is no known organic or behavioral cause. Sometimes this designation is used after other treatments have been tried and failed.

Traditional Treatments for Diarrhea

The treatments above are specific to each cause of diarrhea: diarrhea caused by heat requires heat or cold for its treatment, for example. There are also traditional herbal teas which mothers make at home and give for any kind of diarrhea. The most often named traditional tea in this village is made from a plant called dusushiya. Branches and leaves are purchased already dried and soaked in water over night or picked fresh and boiled and the child is given the resultant tea to drink until it is gone. Sometimes other plants are added including miyar tsauna, guava leaves, and nonon tsunsuwa, which seems to be known widely in Niger as an effective antidiarrheal. Homemade dusushiya tea is mentioned most often as an appropriate treatment for teething diarrhea:

What we say is that if a child has teething diarrhea. We must go out and pick dusushiya, we put it in water until it boils, we give it to the child. Then his gut stops having diarrhea (case #21).

The purpose of traditional teas is to stop the diarrhea. The dushushiya tea recipes I was shown were approximately a liter of water and most mothers seemed to make the recipe every two days. The majority of women made the recipe about three times or until the diarrhea was gone, meaning that the child was given the solution for about six days. It is not clear whether the water is always boiled; it may be that this depends on whether the leaf is fresh or dried. Mothers give the solution a few spoonful at a time

in the morning and in the evening. During the heat of the sun, women say, the solution of indigenous plants is too bitter to give the child. The traditional teas are also thrown out after two days and a new batch is made, because the solution turns bitter. Because mothers usually have to go to the bush to gather the plants themselves, they often confessed to me that they had not yet made the solution two or three days into the diarrhea because they had not yet found the time to gather the plants. Dushushiya is a plant that grows in low areas where water rests on the surface of the ground for a while after the rainy season is over, and one mother took me to the place where it has always grown to show me that it has become too dry in the last few years and the women now have to travel further to find the plant.

Oral Rehydration Therapy

The vast majority of the mothers in this village are aware of the homemade ORT or sugar salt solution (Appendix A) since very few have not attended the baby-weighing clinics. Many women have heard of the SRO packets (Appendix A) but they were only available at the dispensary for about 4 months during this research. In spite of their knowledge of ORT a very small percentage of the mothers in Sabon Gari uses one of these treatments as the first step at the onset of every diarrhea episode.

I asked many women to show me or tell me how they made the solution and found that in general, those who have

learned to make it at the dispensary and who are continuing to make it at home make it correctly and with acceptable proportions of the ingredients. A few women, however, when asked how it is made, begin to recite cereal recipes or in other ways give the wrong measures of ingredients. When pressed these women admit that they have never made the solution at home themselves. When asked where they heard the recipe these women say either that they watched a neighbor make it or that they were at the dispensary when the demonstration was going on but they did not make it at the dispensary with their own hands.

When asked how they give ORT women do not think in terms of chronological periods of time; rather the vast majority say that they give the child "as much as she wants" and "as often as she wants". The easiest way to ascertain how much solution was given was to ask women to show me how much was left in the pot. Most women were told by either the PMI or the dispensary nurse to give one liter of solution per day, but a large percentage did not give the entire liter to the child. Women understand very well the instructions given at the PMI to throw out the left over solution at the end of the day. In fact many throw out solution instead of giving it all to the child, and I found a number of mothers who did not put the correct number of sugar cubes in the formula because they knew their child would not drink the entire liter and they were reluctant to spend 15 CFA per day and then throw half of it out.

Traditional teas given as diarrhea medicines have as their purpose to stop the diarrhea. This expectation that the medicine should stop the diarrhea is extended to the oral rehydration solutions, even though ORS does not decrease the stool and often increases it. The matrones tell the mothers that the ORS will stop the diarrhea. When questioned, the matrones say that ORS stops the diarrhea sooner than the traditional solutions. Among those who make the solutions there is a perception that the solutions stop diarrhea, and that they do this faster than the traditional remedies. Perhaps the women who use them have had the experience of the diarrhea stopping within a short time after giving the solution. Following this logic it may also be that the women who have stopped making the solutions were discouraged because the diarrhea did not decrease, or even increased when they gave the solution.

Women hearing about ORT for the first time asked me if it was all right to give children "that much sugar". Further probing revealed that three sugar cubes in one batch would be considered all right, but eight cubes in one recipe, it is feared, will lead to the illness zahi and cause the child to have more diarrhea. When I asked women familiar with ORT how they felt about the recipe with the eight sugars most mothers said that the salt and the liter of water counteract the effect of the sugar. Some also said that when the dispensary recommended putting a little lime juice in the sugar salt solution they felt comfortable

because lime juice¹³ also counteracts the sugar. After asking many women about this issue I came to the conclusion that in general women worry about it the first time they hear the recipe, but once assured that the salt and water counteract the sugar and are needed by the child, the zahi-causing property of the sugar does not prevent the women from making the recipe. Hadiza (the matrone) suggested one additional property required in the diarrhea medicine:

The sugar is all right as long as it is dissolved. You know you don't want to leave the sugar in lumps on the bottom. If it is dissolved it will not do anything (Hadiza).

She is apparently again referring to the association between zahi and lumps of undigested food. This may be sufficient rationale to encourage women to boil the water used for the solution, as boiling would assure that the granular sugar dissolved completely.

Other Biomedical Treatments

Although the use of antibiotics, antiinfectives, and other drugs is not advised except in cases of bloody stools with fever, ganidan¹⁴ and charcoal were given in probably 2/3 of the cases which reported the diarrhea episode to the dispensary during this study, as the following typical dialogue illustrates:

¹³ Lime juice has cooling properties in the Hausa system of hot and cold.

¹⁴ sulphonamide

- Nana: When she started diarrhea, what did you give her?
- Woman: I didn't give her anything, Allah healed her.
- Nana: What did you do?
- Woman: I took her to the dispensary and they gave her whites and blacks (ganidan and charcoal¹⁵).
- Nana: Then what happened?
- Woman: Then the diarrhea stopped.

In general ganidan and charcoal are highly respected both by health professionals and by the women, who report that this treatment stops the diarrhea.

Liquids and Feeding the Child With Diarrhea

Women in Sabon Gari do not withhold water, breast milk, or food during a diarrhea episode. Neither do they give extra water or liquids or prepare special foods for the ill child. When asked what the child has had to eat or drink during the past 24 hours, the child in the middle of a diarrhea episode will have been offered the usual fare. But the mother will very often say that the child did not want as much to eat or drink during the episode. Mothers offer as much as the child will eat or drink and if the child becomes lethargic or "refuses" food or liquids, she worries, but often does not compel the child to consume liquids or foods.

¹⁵ "White and black" is what people of Sabon Gari call the white pills ganidan (sulphonamide), and charcoal.

Diarrhea Treatment Patterns

Over 150 interviews about diarrhea treatment patterns during a current or recent episode were collected. Some mothers said they went to the dispensary first but when probed further they said that they waited several days before going. When asked why they waited the vast majority responded either that they thought the diarrhea was caused by teething or by anago, both types of diarrhea for which there is no treatment. One woman explains:

I said it was Anago, an affair of this fasting that we are doing. Don't you see that I have no milk? Isn't it inevitable that they get sick? Because the diarrhea was caused by anago. He was fine before the fast. But when the fast started he started having diarrhea (case #9).

Many said they waited a few days to see if the diarrhea would go away before seeking treatment. The following dialogue illustrates women's tendency to wait several days before seeking treatment if they think the child's diarrhea is caused by teething. It also suggests that even though women are aware of ORT, they often still tend to follow the old patterns.

Nana: You waited more than a week before you gave him ORT?

Fatima: Yes.

Nana: Why did you wait?

Fatima: The diarrhea would come and then it would go away. I said that it was teething diarrhea. You know when the teeth are coming in. (She taps her front teeth with her forefinger.) You have to wait until the teeth come in.

Nana: Is that why you didn't give him the ORT?

- Fatima: If your child has diarrhea then we say that's it's teething. Everyone here says that.
- Nana: Then one doesn't give him anything?
- Fatima: We just ignore them.
- Nana: Really?
- Fatima: We just leave him to just keep having diarrhea.
- Nana: Until he gets tired?
- Fatima: Since you (referring to the Peace Corps Volunteer) came, you told people. You said, "Here is the mother of the sick child" (probably implying that the ORT is something that the mother is told to make at home). In the past we didn't know about that. In the past we had to look for a teething amulet. We searched for money to buy the amulet, we put it on the child, around the neck. We didn't know about the other (ORT) (case #1).

Often choices seemed to be based upon the cash available at the moment. Some women said that they sought a traditional treatment first. When pressed to say why they said that they had only enough money for the traditional medicine and they were afraid that if they went to the dispensary they would be asked to buy a more expensive prescription. The treatment pattern for some women is to try a number of traditional remedies and strategies, sometimes following several treatments concurrently. Aboubacar's mother is an example of this pattern of treatment:

Case study #11

Aboubacar had a diarrhea episode from March 1 through March 15. The stool was watery, yellow, frothy, and the baby was vomiting and refusing to eat.

At the same time he had conjunctivitis. The mother, who is divorced and has no parents, is having a hard time feeding herself and her child. She reported that for this diarrhea episode she waited and did nothing for one week. Then she prepared the tea made from dusushiya and gave that to Aboubacar for three consecutive days. When asked why she started with dusushiya she said she could not obtain the money needed every day to buy the sugar cubes to make the ORT. After three days of the traditional tea she made a litre of the ORT daily for three consecutive days. Then the diarrhea stopped.

Aboubacar had another episode of diarrhea from April 12 through April 15. His mother called it teething diarrhea and it was watery and frothy with mucous. This time she gave him homemade ORT for three consecutive days and then the diarrhea stopped.

Meanwhile, sometime around the end of April she decided to have his "head looked at." She took him to the "one who looks" and he was diagnosed by this woman as having the illness called kai. She paid the woman 500 CFA and received a jar of black balm made from mentholatum and one or more kinds of pounded tree bark. Aboubacar's mother put the balm on the child's fontanelle area faithfully every day for about four weeks (This meant she had to buy a second batch). When the kai did not seem to go away, she went to another woman who specializes in the illness known as kai and she purchased a similar jar with a similar looking salve, also for 500 CFA, and put it on the child's head for another two weeks.

On May 7 through May 21 Aboubacar had another bout with diarrhea. First the mother went to the PMI and received SRO packets, one each day for three consecutive days. After this she made homemade ORT for seven consecutive days. The diarrhea let up, but then returned. After the diarrhea returned she made him dusushiya for three days.

Finally she had the child's uvula removed on May 21 and the diarrhea stopped.

Some mothers wait to see if the diarrhea will stop.

Then they make traditional teas. When the diarrhea still doesn't stop they go to the PMI. If the diarrhea still does not stop after preparing the ORS suggested by the PMI, they

are referred to the dispensary. Hamani's mother followed this pattern:

Case study #4

Hamani had a month long bout with diarrhea, according to his mother reporting afterward, from about January 15 to February 15. The first week, his mother reported that she did nothing. The second week she gave him the preparation made from dusushiya. The third week she took him to PMI and received SRO packets, which she prepared for him (one per day) every day for a week. The fourth week she was referred by the PMI to the dispensary, where she purchased a prescription for shots. When Hamani had completed the shots, his diarrhea stopped.

Among the 23 sample children, there were 23 diarrhea episodes reported between March 1 and May 31, involving sixteen of the sample children. Nine of the mothers reported making either the SRO packet or the homemade ORT for the child as the first treatment. Three reported making a traditional tea first, two reported buying amulets and charms first. It is difficult to ascertain how many days mothers really wait before they begin ORT or seek other treatment, when they are reporting after the fact. But it seems quite probable that the most usual first treatment is to do nothing for as long as several days.

