

FOOD AND  
NUTRITION  
TECHNICAL  
ASSISTANCE

**Development of a Behavior  
Change Communications  
Program to Prevent  
Malnutrition in the Central  
Plateau of Haiti: Results and  
Challenges from a Formative  
Research Study**

Purnima Menon, Cornelia Loechl,  
Gretel Pelto, Marie Ruel, and  
Elisabeth Metellus

September 2002



This publication was made possible through the support provided to the Food and Nutrition Technical Assistance (FANTA) Project by the Office of Health and Nutrition of the Bureau for Global Health and the Office of Food for Peace of the Bureau for Democracy, Governance and Humanitarian Assistance at the U.S. Agency for International Development, under terms of Cooperative Agreement No. HRN-A-00-98-00046-00 awarded to the Academy for Educational Development (AED). The opinions expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Agency for International Development. Financial support for this research is also provided by the Government of Germany, World Vision-Haiti and the World Food Program.

Published September 2002

**Recommended citation:**

Menon, Purnima, Cornelia Loechl, Gretel Pelto, Marie Ruel, and Elisabeth Metellus. *Development of a Behavior Change Communications Program to Prevent Malnutrition in the Central Plateau of Haiti: Results and Challenges from a Formative Research Study*. Washington, D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development, 2002.

**Copies of the publication can be obtained from:**

FANTA Project  
Academy for Educational Development  
1825 Connecticut Avenue, NW  
Washington, D.C. 20009-5721  
Tel: 202-884-8000  
Fax: 202-884-8432  
Email: [fanta@aed.org](mailto:fanta@aed.org)  
Website: [www.fantaproject.org](http://www.fantaproject.org)

# TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	i
1. INTRODUCTION .....	1
1.1. Background .....	1
1.2. Objectives of the formative research .....	1
1.3. Structure of the report .....	2
2. RATIONALE FOR A BEHAVIOR CHANGE COMMUNICATIONS (BCC) STRATEGY TO REDUCE CHILD MALNUTRITION .....	3
3. SUMMARY OF FINDINGS FROM PREVIOUS QUALITATIVE RESEARCH AND IDENTIFICATION OF TOPICS REQUIRING FURTHER INVESTIGATION.....	6
3.1. Infant and child feeding practices .....	6
3.2. Maternal dietary restrictions during lactation .....	9
3.3. Women’s work and childcare arrangements.....	9
4. METHODS .....	10
4.1. Topics addressed.....	10
4.2. Methods used .....	13
4.3. Study communities .....	16
5. RESULTS .....	18
5.1. Breastfeeding .....	18
5.2. Complementary feeding.....	22
5.3. Feeding during illness.....	28
5.4. Maternal diet during lactation.....	29
5.5. Maternal work and alternate childcare use .....	31
6. RESULTS OF RECIPE TRIALS .....	34
6.1. Complementary foods currently fed to infants and young children .....	34
6.2. Modified recipes developed during the recipe trials.....	35
6.3. Nutritional quality of the complementary foods.....	48
6.4. Possible nutritional contribution of WSB .....	54
7. WORLD VISION PROGRAM IMPLEMENTATION.....	56
7.1. Observations at different delivery points.....	56
7.2. Utilization of program services by beneficiaries .....	59
7.3. Roles and responsibilities of health agents and colvols.....	61
8. OPTIONS AND OPPORTUNITIES FOR THE DEVELOPMENT OF A SUCCESSFUL BEHAVIOR CHANGE COMMUNICATIONS PROGRAM IN CENTRAL PLATEAU, HAITI.....	64
8.1. Key behaviors to be targeted in the BCC program.....	64
8.2. Program implementation issues .....	72

8.3. Supporting program activities.....	75
REFERENCES .....	77
Annex 1. Interview Guides .....	79
Annex 2. Recipe Trials .....	91
Annex 3. Recipes of Currently Fed Complementary Foods.....	96
Annex 4. Recipes of New and Modified Complementary Foods .....	98
Annex 5. Map of Haiti Showing Study Area.....	104

## Executive Summary

This report describes the formative research process undertaken in Haiti to assist World Vision in the development of a Behavior Change Communications (BCC) program aimed at the *prevention* of childhood malnutrition in the Central Plateau region. This formative research is part of a larger evaluation being conducted by the International Food Policy Research Institute (IFPRI) and Cornell University in collaboration with World Vision-Haiti, to compare two models for delivering an integrated food and nutrition program with a take-home food ration component. The formative research activities reported here were conducted specifically to produce insights and information for adapting World Vision’s current recuperative health and nutrition education model to the needs of a preventive BCC program. This program will be fully implemented by World Vision-Haiti.