CHAPTER IX

CONCLUSIONS, DISCUSSION, AND EDUCATIONAL IMPLICATIONS

In this chapter the main conclusions are presented in each of the research areas, feeding, weaning, and diarrhea treatment ideas and practices, and in the area of related factors such as women's roles and hygiene. In the second part of this chapter the potential points of intervention are explored, and a strategy is suggested for prioritizing and negotiating the form and content of the interventions with those who stand to benefit from any changes in practice. Some Hausa ideas about health which could be useful in discussing interventions with Hausa mothers are discussed. Finally recommendations are made for further research including suggestions for implementing this strategy through the Ministry of Health in Niger.

Conclusions

Men are expected to provide the food, clothing, and shelter for their wives and children, but the way in which the familial responsibilities are defined varies among individuals and from one socioeconomic group to another. Although fonctionnaires and wealthy men may consider meat, rice, butter, and occasional fruits and vegetables their responsibility, poor men may view their role as that of providing only the millet and the accompanying ingredients for the staple dishes, fura, and tuwo. When cash is

available, poor men may purchase extras in the way of legumes, tubers, vegetables and fruits in season, and an occasional piece of meat for sauce. When money is in short supply, either the family goes without this variety in the diet or the wife may find a way to buy extra food with her own money. Thus, although the basic staple foods may be prepared with almost identical ingredients in the richest and the poorest families, the family with the larger cash flow will be able to purchase a much greater variety of snack foods. This can mean a much better chance of meeting biomedical nutritional requirements of calories, protein, vitamins, and minerals. The man's cash flow varies greatly from one time of the year to another. A serious illness of the working man in the family or a bad crop can push a family from a position of having enough millet for the year, to a position of not knowing from one week to the next where the family's food will come from.

Women's daily chores of carrying water, fetching wood, and preparing food require them to work most of the day, except for about two hours after the noon meal. In polygamous households women may alternate between days of heavy work and days of relative rest, during which they may pursue their trades or help their co-wives with the work. Most women probably have enough time to prepare a special dish for the child each day, as long as it does not require additional pounding of flour. During the farming season, however, if the woman works in the fields, she may not have

any time to rest or to do anything extra from morning until bedtime.

Some women manage to keep a trade going all year. They may have been given initial capital from their mothers, or they may be very industrious and keep reinvesting their small weekly profits in animals and other investments which can be turned into relatively large sums of cash. The majority of women, however, do not have the capital to pursue an on-going trade. When they need cash for a social obligation, they borrow the capital, make a one time sale of prepared food, pay back the loan, and then do not trade until the next time they need money. Many husbands give their wives a small amount of money each week to meet their needs when the cash is available. In other families, the women may pilfer small amounts of grain or money from the food allowance for their own use. No matter where the money comes from, women's money is theirs to use for themselves, their children, their social obligations, or for the dowry for their daughters.

It is extremely difficult for an outsider to ascertain exactly how decisions are made within the household to purchase extra food or medicine for the children. It appeared, however, that the lack of trust between husband and wife in financial matters could potentially have a negative effect on the nutritional status of young children. Since requests for food money and money for medicine for children must go through the husband, a woman in a

polygamous household may be reluctant to appear to be the wife making the greatest demands. It was not determined in this research whether women who pilfer from the food money allotted by the husband are decreasing the nutritional resources available to their young children. I saw many instances of women selling their possessions or asking friends for loans, trying to get money for medicine. On the other hand it often appeared that women try not to spend their money on medicine and food for their children, as these expenses are viewed as the responsibility of the husband. It is not known how much this waiting for the husband to provide money, rather than using one's own money, delays medical treatment.

The lack of hygiene is a serious problem in most households. It begins with a lack of potable water sources. Lack of knowledge of germ theory and the difficulty of getting water, mean that hand washing is not done routinely before preparing food or after defecation. Soap is considered to be a luxury, valued for its perfume and cosmetic properties. People usually urinate in a corner of the compound and defecate on the ground in the nearest field. In those few village homes where there is a pit latrine, it is rare to see the hole covered to keep out flies. All wells except one, are open and most are surrounded by wandering animals or animals are tethered nearby. The staple foods are prepared once per day, then covered and set aside to be eaten later by those who were

absent at meal time or by children who get hungry between meal times. Besides the issue of sand and dirt blowing into everything the multiplication of pathogens within cooked food in a setting with no refrigeration may be enormous.

Nearly all children in the village breast-feed on demand until age two or until the mother becomes pregnant. The traditional practice of withholding colostrum is changing now, as mothers are exposed to the health facility message to begin breast-feeding on the day of birth. Drinking water, medicinal teas, and sometimes animal milk are given from birth, even when lactation is successful. The majority of pregnant and nursing women fast during Ramadan even though they say that their breast milk decreases and their nursing babies lose weight. This research did not determine whether the total amount of breast-milk produced actually decreased while the mother is fasting. There may be an increase in diarrhea during the fast because children are given additional solid food during the day. Often this is leftovers rather than something prepared fresh during the day, increasing the dose of pathogens consumed.

Environmental and behavioral factors are thought to make the mother's milk turn "bad", leading to diarrhea and sometimes death. Various kinds of bad milk are sometimes the reasons given for the early termination of breast-feeding. The age at which women say that children should stop breast-feeding is two years, but termination often

takes place much earlier. The decision to terminate breast-feeding is based on considerations of the child's psychological and physical readiness as well as the mother's health and situation. Termination of breast-feeding takes place in one day, in order to avoid trauma for the child.

The child's body is prepared for the consumption of breast milk and food through the use of purgatives and surgical procedures at birth. This view that the gut must be prepared to properly consume and utilize food, may influence the way in which weaning foods are viewed later on. Once the child seems to be successfully consuming solid foods, the special soft weaning foods, which may be viewed in part as preparing the child's body to consume food, are viewed as no longer necessary.

Solid foods are introduced by seven months and most children experience a weaning period of 8 - 18 months. Learning to eat solid foods is a socialization process in which the child learns to feed itself and become satisfied with the staple food eaten by the rest of the family. The child is expected to ask for food when hungry and it is the child who decides when it is full. The child regulates its own food consumption and the anorectic child may not be compelled to eat. The liquid foods, koko and fura, are the first non-breast milk foods offered to the child and serve the purpose of getting the child used to eating. Special preparations or extra meals are often not made for the young child, who is expected to eat from the family pot.

The staple, millet tuwo, is synonymous with "food" and people do not feel that they have eaten if they have not eaten tuwo. The purpose of eating is to fill the stomach; the person whose stomach is full has eaten enough; being able to get full is equated with getting fat and being healthy. This view of the role of food has implications for young child feeding. If the mother feels that the child feels full after having drunk a lot of watery fura or after having eaten bulky tuwo, she may not see the value of adding certain ingredients to meet biomedical nutritional requirements.

The family who can afford to may buy snack foods for the child during the day. Children scrounge and beg food from others as well as eat bites of whatever is being prepared at non-meal times. This between meal snacking and nibbling can greatly increase the young child's nutritional intake for the day.

Government recommended supplementary foods are viewed either as medicine or as preparation of the child to eat from the family pot, rather than as having a nutritional benefit. Therefore they are usually not prepared on a daily basis or continued on a long-term basis in addition to the family pot.

Diarrhea is attributed to a number of environmental and behavioral factors, including too much heat in the digestive system, being exposed to the cold, lumps in the breast milk caused by the breast going too long without being nursed,

and the mother having too much sex or becoming pregnant. Teething is blamed for the majority of diarrhea episodes and since teething diarrhea is viewed as normal, treatment seeking is usually delayed, while the mother waits for the teeth to come in or for the diarrhea to show symptoms suggesting another cause. Mothers often use traditional treatments which have as their goal to "tie up" the diarrhea or to protect the child from the dangers of teething.

Dehydration is not viewed as a loss of water from the body, so rehydration is not seen as the appropriate treatment. Water is not viewed as having any role in the body except to quench thirst, so the idea of replacing lost water does not make much sense to most mothers. Traditional herbal teas are given and are expected to stop the diarrhea. ORT is widely known, but not the first step taken in the majority of diarrhea episodes. ORT is expected to stop the diarrhea, and when the diarrhea stops after giving ORT, ORT may have a better chance of being used again by that mother. Traditional treatments and ORT are often given concurrently or one after the other, depending on the money at hand at the time, the perceived cause and the results.

Liquids, breast milk, and food are seldom withheld during diarrhea episodes, but the anorectic child may not be compelled to eat or drink. The mother's reluctance to control what her child consumes by compelling or helping the child to eat and drink must be addressed in any educational strategy dealing with nutrition education or oral

rehydration therapy.

Discussion and Educational Implications

This section proposes a strategy for developing interventions using Jordan's model (1983)¹ in which the form and content of educational interventions are negotiated between the culture which stands to be affected by the change and the culture of the change agent. During the current study this model of negotiating the form and content of interventions was suggested by the way in which the matrones interpreted the Peace Corps volunteer's health messages to the mothers in the PMI clinic. To illustrate how this might work, the findings on each health event documented by this study are discussed first from the Hausa point of view and then from the biomedical point of view. The biomedical criteria of the health or nutrition change agent are compared with the criteria of the Hausa woman, and the most likely negotiable and non-negotiable areas discussed. Then possible ways of negotiating the content and form of interventions are suggested.

A Model for Developing Interventions

The process of change as suggested by Jordan (1983) involves both cultures looking at several possible ways of doing a health event such as child birth or breast-feeding. Then each culture evaluates the other's way of doing things

¹ See p. 43.

using their own criteria based on their own definition of the health event. Each culture decides which elements it cannot give up and which elements are open to negotiation, and a set of procedures or innovations is developed which meets the basic requirements of both systems. This process gives recognition to what is useful in both systems and does it within the local context and with the participation of the people who will be affected by any changes.

The matrones in Sabon Gari worked closely with the Peace Corps volunteer nutritionist (PCV) in the PMI, often assuming the role of interpreter. The PCV spent many hours in conversation with these older women in which they explored each other's cultures and ways of doing things. The matrones would ask the PCV how babies are fed in her culture and why people do things certain ways, and the PCV would ask them the same questions about how and why things are done in Sabon Gari. In this way the PCV's health messages were discussed, the matrones usually trying to grapple with the principles of the biomedical system which the PCV exemplified and trying to fit these into their system in such a way that the principles in their own system would not be violated. At the same time the PCV was trying to reconcile the biomedical standards she had learned in training with the Hausa standards of doing things. The PCV evaluated the Hausa system using biomedical criteria; the matrones evaluated the biomedical system using the Hausa criteria. Although no one intentionally set out to do the

kind of negotiation of interventions that this section is recommending, the matrones nevertheless went through a process of deciding which elements of the PCV's message they could live with and which elements of their own system they could not give up.

The result was that the matrones modified the prepackaged health messages, keeping the non-negotiable elements from both systems. For example, when the matrones used the bauri metaphor to describe the purpose of the first cereal, they had grappled with the principles of two seemingly different health systems and come up with an explanation which fit logically into both. For the Hausas the idea of feeding a child food before the child is developmentally ready to feed itself is surprising. And the idea of poking the food into the child's mouth is contrary to the Hausa views about the child's right to decide when he or she wants to eat. The matrones, however, saw a parallel between bouillie légère, a thin watery drink with a small amount of grain in it, and bauri. Not only do the solutions look alike, but they have a parallel function, in that they both "get the child accustomed to" eating.

So bouillie légère became bauri in the matrones' health messages. This modification of the health message guarded the health educator's non-negotiable point of getting the child used to eating. At the same time it avoided violating the Hausa non-negotiable point that the child should be old enough to feed itself. By calling the cereal a bauri, it

became a medicine which prepares the child to eat. With the issue of breast-feeding, to look at another example, the matrones were willing to give up the three to four day wait to initiate breast-feeding as long as women could still take the kaikai medicine to protect the child.