The objectives of the formative research were the following:

- To provide a knowledge base about infant and young child feeding and care that would serve as the foundation for a BCC program;
- To develop, through participatory recipe trials, enriched complementary foods to be promoted in the BCC program using locally available and affordable foods; and
- To identify possible avenues and delivery systems for inserting preventive BCC activities into the current structure of World Vision program activities in the Central Plateau of Haiti.

The formative research activities utilized a variety of qualitative data collection methods. These included individual and group interviews with mothers of young infants, grandmothers, fathers, and World Vision program staff. Participatory group recipe trials were conducted to develop recipes for enriched complementary foods and to discuss their feasibility, acceptability and affordability under real-life conditions in the program areas. Finally, observations of World Vision’s program activities were conducted in the Central Plateau area as well as on the island of La Gonâve to understand the implementation of current program activities and to explore the feasibility of enhancing current educational activities.

Results of the formative research are summarized below with an emphasis on how they relate to the development of the BCC program to prevent childhood malnutrition in the Central Plateau region of Haiti. Three key aspects are addressed:

*Key behaviors:* the research identified specific behaviors that need improvement, as well as positive behaviors that could be reinforced through the BCC intervention; factors that may “facilitate” behavior change were also identified as well as aspects that may affect capacity for behavior change (see Table 1 for a summary of findings).

*Programmatic opportunities:* designing and planning the preventive BCC requires building on existing program structure and activities. This includes identification of program contact points and the design of specific communications approaches and materials for different venues.

*Supporting program activities:* considering the potential constraints to behavior change that were identified in the research, supporting program activities were identified that could help relieve some of these constraints and potentiate the effectiveness of the BCC intervention.

## **Key behaviors**

### *0-6-month-old infants*

Our results revealed that breastfeeding is widespread and highly valued, and practiced mostly on demand, at least when mothers are at home and available to their infant. On the other hand, the widespread use of complementary liquids and starchy gruels often fed with a baby bottle to very young infants raises serious concerns about the potential displacement of breast milk, the resulting nutrient inadequacy of the diet, and the excessive risk of contamination. Teas are often fed to treat colic (*gaz*), while gruels and other liquids are mostly fed when mothers have to leave home either to return to their income-generating market activities or to take care of other household responsibilities. Although the use of expressed breast milk is not common, most women were positive about it and willing to try it, given enough training and information. Interviews with “positive deviant” mothers who had experienced successful exclusive breastfeeding for at least four months showed that factors such as support from family members and/or peers, positive role models in the community, and perceived benefits to the infant were important motivating and sustaining factors. Potential constraints to adoption of exclusive breastfeeding include economic needs, which force women to return to their income-generating activities soon after delivery, and the perception that “breastfeeding all the time” weakens the mother and results in fatigue and reduced energy. These aspects will need to be considered carefully in the design of the BCC program and alternative strategies to address these potential constraints to behavior change will need to be addressed.

### *6-24 month old children*

Some of the encouraging findings related to the feeding of 6-24-month-old children are that continued breastfeeding is normative and the concepts of fluid replacement and continued breastfeeding during diarrhea are well ingrained. However, a number of non-optimal feeding practices, which may result in inadequate energy and nutrient intakes, were identified. In particular, the variety of complementary foods seems low, and micronutrient-rich foods such as animal products, fruits, and vegetables are consumed infrequently and in small amounts. This appears to be due to a lack of household access to these expensive products, especially animal source foods, and to certain cultural barriers regarding the use of some fruits and vegetables for young children. The frequency of feeding also appears lower than recommended, probably due to true economic constraints but also in part to the belief that evening meals cause indigestion in young children. There also seems to be no recognition of the need to increase the number of feedings of complementary foods as children grow older, and as the expected contribution of complementary foods to their nutrient requirements increases. Baby bottles appear to be widely used and breastfeeding may not always be on demand, especially when mothers return to their regular income-generating activities away from home. Cultural constraints to optimal feeding practices will have to be addressed in the BCC intervention, whereas other supporting programs should address the problems of limited access to food and overall household food insecurity.