I am suggesting that if the development of health messages were set in the context of negotiation and compromise from the outset, the results might be much more fruitful in terms of developing interventions which the Nigeriens could live with and would adopt. Instead of one national message determined by the Ministry of Health at the capital, based on biomedical principles and guessing what would be acceptable to the target audience, health educators would learn a process which would involve the participation of the people to be affected by the proposed changes.

Discussion of the Findings

Cultures base their standards for practice for a health-related event on their definitions of the event and any changes which are made in the belief system and practices are grounded in this definition. The health educator's standards of young child feeding, weaning, and diarrhea illness are usually strongly rooted in the medical, physiological, and nutritional definitions of these events. The health educator's intervention, therefore, usually involves changes in hygiene, nutrition, and to some extent, a concern for the psychological effects believed to be

related to mother-child bonding. The Hausa mothers of Sabon Gari, as the presentation and analysis of the findings have shown, do not always share the same views and therefore do not see the same remedy as the biomedically oriented health educator.

In the discussion which follows the findings of this study will first be discussed using what has been learned from the research about the definition and standards for each health event held by the Hausa woman of Sabon Gari. Then the biomedical definition and standards will be reviewed and compared with the Hausa views gleaned from the study. Each culture's non-negotiable points will be discussed and some suggestions made as to areas of possible negotiation and the possible final form and content of interventions. This is not meant to be the definitive word on how Hausas view these health events, as we cannot know without asking Hausa women, what their non-negotiable points might be. This section is rather an attempt to illustrate a step which seems to have been missing in the development of interventions in the past and which could be pursued with Nigeriens in the process of developing interventions. This model allows discussion of the findings in a way which gives credence to the Hausa view, instead of simply summarizing the findings and then discussing the implications from the biomedical view alone. For each of the four health events, breast-feeding, termination of breast-feeding, supplementary feeding, and diarrhea illness, a chart summarizes for the

reader the points made in the discussion.

Breast-feeding

The Hausa definition of the event of breast-feeding has as its priority the assurance of the quality and quantity of the breast-milk, and the preparation of the child's body to be able to successfully consume and utilize breast-milk (see Figure 2). The Hausa technology and procedures are developed within a framework of monitoring the quality and quantity of breast milk and the functioning of the child's body. The quality of milk must be monitored to avoid giving the child dakashi (colostrum) or the illness kaikai, and the mother is given medicine to prevent kaikai. The mother is also given galactogogues to increase her milk production. Preparation of the child's body to consume and utilize breast milk is accomplished through the evacuation of the meconium and cleansing the gut by using purgatives, and by various surgical procedures. Meeting the baby's hunger and thirst needs often are accomplished by giving water and animal milk.

Hausa standards, then, are to avoid kaikai and the dangers of dakashi, to increase the mother's milk production, to remove impurities and impediments from the child's body, to satisfy the baby's hunger and thirst needs and prevent weight loss. The Hausa woman's non-negotiable standards would probably be the avoidance of illness, weight loss, and death of the baby, and the assurance of the

Figure 2. BREAST-FEEDING

Culture	Hausa	Health Educator
Definition of health event	* Ensure quality and quantity of breast milk. * Ensure the ability of the child to consume and utilize breast milk.	* Ensure successful long-term lactation. * Meet nutritional needs of child. * Achieve bonding of mother-infant pair.
Framework for practice	* Mother's body must be monitored and medicine given. * Baby's body must be monitored, purgatives given and surgery performed.	* Physiological and nutritional. * To some extent psychological.
Standards for practice	* Avoid <u>kaikai</u>. * Avoid <u>dakashi</u>. * Increase milk production. * Satisfy baby's hunger and thirst needs and avoid weight loss.	* Ensure successful long-term lactation. * Meet physiological needs of baby. * Meet psychological needs of baby. * Provide protection against infection. * Evacuate the meconium. * Return mother's uterus to normal.
Non-negotiable standards	* Ensure quality and quantity of breast milk. * Avoid illness, weight loss, and death of child.	* Initiate breast-feeding immediately after birth. * Meet child's nutritional needs.
Possible areas for negotiation	* Day of initiation of breast feeding. * Use of animal milk for body. * Possibly others if mothers were shown that colostrum can accomplish removing impurities from baby's body and satisfy hunger and thirst needs.	* No other liquids given during first 4-6 months.
Possible form of intervention	* Give breast immediately after birth: <u>dakashi</u> prevents weight loss and <u>kaikai</u>. * <u>Dakashi</u> has medicine to protect from illness. * <u>Dakashi</u> cleans out the child's gut. * Immediate sucking "pulls" the mother's milk, makes her produce more milk. * Immediate sucking prevents illness of the breast.	

quality and quantity of the breast milk. The negotiable areas for the Hausa woman would probably be the details of how these non-negotiable standards would be met. The Hausa woman, for example, might be willing to be flexible about the day of initiation of breast-feeding, the use of animal milk for the baby, and possibly other areas if she were convinced that her non-negotiable standards were being met.

In the biomedical view the sooner the child is put to the breast the sooner the entire physiology of the breast becomes fully functioning, returning the child to birth weight and possibly even producing catch-up growth for low birth weight babies, furnishing needed protection for the baby against infection, evacuating the meconium from the newborn, returning the mother's uterus to normal, and perhaps most important, enhancing the chances of long-term successful breast-feeding. The probable high number of low birth weight babies in Niger¹ and the frequency with which women complain of breast illness and insufficient milk probably make putting the child to the breast immediately after birth a non-negotiable point for the health educator². Since Hausa mothers do not express the milk, congestion of the breasts can make nursing difficult and

¹ Figures on birth weight are not known except in the case of babies born in hospitals and maternities in the large cities.

² In contrast, Millard has suggested that giving colostrum may not always be important enough nutritionally to warrant trying to change practice in this area (Millard, 1985).

lead to breast infections. A child who because of delayed initiation of breast-feeding does not succeed in establishing successful breast-feeding in a rural village, has a very poor chance of surviving.

Such practices as giving purgatives and traditional medicines could be considered potentially detrimental because they introduce pathogens, but might be negotiable items to the health educator, if the child were getting the full benefits of the early initiation of breast-feeding. The health of the mother and the psychological and economic advantages of breast-feeding are also key elements in both cultures' definitions of breast-feeding.

In the Hausa view putting the child to the breast immediately means giving the first milk, which could lead to death. From a biomedical point of view, however, it could be argued that all of the Hausa standards or requirements could be met by initiating breast-feeding immediately after birth. A few cases of kaikai would probably not be preventable by the implementation of this intervention alone. Low birth weight, umbilical tetanus, and certain other biomedical causes of death soon after birth would require additional interventions.

A compromise might be reached in which the Hausa agree to put the child to the breast immediately after birth as long as they could continue to give kaikai medicine and perform other traditional preventive measures. If information about the role of colostrum in the evacuation of

the meconium and in successful prolonged lactation were included in the health message this might lead to a gradual reduction in the amount of sugar-water currently recommended by the health care providers, and other purgatives given to the child at birth, as well as elimination of the use of animal milk. A reduction in umbilical tetanus and an improvement in maternal nutrition during pregnancy might lead to a decrease in the incidence of kaikai, which should lead to an increase in the adoption of the practice of immediate initiation of breast-feeding.

The fact that early initiation of breast-feeding is being adopted wherever it is recommended suggests that this kind of compromise has been taking place even without anyone intentionally facilitating the process. I would suggest that this change has taken place largely because the Hausa view of the event of breast-feeding and Hausa non-negotiable criteria are closely aligned with those of the biomedical culture; Both cultures have as their main criteria the quality and quantity of breast milk and successful lactation, as measured by the growth of the child. The relatively widespread adoption of this intervention may be because of the clearly visible immediate advantages to the mother and the child, i.e. freedom from pain and fever of congested breasts for the mother and rapid weight gain for the child.

Termination of Breast-feeding

The Hausa definition of the termination of breast-feeding focuses on the socialization of the child (see Figure 3). The child must have learned to feed itself from the family pot without "rebellious" or must be satisfied eating what the family has to offer as food. Physically, the child must be able to feed itself and must be properly utilizing the food as manifested by the child getting full and continuing to grow. The child is also expected to be psychologically ready to forget the breast, making it less likely that the child will have the fatal illness which can happen at the termination of breast-feeding. The Hausa framework for practices at the termination of breast-feeding can therefore be said to be social, physical, and psychological. Early termination of breast-feeding is warranted in the Hausa view if the quality of breast milk is deemed bad. Early termination of breast-feeding may sometimes be indicated if the mother's health or work or family circumstances suggest that it is no longer possible to breast-feed.

The Hausa's non-negotiable points might be the psychological readiness of the child, the degree to which the child has achieved social awareness around eating, and the protection of the child from poor quality breast milk. For the actual day of the termination of breast-feeding the important Hausa standard is that the child should quickly forget the breast with as little trauma as possible.

Figure 3. TERMINATION OF BREAST-FEEDING

Culture	Hausa	Health Educator
Definition of health event	* Child must be ready to feed itself and get full and get fat on adult foods. * Avoid fatal illness at termination of breast-feeding.	* Meet child's nutritional needs with solid food. * Avoid psychological trauma.
Framework for practice	* Physical, psychological, social.	* Nutritional, psychological.
Standards for practice	* Child must be used to eating adult foods. * Child must be eating and getting full on adult foods. * If quality of milk is bad, breast-feeding must be terminated early. * If mother's state or situation warrants, breast-feeding may be terminated early. * Child must be psychologically ready to give up the breast. * Breast-feeding must be terminated abruptly to avoid trauma.	* Child must be ready and able to eat solid foods. * Child must be able to get nutrients needed for growth.
Non-negotiable standards	* Protect child from poor quality breast milk. * Child must be ready.	* Breast-feeding must be decreased gradually before termination to avoid trauma. * Meet child's nutritional needs. * Avoid trauma for child.
Possible areas for negotiation	* Nursing after pregnancy if protection is assured for nursing child.	* Abrupt vs. gradual withholding of breast.
Possible form of intervention	* Probably no change in area of abrupt termination. * Interventions would probably be the same as for supplementary feeding.	

Both the biomedical culture and the Hausa culture of Sabon Gari take into account the psychological and developmental readiness of the child and the health and situation of the mother, in deciding when to remove the child from the breast. For the health educator, the definition of the termination of breast-feeding has mostly to do with meeting the nutritional needs of the young child, and to some extent, the avoidance of psychological trauma in removal from the breast. The biomedical framework for practice, therefore is nutritional and psychological. The standards for the health educator are that the child must be ready and able to eat solid foods so that he or she can get all of the nutrients necessary for continued growth.

The abrupt termination of breast-feeding in one day practiced by the Hausa has as its purpose the avoidance of suffering for the child, which is ironically the same reason given by Western mothers for the gradual withdrawal of the breast. I believe that the issue of abrupt termination of breast-feeding would not be a non-negotiable issue for the health educator.

The non-negotiable criteria for the biomedical culture is that the child's nutritional needs must be met and avoidance of trauma for the child. This is accomplished by the child being used to eating other foods and having sufficient foods available to replace the nutrition formerly provided by the breast milk. For the Hausa mother the emphasis is not on the nutrient value of the food, but on

the child's socialization around the breast and food and the ability of the child's body to consume and utilize the food to grow. The difference, as with the supplementary food discussion, is that Hausas generally do not associate specific nutrients with growth and health. Therefore the goals of the biomedical interventions become the same as those under the discussion of supplementary feeding, that is, increasing the caloric and nutritional content of foods and feeding more often.

Supplementary Feeding

For the Hausa woman in Sabon Gari the period of supplementary feeding is defined largely as a social process which prepares the child to become a member of the family and the community (Figure 4). The child must learn to feed itself to the point of feeling full and getting fat on the food provided by the family. The standards which shape practice have to do with food seeking behavior of the child and the staple character of the food. First, the child must be physically able to feed itself, first by grabbing its mother's hands and then by reaching for and grabbing food and putting it into its mouth. The foods must make the child want more so that the child will feed itself and demand food when hungry. Foods must be those which the Hausa family considers to be appropriate adult food, generally the staple, millet, prepared in the way in which the family prepares it. The food must be available and

Figure 4. SUPPLEMENTARY FEEDING

Culture	Hausa	Health Educator
Definition of health event	* Prepare child to be a member of society. * Assure that child grows.	* Assure normal growth of child. * Meet nutritional needs of child for growth and repair.
Framework for practice	* Socialization. * Assure growth.	* Nutritional, psychological.
Standards for practice	* Child must be physically able to feed self. * Child must want food and actively seek it. * Foods must make child want more. * Food must be acceptable adult food, preferably the staple. * Food must be affordable, available, and not too much work.	* Meet required amounts of each nutrient daily.
Non-negotiable standards	* Perhaps, same as standards for practice, above.	* Sufficient calories. * Sufficient frequency of feeding. * Balanced diet.
Possible areas for negotiation	* Occasional purchase or preparation of foods to prevent certain illnesses. * Occasional purchase or preparation of foods to obtain certain kinds of good health. * Perhaps addition of ingredients to child's foods.	* Which foods are used to supply which nutrients. * Certain aspects of preparation.
Possible form of intervention	* Beans and meat increase the blood and make the child strong. * Buying a child liver and fruit will protect the child from illness. * Feeding more times per day will keep the child from crying so mother can work. * Adding butter and oil to the child's food will help child sleep through the night and make him fat.	

affordable. In short, it is important for the child to learn to eat with the rest of the family from the family pot.

The biomedical definition of supplementary feeding focuses mainly on the nutritional requirements of the human body during the infant and toddler period. The framework in which the health educator develops guidelines for practice is largely nutritional and physiological. According to this biomedical view, the human body requires a complex set of nutrients in certain amounts at a certain frequency and at certain points in the child's physical development.

The biomedical non-negotiable criteria for supplementary feeding have to do with making sure that the child consumes sufficient nutrients to support the rapid growth of the child and to meet the body's needs for catch-up growth and repair during illness. This emphasis on nutrient requirements is so important that the Western mother in many societies sees it as her role to control the quantity and the choice of foods that the young child consumes. To accomplish this the child is fastened into a high chair as soon as he or she is able to sit up. Instead of waiting until the child begins to gesture toward the food out of curiosity or can feed itself with its own hands, he or she is fed with a spoon, foods which are nutritionally recommended at that age or that are thought by the mother to make the child feel full and sleep through the night. When the child makes a face at new or strange food being poked

into its mouth the mother coaxes the child, mixes the strange food with familiar foods the child likes, or in other ways coerces the child to eat foods which she believes that the child needs.

Contrast this with the Hausa view that the child has the right to decide whether or not to eat, and that it is not the mother's place to interfere by poking food into the child's mouth or otherwise coercing the child to eat. If the Hausa child makes a face when offered new foods the mother views this as the sign that the child does not yet want the food or is not yet ready to eat foods and the mother waits until the child decides that it is interested in the food. The most important implications of this are the following: 1) If the food is not consumed by family members daily and therefore not regularly seen by the child, it is not likely that the child will acquire a taste for or begin to demand that food, since the child is allowed to decide when he or she wants to begin to eat. 2) If a child is ill or anorectic mothers may not feel it is appropriate to put food in the child's mouth or in other ways compel the child to eat. The issue of the amount of caretaker control of eating becomes particularly significant when combined with anorexia.

For the Hausa mother the non-negotiable criteria for supplementary feeding might be that the child be able to feed itself to the point of feeling full on the food that is available to the family. For the health educator the non-

negotiable points would be sufficient calories daily at sufficient frequency and a balanced diet which includes appropriate quantities of various nutrients. I would expect that the area of supplementary feeding would be much more difficult than breast-feeding to negotiate between the two cultures, because of the great differences in the explanatory model.

Careful exploration of the areas of commonalities and differences between the two cultures, however, could yield a number of shared values upon which interventions could be negotiated. These might include the high value in both cultures of having a good appetite, getting full so that the child doesn't cry and interfere with the mother's work, seeing children grow fat and strong, and seeing children exhibiting certain signs of good health such as playing, laughing, sitting, crawling, walking, and food-seeking behaviors. The negotiable areas for the Hausa might be the occasional purchase or preparation of snacks for the young child or special foods when the child is sick, occasional purchase or preparation of foods to bring certain kinds of good health or to prevent certain illnesses, or the addition of certain ingredients to the child's portion of the family pot.

A biomedical intervention, for example, might be adding oil to the child's food (Dearden et al., 1980) to increase its caloric content. A Hausa mother might object on the grounds that it is not what the family eats: oil is

expensive and one does not traditionally add oil to koko or tuwo. But the mother's criteria of the child feeling full after eating would be met by adding oil to the child's food. Soft adult foods and thin gruels might meet the Hausa woman's criteria of increasing the child's appetite, especially during illness. Encouraging the mother to buy a daily portion of plant and animal protein foods meet the Hausa criteria of making the child strong. Oils and starches may meet the Hausa criteria of making the child fat. Vitamin and mineral foods may be seen as a way to prevent illness. In the area of feeding the sick child the Hausa mother might find that providing more assistance to her child when he or she is sick might help the child to maintain a good appetite and strength.

Although the multi-mix idea uses foods locally available, they are a separate preparation and are not the family pot. Ways must be found, I believe, to utilize the staple food served to adults as the primary weaning food rather than focusing on separately prepared dishes. And ways must be found to convince mothers to take more control over their children's eating, at least when they are sick.

Diarrhea Illness

For the mother in Sabon Gari, diarrhea illness can be caused by a number of factors: teething, bad breast milk, the mother working too long in the sun, the mother having too much sex, and other environmental and behavioral factors

FIGURE 5. DIARRHEA ILLNESS

Culture	Hausa	Health Educator
Definition of health event	* Diarrhea caused by teething, bad milk, environmental or behavioral factors.	* Physiological; diarrhea caused by pathogens through oral-fecal contamination.
Framework for practice	* Discover the cause; treat the cause.	* Reverse or prevent dehydration. * Maintain growth.
Standards of practice	* Identify cause and give appropriate treatment. If that doesn't work, assume another cause and try another treatment. * Goal of treatment is to get body back to healthy state. Sign of this is the end of diarrhea stools.	* Rehydrate if dehydrated. * Maintain breast-feeding during episode. * Give additional liquid with each stool. * Give extra food during convalescence. * Prevent dehydration with ORS. * Give antibiotics only in case of bloody stool or fever.
Non-negotiable standards	* Diarrhea stools stop. * Child seems healthy: strong, playful, has appetite, etc.	* Prevent dehydration or rehydrate. * Meet child's nutritional requirements.
Possible areas of negotiation	* Type of medicine -- as long as it accomplishes non-negotiable standards above.	* Base of rehydration solution.
Possible forms of intervention	* SRO cleans the gut and stomach (use packets). * Sick children are hungry but are too weak to eat by themselves. They need help to eat.	

(see Figure 5). Hausa practice in the area of diarrhea illness is set within the framework of trying to identify and address the cause of the diarrhea. The standards of Hausa practice are to discover the cause and give the appropriate treatment. If the first treatment does not give the desired result, than another cause will be assumed and another treatment tried. The goal of treatment is to get the body back to a healthy state, as measured by an end to the diarrhea stools, and a return of strength, appetite, and growth. This return to a state of health, including an end of the diarrhea and a strong, healthy, playful child, might be the Hausas' non-negotiable standard, while the type of medicine used might be negotiable.

The biomedical or health workers's view of diarrhea illness is physiological and nutritional. The immediate danger with diarrhea is dehydration from loss of from 2.5% to 10% of body fluids within a few hours through frequent stools and vomiting. The next concern is nutritional. For the health educator, then, the main thrust of diarrhea treatment and the non-negotiable standards are to keep the child hydrated and to meet the child's nutritional requirements. Standards required for treatment are the maintenance of breast-feeding, giving additional liquids with each stool, giving extra foods during convalescence, rehydration if the child is dehydrated, and antibiotics only in the case of bloody stool or fever. Hausa non-negotiable standards of a return of appetite and strength, could be met

by preventing dehydration and meeting nutritional requirements, but stopping the diarrhea would not necessarily result from ORT and additional food. Although it may save many lives, ORT does not reduce the duration of the diarrhea episode nor decrease the stool.

The problem of reconciling these two views is that the Hausas blame the symptoms of weakness, loss of appetite, and loss of weight, on the illness itself. Therefore, for them, the origin of the illness must be diagnosed and addressed with the appropriate medicine. When the illness has been addressed, and leaves the child, then the stool will stop and the child's strength, appetite, and weight will return to normal. Again, the biomedical view is that these symptoms are due to a nutritional and water deficit, brought on by the illness, and aggravated by the fact that the child eats and drinks less than usual. The remedy is to give the child extra liquids and foods.

Hausas have a great concern for the quality and quantity of certain fluids within the body: blood, mucous, breast milk, and sexual fluids. Hausas, however, do not ascribe any role to water in the body, except to quench thirst. Women are very aware of the consistency of their children's stools, although they have not associated watery stools a loss of water from the body. A commonly used educational tool is the gourd doll, which loses water out its bottom (as in diarrhea), as fast as water is poured into the top, (as in drinking). The doll is supposed to help

mothers understand the loss of water in their children when they have diarrhea. This approach has been internalized by the matrones, who now verbalize the idea that one has to replace the water in the body, but I have not seen evidence that the idea really makes any difference in how women behave. Another approach, that of likening the human body to a plant which has wilted from lack of water, does not work either. The use of metaphors in teaching nutrition is very appealing and widely recommended (Nichter & Nichter, 1986). It is important to understand, however, that asking Hausas to think of themselves as plants is not compatible with Islamic teachings or Hausa ideas.

A more effective approach, it would seem to me, would be to appeal to the burdens or difficulties which the mother experiences or sees her child experience, such as: making the stool decrease, making the child want to eat, keeping the child from deteriorating, keeping the child from losing his or her flesh. ORT might be described as cleaning the gut and stomach, which is closer to a Hausa idea about what needs to be done when there are "digestive" problems.

Pamela Schmoll, an anthropologist who is studying Hausa therapy, (as per conversation, Oct. 6, 1990) suggested that talking about replacing blood in the body in cases of dehydration might make more sense than the idea of replacing water.

It might be useful to develop a millet-based ORT for Niger for these reasons: it has been shown to decrease the

stool, it has been shown to be absorbed faster, and the additional nutrients might help to keep the child's appetite at the usual level, helping to avoid the awful wasting which happens to some children. Another approach might be to develop an intervention which urges the frequent feeding of a common weaning food, especially while the child is sick. For the ill child, I believe that something needs to be negotiated about greater caretaker control of feeding, perhaps in order to meet the mother's criteria of keeping up the child's strength and appetite.

Some Hausa Ideas About Health

Magani (medicine) in Hausa has several meanings: 1) medicine as in a treatment for an illness, as the word medicine is used in English, 2) method of obtaining something, as in medicine to help you get money or some other kind of good fortune and 3) means of avoiding or protecting oneself against something, as in medicine to keep others from beating you (Abraham, 1968). Although health educators may feel squeamish about telling people that certain foods are medicine, rather than emphasizing permanent changes in food habits, Hausas have a different concept of "medicine" than Westerners. Indeed, medicine is often used for prevention in the Hausa way of thinking.

To illustrate, the curative meaning can be used in the case of vitamin A in talking about the value of liver to a child or woman who already has dundumi, or night blindness.

Thus the person might be advised to eat 50 CFA of liver every day for two weeks to cure the night blindness.

Maganin dundumi ne, "this is night blindness medicine", suggesting that she has to follow this advice if she wants to be cured.

The preventive meaning of the word magani is very appropriate for talking about the role of vitamins and minerals in the body, that is a protection against a certain illness. For example, in the context of telling a mother about the value of eating liver once per week or of offering children some mango and green leaves every day, maganin dundumi ne, means that eating more of these things will prevent your child from getting night blindness.

The procurement idea of magani can be used to talk about the positive side of the vitamin, in other words, If you increase the amount of these foods in your child's diet, it will make the child stronger or healthier. Then green leaves, mangoes, or liver become maganin karfi (medicine to make you strong) or maganin lafiyar jiki (medicine to make the body healthy).

In putting together a culturally relevant communications strategy educators should try to put health messages in terms which reflect the health concerns of the population. For example, if you are addressing middle class Americans, you might try to find a way in which your health intervention improves physical fitness, lowers blood cholesterol, strengthens the heart, or helps one control

weight. Hausa health concerns are quite different from current Western ideas. Some examples of Hausa health concerns and how they might be used in wording an intervention are the following:

1. Hausa health concern: the quality and quantity of blood in the body

Possible health message: Urging mothers to serve more liver because it "increases the blood," "Yana kara jini".

2. Hausa health concern: having a good appetite or being able to eat enough to get full

Possible health message: Eating fruits and vegetables daily increase one's appetite so that one can eat and get full. In ka ci x kullum, c'est ka ci abinci, ka koshi. (If you eat x every day, then you will eat food and get full).

3. Hausa health concern: getting fat or having a good body

Possible health message: Urging mothers to serve more butter to children or to add oil to greens and other foods because it will make them fat³ (maganin kiba means medicine to make one fat).

These are just a few of the ideas which could be used in developing educational interventions. Others include the many proverbs used by Hausas and an examination of the use

³ Fat eaten with vitamin A makes the vitamin more accessible to the body because it is a fat soluble vitamin.

of metaphors which have the potential for use in the health context. Development of interventions also requires a discussion of the different audiences and their roles in young child health: fathers, grandmothers, gardeners, and village leaders, to name a few. Space does not permit an elaboration of all of these considerations here, but they are mentioned because they should be included in the process of developing interventions.

Recommendations for Further Research

There are a number of specific research needs suggested by this study, such as the need to:

1. Determine the caloric and nutrient of fura, tuwo, dried leaves, and a serving of sauce.
2. Determine the amounts of staple foods consumed by young children per day.
3. Determine if the total amount of breast milk received by a child during the fast during a day decreases or remains the same. Determine if nursing children's weight curves are affected by the fast.
4. Develop a millet-based ORT and/or a cereal or food which mothers would be encouraged to give when their children are sick or have diarrhea.
5. Observe and document children feeding 24 hours per day including detailed observation of feeding styles for each age group and during different situations such as illness of the child or heavy work days for the mother.
6. Study the treatment of malnourished children including the following:
 - factors affecting parental behavior in treatment seeking, feeding.
 - factors affecting the family decision to seek treatment at a hospital or nutritional rehabilitation center.
 - parental behavior and ideas once they believe

that their child will die.

7. Determine how mothers know when the small child is thirsty, and specifically whether or not they perceive increased thirst with the onset of dehydration.

The most important next step suggested by this research is to develop interventions, and to include the Nigeriens in the process, incorporating the strategy outlined in this section. The goal would be to negotiate the content and form of interventions with those who would be affected by them. There is a great need to develop skills among the health service providers at all levels in the areas of local community diagnosis and the development of community-based interventions. Therefore participatory methods should be used in the planning, development, and implementation of these interventions.

I would suggest the following broad steps:

- 1) Compile and examine the results of all child survival research in Niger:
 - a. this study.
 - b. other studies by this author (Keith, 1990, 1991a, 1991b).
 - c. the Africare survey in the Dosso and Diffa Departments (Baptiste et al, 1990).
 - d. the CARE study in Zinder (Swimmer, 1990).
 - e. the 1988 USAID Rapid Ethnographic Assessment in the Niamey Department (Brandstetter & Fishman, 1989).

All of these studies combined should provide a great deal of information on Nigerien attitudes and practice in the areas of young child feeding, weaning, and diarrhea illness. The

gaps could be filled in through a quick ethnographic investigation.

- 2) Select a cadre of health care providers at all levels to be trained in negotiation and development of interventions.
- 3) Train the group in the techniques of quick ethnographic assessment.
- 4) Implement the quick ethnographic assessment to fill in the gaps in information.
- 5) Examine what is known and consider possible interventions.
- 6) Train the group in the process of negotiation outlined in this section.
- 7) Implement the process of negotiating specific interventions at the local level.
- 8) Convene the team to develop interventions.
- 9) Field test the interventions.⁴
- 10) Convene people to share information from different parts of the country, looking for similarities which might be useful for national campaigns including radio and television messages.

⁴ Griffiths et al. (1988) outline a process for developing and testing interventions in the area of feeding during diarrhea illness.

GLOSSARY OF FRENCH AND HAUSA WORDS

FRENCH - Note: Some of these words are unique to African French.

Bouillies - baby cereals.

Canton - district.

Charette - two wheeled cart.

Chef - chief.

Commerçants - businessmen.

Contre saison - off season or dry season (gardening).

Exode - exodus, in West Africa, to leave the country to seek work on the coast.

Fonctionnaires - functionaries or civil servants.

Ganidan - sulphonamide.

Mandat - money order.

Matrones - traditional midwives.

Niébé - cowpeas.

Nime - a large imported shade tree

Nivaquine - malaria medication.

PMI (Protection Maternelle et Infantile) - mother-child protection, refers to mother child health services.

Pépinère - tree nursery

Quinamax - malaria medication.

Quartier - quarter or neighborhood.

SRO - Solution Rehydration Orale - oral rehydration solution (refers to the packets).

HAUSA

Adashi - women's traditional credit associations.

Alhaji - a title given to men who have made the pilgrimage to Mecca.

Alhamdu lillahi - God be praised!

Anago - missing something that you have been used to eating or drinking (particularly milk).

Arziki (azziki) - prosperity.

Azumi - The fast of Ramadan.

Bauri - the general name given for a number of medicinal solutions given to babies at birth.

Baurin itatuwa - bauri made from trees or herbs.

Baurin zamani - modern or progressive bauri.

Bayan gida (behind the house) - human excrement.

Biki - feast.

Bismilla - Arabic formula said on beginning something.

Boka (pl. bokaye) - traditional healer.

Bori - the cult of being spirit possessed.

Bushe - became dry, (or if describing a person) became thin.

Calabash - a bowl made from half a large gourd.

Ci - verb meaning to eat, to have intercourse, and to kill.

Ciki - stomach.

Ciwo - illness or pain.

Cuta - illness, offensive act or oppression.

Daura - tied a thing on to.

Dafa - cooked.

Dakashi - colostrum.

Daji - "bush", jungle, fields, beyond the village.

Daki - room.

Dame - mixed something into a paste.

Dan kanoma - hemorrhoids.

Dan rurrutsa - child of a woman who becomes pregnant before the nursing child is weaned from the breast.

Danye - unripe or raw.

Diddira - dysentery.

Dundumi - nightblindness, the first sign of vitamin A deficiency.

Dushishiya - indigenous plant used in Sabon Gari as diarrhea medicine for children.

Fadama - marshy ground, used to mean watered gardens.

Fulani - ethnic group know as Peule in French, or the speakers of Fulfulde.

Fura - sour milk millet mash.

Gasa - grilled meat.

Gobe - tomorrow.

Goyo - baby carried on the back.

Gulbi or gurbi - depression in the ground, also the name for a certain type of diarrhea.

Gunku - a woman whose menses do not return before pregnancy.

Gurbace - sediment that has become stirred up from the bottom.

Habaci - a kind of innuendo used between co-wives.

Hauka - crazy.

(Hida) Fitar da - take something out, used in Sabon Gari for the cessation of breast feeding.

(Hida) Fida hakora - teething.

Hanji - intestines.

Ilimi - knowledge, especially of Muslim Theology.

Isa - is or was sufficient.

Ja wur - scarlet.

Jiki - body.

Kai - head, and a childhood illness involving a splitting head.

Kaikai - infant illness.

Kala - gleaning the fields.

Kanwa - potash, natron, or saltpeter.

Karfi - strength.

Karho (karfu) - leather belt.

Kasari - the water that pounded millet is washed in.

Kashe - killed.

Kawa - Woman's close woman friend.

Katala - antidote.

Kayan dadi - snacks.

Kayan daki - things of the room (bed linens, pots and pans etc.).

Koko - hot, spicy, slightly fermented semi-liquid millet gruel.

Koshi - became replete.

Kubli - Aderawa variation of "kulle", meaning locked, or keeping a woman in purdah.

Kulikuli - peanut solids left over after the oil has been removed.

Kumburi - swelling.

Kunu - traditional millet cereal.

Kurji - sores, pimples, pustules and rashes.

Kwarakare hanji - to dip out small remaining liquid.

Lada - reward.

Lafiya - health (good health).

Lalace - a spoiled.

Lalame - the millet drink consumed by the parturient after child birth.

Laya - amulets with verses folded up inside.

Limam - head Muslim priest.

Mabugi - convulsions which accompany cerebral malaria.

Madiga - fontanelle.

Magani - medicine

Magori - medicine sellers who travel to other countries to sell their wares.

Maha - see mabugi.

Mai gida - head of the household.

Mai magani - medicine sellers.

Malam - Muslim priest (pl. malamai).

Mata - women or wives.

Matunai - teeth or teething.

Mugu - bad, evil.

Mugun nono - bad milk.

Nono - breast milk, breast, or sour skimmed animal milk.

Ramce - borrow for a short time something which itself is not to be paid back.

Rame - became thin or emaciated.

Rika - grab or hold.

Rubutu - act of writing and water resulting from washing Koranic verses from a wooden board.

Rurrutsa - conceiving before the previous child is weaned.

Saba - become accustomed to.

Sabara - *Guiera senegalensis*, a medicinal plant.

Sabunin salo (sabulun salo) - indigenous soap drunk as medicine.

Sana'a - one's trade or profession.

Sanyi - damp coldness.

Santi - the tradition which holds that eating can make people say things which have hidden meanings which may embarrass the speaker.

Sha - drank.

Talakawa - peasants.

Tasha - station, stopping place for buses and bush taxis.

Tawada - ink or Koranic writing.

Tiya - a standard measuring calabash or bowl, which holds about two and one half kilos (5½ lbs) of millet.

Toya - fried.

Tsaba - threshed grain.

Tutu - human excrement.

Tuwo - millet staple starch.

Ungozoma (pl. ungozomai) - midwife.

Wahala - troubles.

Yaji - pungent spices such as cayenne, cloves and ginger.

Yan bori - spirit mediums.

Yaye - weaned from breast-feeding.

Zahi - heat, illness caused by heat.

Zaure - entrance hut (Men who are not members of the family may enter here, but may not go any further into the interior of the compound.).

Zawo - diarrhea.

Zawoce - defecate.

Zuba - poured.

Zuciya - heart.

APPENDIX A

ORAL REHYDRATION SOLUTION (ORS) RECIPES USED IN NIGER

APPENDIX A
Oral Rehydration Solution (ORS) Recipes Used in Niger

The following are the two recipes which are referred to repeatedly in this report. Both recipes should be made with boiled water.

Homemade Sugar Salt Solution

This is the homemade solution which women are taught to make in their homes for their children when they have a diarrhea episode.

- 1 liter of water (the standard small enamel sauce pan filled to the level of the handles)
- 2 pinches of salt (each pinch must be made with three fingers)
- 8 sugar cubes

Packet or sachet (SRO)

This is the prepared packet that is distributed through the health facilities in Niger when it is available.

- 1 liter of water (same measure as above)
- 1 packet

APPENDIX B
GOVERNMENT RECOMMENDED BABY CEREAL RECIPES

APPENDIX B
Government Recommended Baby Cereal Recipes

These are the standard baby cereal recipes recommended by all PMI's throughout the country. Bouillie Légère is referred to in this dissertation.

Bouillie Légère (light cereal)
1/2 ladle of grilled flour (millet)
6 ladles of water
3 pinches of sugar
1 pinch of salt

Bouillie Enrichie au Lait de Vache (cereal enriched with cow's milk)
1 ladle of grilled flour
3 ladles of water
3 ladles of fresh milk
3 sugar cubes

Bouillie Enrichie au Torteau d'Arachide (cereal enriched with peanut solids)
1 ladle of millet flour
6 ladles of water
12 ladle of peanut solids flour
3 sugar cubes

Bouillie Enrichie au Jaune d'Oeuf (cereal enriched with egg yolk)
1 ladle of millet flour
6 ladles of water
1 egg yolk
3 sugar cubes

Bouillie a la Farine de Nièbé (bean flour cereal)
1 ladle of millet flour
6 ladles of water
1/2 ladle of bean flour
1 ladle of peanut solids flour

Bouillie au Bouillon de Légumes (cereal with boiled vegetables)
1/2 ladle of grilled flour
6 ladles of boiled vegetables and leaves in season: green papaya, carrot, green mango, eggplant, onion, manioc, sweet potato leaves
3 sugar cubes
1 pinch of salt

REFERENCES

REFERENCES

- Abraham, R. C. (1962). Dictionary of the Hausa Language (2nd. ed.). London: University of London Press.
- Adam, J. G., Echard, N., & Lescot, M. (1972). Plantes médicinales Hausa de l'Ader, République du Niger (Aderawa Hausa medicinal plants [Niger Republic]). Journal d'Agriculture Tropicale et de Botanique Appliquée, Travaux d'Ethnobotanique et d'Ethnozoologie, 19, (8-9).
- Albino, R. C., & Thompson, V. J. (1956). The effects of sudden weaning on Zulu children. British Journal of Medical Psychology, 29, 177-210.
- Arberry, A. (Trans.) (1955). The Koran. Oxford: Oxford University Press.
- Aziz, K. M. A., Hasan, Z., Patwary, Y., Rahaman, M. M., & Aziz, K. M. S. (1981). A study of interpersonal spread of human faeces in rural Teknaiff of Bangladesh. Dhaka, Bangladesh: International Center for Diarrhoeal Disease Research, Bangladesh.
- Baptiste, K., Chapko, M., Keith, N., & Jones, P. (1990). Baseline child survival survey in Dosso and Diffa (Niger). Niamey, Niger: Africare.
- Barkow, J. H. (1973). Muslims and Maguzawa in North Central State, Nigeria: An ethnographic comparison. Canadian Journal of African Studies, VII (1), 19-76.
- Barkow, J. H. (1972). Hausa women and Islam. Canadian Journal of African Studies, 6 (2), 317-328.
- Barlow, K. (1984). The social context of infant feeding in the Murik Lakes of Papua New Guinea. Ecology of Food and Nutrition, 15, 61-72.
- Barrell, R. A. E., & Rowland, M. G. M. (1979). Infant foods as a potential source of diarrhoeal illness in rural West Africa. Transactions of the Royal Society of Tropical Medicine and Hygiene, 73, 85-90.

- Bentley, M. E. (1988a). Ethnographic field guide: Preliminary one-month ethnography dietary diarrhea management project. In Nutrition Communication Project: Rapid Ethnographic Assessment Supplementary Readings. Washington: Academy for Educational Development.
- Bentley, M. E. (1988b, April). Sociocultural factors involved in an intervention to improve weaning practices in Kwara State, Nigeria. Paper presented at the workshop, Improving Infant Feeding Practices to Prevent Diarrhea or Reduce Its Severity: Research Issues, sponsored by Johns Hopkins University and the World Health Organization, Baltimore, MD.
- Bentley, M., Pelto, G. H., Straus, W. L., Schuman, D. A., Adegbola, C., De La Pena, E., One, G. A., Brown, K. H., & Huffman, S. L. (1988). Rapid ethnographic assessment: Applications in a diarrhea management program. Social Science and Medicine, (Summer).
- Black, R. E., Brown, K. H., Becker, S., Alim, A. R. M. A., & Merson, M. H. (1982a). Contamination of weaning foods and transmission of enterotoxigenic *Escherichia coli* diarrhoea in children in rural Bangladesh. Transactions of the Royal Society of Tropical Medicine and Hygiene, 76 (2), 259-264.
- Black, R. E., Brown, K. H., Becker, S., Yunus, M. (1982b). Longitudinal studies of infectious diseases and physical growth of children in rural Bangladesh. American Journal of Epidemiology, 115 (3), (March), 305-314.
- Black, R. E., Merson, M. H., & Brown, K. H. (1983). Epidemiological aspects of diarrhea associated with known enteropathogens in rural Bangladesh. In L. C. Chen & N. S. Scrimshaw (Eds.), Diarrhea and Malnutrition: Interactions, Mechanisms and Interventions (pp. 73-86). New York: Plenum Press.
- Bogdan, R. C., & Biklen, S. K. (1982). Qualitative Research of Education: An Introduction to Theory and Methods. Boston: Allyn & Bacon.
- Brandstetter, R., & Fishman, C. (1989). Final report: rapid ethnographic assessment of infant feeding, August 29-October 2, 1988. Report of the Nutrition Communication Project in Niger (United States Agency for International Development Contract No. 936-5113; DAN-5113-Z-00-7031-00). Washington, DC: Academy for Educational Development.

- Briend, A. (1985). Normal fetal growth regulation: Nutritional aspects. In M. Gracey & F. Falkner (Eds.), Nutritional needs and assessment of normal growth (pp. 1-18). New York: Raven Press.
- Briscoe, J. (1979). The quantitative effect of infection on the use of food by young children in poor countries. American Journal of Clinical Nutrition, 32, 648-676.
- Brown, J. E. (1977). Finding the causes of protein-calorie malnutrition in a community. Part II: Notes on researching community food practices. Environmental Child Health, (October), 251-253.
- Buzzard, S. (1984). Appropriate research for primary health care: An anthropologist's view. Social Science and Medicine, 19 (3), 273-276.
- Cairolì, M. L. (1988). Purdah compared: Female seclusion in Morocco and northern Nigeria. Unpublished master's thesis, New York University.
- Callaway, B., (1984). Ambiguous consequences of the socialisation and seclusion of Hausa women. The Journal of Modern African Studies, 22 (3), 451-467.
- Cameron, M. & Hofvander, Y. (1983). Manual on feeding infants and young children. Dehli: Oxford University Press.
- Campbell, J. (1988). Training program in rapid ethnographic research: Infant feeding (Contract no. 936-5113 DAN-513-Z-00-7031-00). Niamey, Niger: United States Agency for International Development.
- Carlioni, A. S. (1981). Sex disparities in the distribution of food within rural households. Food and Nutrition, 7, 3-12.
- Cassidy, C. M. (1980). Benign neglect and toddler malnutrition. In L. S. Greene & F. E. Johnston (Eds.), Social and biological predictors of nutritional status, physical growth, and neurological development (pp. 109-139). New York: Academic Press.
- Cassidy, C. M. (1985). World-view conflict and toddler malnutrition: Change agent dilemmas. In N. Scheper-Hughes (Ed.), Child survival: Anthropological perspectives on the treatment of children (pp. 1-25). Boston: D. Reidel.

- Chen, L. C. (1983). Interactions of diarrhea and malnutrition: Mechanisms and interventions. In L. C. Chen & N. S. Scrimshaw (Eds.), Diarrhea and malnutrition: Interactions, mechanisms and interventions (pp. 3-19). New York: Plenum Press.
- Chen, L. C., Huq, B., & D'Souza, S. (1981). Sex bias in the family allocation of food and health care in rural Bangladesh. Population and Development Review, 7 (1), 55-70.
- Cherian, A. (1981). Attitudes and practices of infant feeding in Zaria, Nigeria. Ecology of Food and Nutrition, 11, 75-80.
- Chung, A. W., & Viscorova, B. (1948). The effect of early oral feeding versus early oral starvation on the course of infantile diarrhea. Journal of Pediatrics, 33, 14.
- Coles, C. M. (1983). Urban Muslim women and social change in northern Nigeria. Women In Development Working Papers, 19. East Lansing, MI: Office of Women In Development, Michigan State University.
- Darrah, A. C. (1980). A hermeneutic approach to Hausa therapeutics: The allegory of the living fire. University Microfilms No. 8026790.
- Dearden, C., Harman, P. & Morley, D. (1980). Eating more fats and oils as a step towards overcoming malnutrition. Tropical Doctor, 10, 137-142.
- Dettwyler, K. A. (1985). Breastfeeding, weaning, and other infant feeding practices in Mali and their effects on growth and development. Doctoral dissertation, Indiana University, Bloomington.
- Dettwyler, K. A. (1989a). Interaction of anorexia and cultural beliefs in infant malnutrition in Mali. American Journal of Human Biology, 1, 683-695.
- Dettwyler, K. A. (1989b). Styles of infant feeding: Parental/caretaker control of food consumption in young children. American Anthropologist, 91 (3), 696-703.
- Dewalt, K. M., & Pelto, G. H. (1977). Food use and household ecology in a Mexican community. In T. Fitzgerald (Ed.), Nutrition and Anthropology in Action (pp. 79-93). The Hague: Ban Gorcum.

- Echard, N. (1975a). L'experience du passé: Histoire de la société paysanne Hausa de l'Ader. L'Etudes Nigeriennes, 35. Niamey, Niger: Institute de Recherche en Sciences Humaines.
- Echard, N. (1975b). Répertoire historique des communautés rurales de la Province de Tawa (République du Niger). Paris: Institut d'Ethnologie.
- Escobar, G. J., Salazar, E., & Chuy, M. (1983). Beliefs regarding the etiology of infantile diarrhea in Lima, Peru. Social Science and Medicine, 17, 1257-1269.
- Faulkingham, R. (1970). Political support in a Hausa village. Dissertation, Michigan State University, East Lansing, MI.
- Glaser, B. G., & Strauss, A. L. (1967). The discovery of grounded theory; strategies for qualitative research. Chicago: Aldine Pub. Co.
- Glik, D. C., Parker, K., Muligande, G., & Hategikamana, B. (1986-1987). Integrating qualitative and quantitative survey techniques. International Quarterly of Community Health Education, 7 (3), 181-200.
- Goldman, A. S., & Smith, C. W. (1973). Host resistance factors in human milk. Journal of Pediatrics, 82, 1082-1090.
- Gorden, R. L. (1980). Interviewing: Strategy, techniques, and tactics. Homewood, IL: Dorsey Press.
- Grant, J. P. (1990). The state of the world's children 1990. Published for UNICEF. New York: Oxford University Press.
- Griffiths, M., Piwoz, E., Favin, M., & Del Rosso, J. (1988). Improving young child feeding during diarrhea: A guide for investigators and program managers. The Weaning Project, Manoff International, for Technologies in Primary Health Care (PRITECH), Management Sciences for Health. Washington, DC: PRITECH.
- Guldan, G. S. (1988). Maternal education and child caretaking practices in rural Bangladesh. Doctoral Dissertation, Tufts University, Boston, MA.
- Hammersley, M., & Atkinson, P. (1983). Ethnography: Principles in practice. New York: Tavistock.
- Hill, P. (1969). Hidden trade in Hausaland. Man, 4 (3), 392-409.

- Hill, P. (1972). Rural Hausa: A village and a setting. Cambridge: Cambridge University Press.
- Hogle, J. (1985). Promotion of oral rehydration therapy in Niger. Paper presented at the Annual Meetings of the American Anthropological Association, Washington, DC.
- Horowitz, M. M. (1983). Niger: A social and institutional profile. Binghamton, New York: Institute for Development Anthropology.
- Howard, M. T. (1980). Kwashiorkor on Kilimanjaro: The social handling of malnutrition. Unpublished doctoral dissertation, Michigan State University, East Lansing, Michigan.
- Hoyle, B., Yunus M., & Chen L. C. (1980). Breast-feeding and food intake among children with acute diarrheal disease. American Journal of Clinical Nutrition, 33 (11), 2365-2371.
- Hull, V. H., & Simpson, M. (Eds.) (1985). Breastfeeding child health & child spacing. Cross cultural perspectives. London: Croom Helm.
- Ikhiri, K., Saadori, M., & Garba, M. (1984). Recherche sur la pharmacopée au Niger (Research on the pharmacopia of Niger). Centre d'Etudes Linguistiques par Tradition Orale, Niamey, Niger (Center for the Study of Linguistics through Oral Tradition, Niamey, Niger). UNESCO Contract No. BOC 640.724.3. Niamey, Niger: UNESCO.
- International Centre for Diarrhoeal Disease Research (ICDDR) (1980). Annual Report, 1979. Cacca, Bangladesh: International Centre for Diarrhoeal Disease Research.
- Jelliffe, D. B. (1966). The assessment of the nutritional status of the community. World Health Organization Monograph Series, 53. Geneva: World Health Organization.
- Jelliffe, D. B. (1959). Protein-calorie malnutrition: A review of recent literature. Journal of Pediatrics, 54, 277.
- Jelliffe, D. B., & Jelliffe, E. F. P. (1989). Dietary management of young children with acute diarrhea: A practical guide for district programme managers. Geneva: World Health Organization.

- Jelliffe, D. B., & Jelliffe, E. F. P. (1978). Human milk in the modern world: Psychosocial, nutritional, and economic significance. Oxford: Oxford University Press.
- Jepson, L., Vigil, R. et al. (1984). Drought situation report. United States Agency for International Development (USAID) (Contract No. PN-AAR-220). Niamey, Niger: USAID.
- Jerome, N. W., & Pelto, G. H. (1981). Integrating ethnographic research with nutrition studies. Nutritional Anthropology - Federation Proceedings, 40 (11).
- Jordan, B. (1983). Birth in four cultures. A crosscultural investigation of childbirth in Yucatan, Holland, Sweden and the United States. London: Eden Press.
- Kaur P., Ganguly, R., Reddy, D. C. S. & Rao, N. S. N. (1986). Part 2. Home-made rehydration solutions. In J. A. Walker-Smith & A. S. McNeish (Eds.), Diarrhoea and malnutrition in childhood (pp. 233-241). London: Butterworths.
- Keith, N. (1990). A summary of findings related to the consumption of vitamin A-rich foods and suggestions for a communications strategy for Niger. (USAID Contract No. DAN-5113-Z-00-7031-00). Washington DC: Nutrition Communication Project, Academy for Educational Development.
- Keith, N. (1991a). Young child feeding, weaning, and diarrhea illness: Practice in a Hausa village and educational implications. Part I: The ethnographic study. (USAID Contract No. AID-683-0929.83-C-8023-00). Washington, D.C.: United States Agency for International Development.
- Keith, N. (1991b). Young child feeding, weaning, and diarrhea illness: Practice in a Hausa village and educational implications. Part II: Survey of the Dogorawa Canton - June 1989. (USAID Contract No. AID-683-0929.83-C-8023-00). Washington, D.C.: United States Agency for International Development.
- Keilmann, A. A., & McCord, C. (1978). Weight for age as an index of risk of death in children. Lancet, 1, 1247-1250.

- Kendall, C., Foote, D., & Martorell, R. (1984). Ethnomedicine and oral rehydration therapy: A case study of ethnomedical investigation and program planning. Social Science and Medicine, 19, 253-260.
- Keusch, G. T. (1983). The epidemiology and pathophysiology of invasive bacterial diarrheas: With a note on biological considerations in control strategies. In L. C. Chen & N. S. Scrimshaw (Eds.), Diarrhea and Malnutrition: Interactions, Mechanisms and Interventions (pp. 45-72). New York: Plenum Press.
- Konno, T., Kutsuzawa, T., & Suzuki, H. (1983). In vitro cultivation of human rotavirus in MA104 cells. In J. Bellanti (Ed.), Acute diarrhea: Its nutritional consequences in children (pp. 31-38). Raven Press: New York.
- Last, M. (1979). Strategies against time. Sociology of Health and Illness, 1 (3), 306-317.
- Latham, M., Agunda, K. O. & Elliot, T. (1988). Infant feeding in Nairobi, Kenya. In B. Winikoff, M. A. Castle, V. A. Laukaran (Eds.), Feeding infants in four societies (pp. 67-93). New York: Greenwood Press.
- Ljungqvist, B. G., Mellander, O., & Svanberg, U. (1981). Dietary bulk as a limiting factor for nutrient intake in pre-school children. 1. A problem description. Journal of Tropical Pediatrics, 27, 68-73.
- Longhurst, R. (1984). The energy trap: Work, nutrition and child malnutrition in northern Nigeria. Cornell International Nutrition Monograph Series, 13. Ithaca, New York: Cornell University.
- Longhurst, R. (1982). Resource allocation and the sexual division of labor: A case study of a Moslem Hausa village in northern Nigeria. In L. Beneria (Ed.), Women in development: The sexual division of labor in rural societies (pp. 95-118). New York: Praeger (Holt, Rinehart and Winston).
- Lozoff, B., Kamath, K. R., & Feldman, R. A. (1975). Infection and disease in South Indian families: Beliefs about childhood diarrhea. Doctoral dissertation. University Microfilms, Ann Arbor, MI.

- Mahalanabis, D. (1983). Feeding practices in relation to childhood diarrhea and malnutrition. In L. C. Chen & N. S. Scrimshaw (Eds.), Diarrhea and malnutrition: Interactions, mechanisms and interventions (pp. 223-234). New York: Plenum Press.
- Mahalanabis, D. (1985). Oral rehydration therapy - physiological basis. In M. Gracey (Ed.), Diarrhoeal disease and malnutrition: A clinical update (pp. 145-157). New York: Churchill Livingstone.
- Marshall, L. B. (Ed.) (1985), Infant care and feeding in the South Pacific. New York: Gordon and Breach Science Publishers.
- Martorell, R., Habicht, J. P., Yarborough, C., Lechtig, A., Klein, R. E., & Western, K. A. (1975). Acute morbidity and physical growth in rural Guatemalan children. American Journal of Diseases of Children, 129, 1296.
- Martorell, R., Yarbrough, C., Yarbrough, S., & Klein, R. E. (1980). The impact of ordinary illnesses on the dietary intakes of malnourished children. American Journal of Clinical Nutrition, 33, 345-350.
- Mata, L. (1985). Environmental factors affecting nutrition and growth. In M. Gracey & F. Faulkner (Eds.), Nutritional needs and assessment of normal growth (pp. 165-182). New York: Raven Press.
- Mata, L. J. (1983). Epidemiology of acute diarrhea in childhood: Overview. In J. Bellanti (Ed.), Acute diarrhea: Its nutritional consequences in children (pp. 3-22). New York: Raven Press.
- Mata, L. J. (1978) (Ed.). The children of Santa Maria Cauque: A prospective field study of health and growth. Cambridge, MA: MIT Press.
- Mata, L. J., Kromal, R. A., Urrutia, J. J., & Garcia, B. (1977). Effect of infection on food intake and the nutritional state: Perspectives as viewed from the village. American Journal of Clinical Nutrition, 30, 1215-1227.
- Mata, L. J., & Wyatt, R. G. (1971). The uniqueness of human milk. Host resistance to infection. American Journal of Clinical Nutrition, 24, 976-986.

- McAnarney, E. R. (1981). The precious dyad -- special requirements of the pregnant adolescent and her fetus. In J. T. Bond, L. J. Filer Jr., G. A. Leveille, A. M. Thomson, & W. B. Weil Jr. (Eds.), Infant and child feeding (pp. 225-237). New York: Academic Press.
- McKee, L. (1987). Ethnomedical treatment of children's diarrheal illnesses in the highlands of Ecuador. Social Science and Medicine, 25, 1147-1155.
- Millard, A. V. (1985). Family planning programs in agrarian societies: Lactation contraception and its policy implications. Occasional Paper Number 6. East Lansing, MI: Michigan State University, Center for Advanced Study of International Development.
- Millard, A. V. & Graham, M. A. (1985a). Abrupt weaning reconsidered: Evidence from central Mexico. Journal of Tropical Pediatrics, 31, 229-234.
- Millard, A. V. & Graham, M. A. (1985b). Breastfeeding in two Mexican villages: Social and demographic perspectives. In V. Hull & M. Simpson (Eds.), Breastfeeding, child health and child spacing (pp. 55-77). London: Croom-Helm.
- Millard, A. V. & Graham, M. A. (1985c). Principles that guide weaning in rural Mexico. Ecology of Food and Nutrition, 61, 171-188.
- Millard, A. V., Ferguson, A. E., & Khaila, S. W. (1989). Agricultural development and malnutrition in developing countries: A causal model of child mortality. Paper presented at the Institute of International Health, Michigan State University, East Lansing, Michigan.
- Ministere de la Santé Publique et des Affaires Sociales (1985). Survey of morbidity and mortality. Niamey, Niger: Republique du Niger Conseil Militaire Suprême.
- Molla, A., Molla A. M., Sarker, S. A., Khatoon, M., & Rahaman, M. M. (1983a). Effects of acute diarrhea on absorption of macronutrients during disease and after recovery. In L. C. Chen & N. S. Scrimshaw (Eds.), Diarrhea and malnutrition: Interactions, mechanisms and interventions (pp. 143-154). New York: Plenum Press.
- Molla, A. M., Molla, A., Sarker, S. A., & Rahaman, M. M. (1983b). Food intake during and after recovery from diarrhea in children. In L. C. Chen & N. S. Scrimshaw (Eds.), Diarrhea and malnutrition: Interactions, mechanisms and interventions (pp. 113-124). New York: Plenum Press.

- Munir, M., Mustadjab, I., Rampengan, T. H., & Wulur, F. H. (1983). Problem of infant feeding practices: Implication for immediate action, Paediatrica Indonesiana, 23 (1-2), 32-46.
- Murray, M. J., & Murray, A. B. (1979). Anorexia of infection as a mechanism of host defense. American Journal of Clinical Nutrition, 32, 593-596.
- Nations, M. K., & Rebhun, L. A. (1988). Angels with wet wings won't fly: Maternal sentiment in Brazil and the image of neglect. Culture, Medicine and Psychiatry, 12, 141-200.
- Nations, M. (1982). Illness of the child. Unpublished dissertation, University of California, Berkeley.
- Nichter, M., & Nichter, M. (1981). An anthropological approach to nutrition education. Newton, MA: Educational Development Center.
- Nichter, M., & Nichter, M. (1986). Health education by appropriate analogy: Using the familiar to explain the new. Convergence, XIX (1), 63-71.
- Nicolas, G. (1960). Un village haoussa de la République du Niger: Tassao Haoussa. Cahiers d'Outre Mer, 13, 421-450.
- Nicolas, J. (1967). Les "juments des dieux" - Rites de possession et condition féminine en pays hausa (vallée de Maradi, Niger). Etudes Nigériennes, 21. Niamey, Niger: Institute de Recherche en Sciences Humaines.
- PRITECH/Sahel, & ORANA (August, 1989). Les maladies diarrhéiques dans le Sahel: Données épidémiologiques et premiers résultats des programmes de lutte (Diarrhea illness in the Sahel: Epidemiological findings and early results of the campaign against diarrhea disease.). (USAID Contract No. DPE-5969-Z-00-7064-00. Project: 936-5969). Dakar, Senegal: PRITECH/Sahel, Management Sciences for Health, and ORANA.
- Pelto, G. H. (1987). Cultural issues in maternal and child health and nutrition. Social Science and Medicine, 6 (25), 553-559.
- Pelto, G. H., (1981). Infant feeding practices in the third world: Beliefs and motivations. In J. T. Bond, L. J. Filer Jr., G. A. Leveille, A. M. Thomson, & W. B. Weil Jr. (Eds.), Infant and child feeding (pp. 191-204). New York: Academic Press.

- Pelto, G., & Pelto, P. (1974). Anthropological methodologies for assessing household organization and structure. In D. E. Sahn, R. Lockwood & N. Scrimshaw (Eds.), Workshop of the Evaluation of Food and Nutrition Programmes (pp. ??-??). Tokyo: United Nations University Press.
- Pelto, J. P., & Pelto, G. H. (1978). Anthropological research: The structure of inquiry. New York: Cambridge University Press.
- Peyre de Fabreques, B. (June 1979). Lexique des plantes du Niger, noms scientifiques-noms vernaculaires (Lexicon of the plants of Niger: Scientific names and vernacular names). Institut National de la Recherche Agronomique de Niger. Niamey, Niger: National Institute for Agricultural Research, Niger.
- Pittin, R. I. (1983). Houses of women: A focus on alternative life-styles in Katsina city. In C. Oppong (Ed.), Female and Male in West Africa (pp. 290-302). London: Allen and Unwin.
- Popkin, B. M., Lasky, T., Litvin, J., Spicer, D., & Yamamoto, M. E. (1986). The infant-feeding triad: Infant, mother, and household. New York: Gordon and Breach Science Publishers.
- Prentice, A. M., Prentice, A., Lamb, W. H., Lunn, P. G., & Austin, S. (1983). Metabolic consequences of fasting during Ramadan in pregnant and lactating women. Human Nutrition: Clinical Nutrition, 37C (4), (July), 283-294.
- Prentice, A. M., Lamb, W. H., Prentice, A., & Cowad, W. A. (1984). The effect of water abstention on milk synthesis in lactating women. Clinical Science, 66, (March), 291-298.
- Puffer, R., & Serrano, C. (1973). Patterns of mortality in childhood. Pan-American Health Organization Scientific Publications #262. Washington, DC: Pan-American Health Organization, 146.
- Rajalakshmi, R. (1979). Gestation and lactation performance in relation to the plane of maternal nutrition/ In H. Asbi & R. Whitehead (Eds.). Maternal Nutrition During Pregnancy and Lactation, a Nestlé Foundation Workshop, Latry/Lousanne, April 26-27. Bern: Hans Huber Publishers.

- Raphael, D. (1979a). Social myths and economic realities about breast-feeding. In D. Raphael (Ed.), Breastfeeding and food policy in a hungry world (pp. 25-36). Academic Press: New York.
- Raphael, D. (Ed.) (1979b). Breastfeeding and food policy in a hungry world. Academic Press: New York.
- Raynaut, C. (1977a). Aspects socio-économiques de la préparation et de la circulation de la nourriture dans un village Hausa (Niger). Cahiers d'Etudes Africaines, XVII (4), 569-597.
- Raynaut, C. (1977b). Circulation monétaire et évolution des structures socio-économiques chez les Haoussas du Niger [Circulation of money and evolution of socio-economic structures among the Haoussa of Niger]. Africa, 47 (2), 160-171.
- Raynaut, C. (1971). Soumara: Notes sur le territoire et l'économie. Centre d'Etudes et de Recherches Ethnologiques. Bordeaux: Université de Bourdeaux.
- Reinhardt, M. C., & Lauber, E. (1981). Maternal diet, breast feeding and infants' growth. Journal of Tropical Pediatrics, 27, 229-236.
- Richards, A. (1951). Land, labor and diet in northern Rhodesia: An economic study of the Bemba tribe. London: Oxford University Press.
- Rohde, J. E., Cash, R. A., Guerrant, R. L., Mahalanabis, D., Molla, A. M., & Valyasevi, A. (1983). Therapeutic interventions in diarrhea. In L. C. Chen & N. S. Scrimshaw (Eds.), Diarrhea and malnutrition: Interactions, mechanisms and interventions (pp. 287-298). New York: Plenum Press.
- Rowland, M. G. (1983). Epidemiology of childhood diarrhea in the Gambia. In L. C. Chen & N. S. Scrimshaw (Eds.), Diarrhea and malnutrition: Interactions, mechanisms and interventions (pp. 87-99). New York: Plenum Press.
- Rowland, M. G. M. (1985). The "why" and "when" of introducing food to infants: Growth in young breast-fed infants and some nutritional implications. American Journal of Clinical Nutrition, 41, (February), 459-463.

- Rowland, M. G. M., & Paul, A. A. (1981). Factors affecting lactation capacity: Implications for developing countries. In J. T. Bond, L. J. Filer Jr., G. A. Leveille, A. M. Thomson, & W. B. Weil Jr. (Eds.), Infant and child feeding (pp. 63-76). New York: Academic Press.
- Rowland, M. G. M., & Whitehead, R. G. (1980). The epidemiology of protein-energy malnutrition in a West African village community: A summary of the work of the Medical Research Council Dunn Nutrition Group 1974-1978. London: Medical Research Council.
- Sack, R. B. (1983). Bacterial and parasitic agents of acute diarrhea. In J. Bellanti (Ed.), Acute diarrhea: Its nutritional consequences in children (pp. 53-66). Raven Press: New York.
- Sahni, S., & Chandra, R. K. (1983). Malnutrition and susceptibility to diarrhea: With special reference to the antiinfective properties of breast milk. In L. C. Chen & N. S. Scrimshaw (Eds.), Diarrhea and malnutrition: Interactions, mechanisms and interventions (pp. 73-86). New York: Plenum Press.
- Sakr, A. H. (1975). Fasting in Islam. Journal of the American Dietetic Association, 67, (July), 17-21.
- Salamone, F. (1969-1970). Further notes on Hausa culture and personality. International Journal of Social Psychiatry.
- Saunders, M. O. (1978). Marriage and divorce in a Muslim Hausa town (Mirria, Niger Republic). Dissertation, Indiana University, Bloomington, Indiana.
- Saunders, M. O. (1980). Women's role in a Muslim Hausa town (Mirria, Republic of Niger). In E. Bourguignon & contributors, The World of Women: Anthropological studies of women in the societies of the world (pp. 57-86). New York: Prager (Holt, Rinehart and Winston).
- Schatzman, L., & Strauss, A. L. (1973). Field research: Strategies for a natural sociology. Englewood Cliffs, NJ: Prentice-Hall.
- Scheper-Hughes, N. (1985). The cultural politics of child survival. In N. Scheper-Hughes (Ed.), Child survival: Anthropological perspectives on the treatment of children (pp. 1-25). Boston: D. Reidel Publishing Company.

- Scheper-Hughes, N. (1984). Infant mortality and infant care: Cultural and economic constraints on nurturing in northeast Brazil. Social Science and Medicine, 19 (5), 535-546.
- Schildkrout, E. (1983). Dependence and autonomy: The economic activities of secluded Hausa women in Kano. In C. Oppong (Ed.), Female and male in west Africa (pp. 107-126). London: Allen and Unwin.
- Schroeder, R. A. (1987). Gender vulnerability to drought: A case study of the Hausa social environment. Natural hazard research, working paper #58. Madison: University of Wisconsin.
- Scrimshaw, S. C. M. (1978). Infant mortality and behavior in the regulation of family size. Population and Development Review, 4 (3), 383-403.
- Scrimshaw, N. S., Taylor, C. E., & Gordon, J. E. (1968). Interactions of nutrition and infection. World Health Organization Monograph Series, 57. Geneva: World Health Organization.
- Smith, M. F. (1981). Baba of Karo: A woman of the Muslim Hausa (1954). New Haven: Yale University Press.
- Smith, M. G. (1957). Cooperation in Hausa society. Paris: International Social Science Council.
- Smith, M. G. (1955). The economy of Hausa communities of Zaria: A report to the Colonial Social Science Research Council. Colonial Research Studies, 16, (vii). London: H.M. Stationery Office of the Colonial Office.
- Smith, M. G. (1960). Government in Zazzau, 1800-1950. London: Oxford University Press.
- Soderhjelm, L. (1981). In J. T. Bond, L. J. Filer Jr., G. A. Leveille, A. M. Thomson, & W. B. Weil Jr. (Eds.), Infant and child feeding (pp. 135-141). New York: Academic Press.
- Sommer, A., Hussaini, G., Tarwotjo, I. & Susanto, D. (1983). Increased mortality in children with mild vitamin A deficiency. Lancet, September: 585-588.
- Sommer, A., Katz, J. & Tarwojto, I. (1984). Increased risk of respiratory disease and diarrhea in children with preexisting mild vitamin A deficiency. American Journal of Clinical Nutrition, 40, 1090-1095.

- Sommer, A., Dijunaedi, E., Loeden, A. A., Tarwotjo, I., West, K. P. Jr., Tilden, R., Mele, L. & the ACEH Study Group (1986). Impact of vitamin A supplementation on childhood mortality: A randomised controlled community trial. Lancet, (May 24), 1169-1173.
- Stewart, R. A. (1981). Supplementary foods: Their nutritional role in infant feeding. In J. T. Bond, L. J. Filer Jr., G. A. Leveille, A. M. Thomson, & W. B. Weil Jr. (Eds.), Infant and child feeding (pp. 123-135). New York: Academic Press.
- Swimmer, K. (February, 1990). Field research on traditional knowledge and practices related to child health care and child feeding, conducted in Margaria and Matamaye Arrondissements, Department of Zinder. Unpublished monograph. A collaborative effort of the Zinder Department of Public Health, Peace Corps Niger, and the Zinder Child Health Project of CARE International. Niamey, Niger: Child Survival Project, CARE, Niger.
- Teitjen, A. M. (1984). Infant care and feeding practices and the beginnings of socialization among the Maisin of Papua New Guinea. Ecology of Food and Nutrition, 15, 39-48.
- Trevor, J. (1975). Family change in Sokoto: A traditional Moslem Fulani/Hausa city. In J. C. Caldwell (Ed.), Population growth and socioeconomic change in west Africa (pp. 236-253). New York: Columbia University Press.
- United States Agency for International Development (USAID) (1978). DAP - Niger: Health sector assessment. (AIDTO-A-06). ADO/Niamey, Niger.
- Van Esterik, P. (1983). Integrating ethnographic and survey research: A review of the ethnographic component of a study of infant feeding practices in developing countries. International programs working paper; 17. New York: Population Council.
- Van Esterik, P. & Elliott, T. (1986). Infant feeding style in urban Kenya. Ecology of Food and Nutrition, 18, 183-195.
- Walker-Smith, J. A., & McNeish, A. S. (1986). Diarrhoea and malnutrition in childhood. London: Butterworths.
- Wall, L. L. (1988). Hausa medicine: Illness and well-being in a west African culture. Durham, North Carolina: Duke University Press.

- Watts, M. (1983). Silent violence: Food, famine & peasantry in northern Nigeria. Berkeley: University of California Press.
- Winikoff, B., Castle, M. A. & Laukaran, V. H. (Eds.). (1988). Feeding infants in four societies: Causes and consequences of mothers' choices. New York: Greenwood Press.
- World Bank (1980). World development report 1980. Washington, DC: World Bank.
- World Health Organization (1976). Vitamin A deficiency and xerophthalmia: Report of a joint WHO/USAID meeting. World Health Organization Technical Report Series: No. 590. Geneva: World Health Organization.
- World Health Organization (1983). Oral rehydration therapy: An annotated bibliography (2nd ed.). Scientific Publication No. 445. Washington, DC: World Health Organization.
- Worsley, A. (1980). Thought for food: Investigations of cognitive aspects of food. Ecology of Food and Nutrition, 2, 65-80.
- Wray, J. D., & Aguirre, A. (1969). Protein-calorie malnutrition in Candelaria, Colombia. I. Prevalence; social and demographic causal factors. Journal of Tropical Pediatrics, (September), 76-98.

MICHIGAN STATE UNIV. LIBRARIES



31293007604261