The recipe trials confirmed that traditional complementary foods are generally low in energy- and micronutrient-density. A number of improved recipes was developed, using traditional preparation methods and ingredients, and adding locally available nutrient-dense foods such as fish, eggs, beans, and vitamin A-rich foods. The most promising recipes from both a feasibility and an economic point of view were the wheat flour gruels enriched with either black beans and dried fish, beans and sugar, or with an egg; and mashed plantain with pumpkin, fish sauce, and oil. Although these improved recipes would allow young children to meet their energy requirements if fed the recommended number of times per day for their age, they still would fall short in helping children meet their iron and zinc daily requirements. Further recipe trials will be conducted to explore other improved preparations, which use donated commodities such as wheat-soy-blend (WSB). This product is particularly suitable for complementary foods because it is not generally liked by adults, although young children do consume it. This makes WSB less susceptible to intrahousehold leakage and allows using the product specifically for the child targeted by the program.

Additional approaches to further increase children's micronutrient intake will be explored, especially because of their crucial importance for children's growth, immunity, and cognitive development.

The collection of information on the psychosocial care aspects of infant feeding was beyond the scope of the present study because of the intensive data collection methods required to obtain reliable and valid data on these aspects of child feeding. However, the principles of psychosocial care will be considered in the development of the BCC program. In addition, the multiple substitute caregivers who take on a variety of childcare responsibilities when mothers are away from home will be considered in planning the delivery of the preventive BCC model. Specifically, fathers, grandmothers, school children, and adolescent siblings will be considered as additional BCC program beneficiaries.

### *Maternal diet during lactation*

The present study revealed the existence of a number of dietary restrictions during lactation, which may affect the quality of the diet of lactating mothers. This in turn could affect their lactation performance. The dominant food proscriptions include avoidance of a number of white-colored foods like fish, milk, white beans, and some vegetables. These restrictions were reported to be particularly important during the first three months of lactation and our interviews with breastfeeding women confirmed that they were adhered to. In the absence of quantitative dietary information, our study did not allow an examination of the implications of these restrictions for maternal energy intake and dietary quality. This issue, however, will be addressed in the future because dietary proscriptions during lactation may affect the quantity and quality of lactating women's diet at a time when their energy and nutrient requirements are particularly high. Moreover, we suspect that these proscriptions may, at least to some extent, be responsible for the concern reported by women about fatigue and weakness resulting from breastfeeding frequently and/or exclusively.

## **Programmatic opportunities for implementing the BCC intervention**

Three main program delivery points are used by World Vision in their program and information was gathered at each one of these delivery points: 1) the Rally Posts (where growth monitoring, immunization, and health education activities are held); the food distribution points (where food commodities are distributed); and 3) the Mothers' Clubs (group meetings held in the communities and used primarily for discussions on health education topics). The goal was to improve our understanding of current health and nutrition education program activities and to identify focal points for introducing our preventive BCC intervention.

Observations at the Rally Posts showed that the weighing and recording of children's weights took up most of the time of health agents and resulted in little interaction with program participants and little or no individual counseling of mothers. Additionally, program education sessions were scheduled at the beginning of the Rally Post, a time when the large majority of beneficiaries had not yet arrived from their long journey to the Post. While the Rally Posts may be a promising entry point for the BCC program, some aspects of program implementation will have to be modified to improve their potential for effective communication with participants. First, the timing of the education session will have to be reconsidered to accommodate the majority of participants. Second, health agents should be trained on the use of communication techniques to improve their skills and interest in this area, and they should be provided with appropriate material to communicate more effectively. Finally, the time allocation of health agents should also be shifted to allow more time for communication and counseling, and less to weighing, charting, and reporting children's weights. It may be useful to consider training a *colvol* (community volunteer) or an assistant mother in weighing children, so that health agents can be freed from this responsibility and can dedicate a larger proportion of their time to the BCC intervention.

The food distribution points were identified as the least promising delivery point for the BCC intervention because of their crowded, busy, and distracting environment. However, the structured progression of beneficiaries through the food distribution system could facilitate the incorporation of a system to distribute brochures, counseling cards, or handouts to beneficiaries based on their child's current age and health status. The venue could also be used to inform program beneficiaries about the proper use of donated commodities and their potential use for preparing enriched complementary foods.

The Mothers' Clubs are an excellent setting for group communication and discussions, and thus a promising venue for the BCC program. However, it will be important to modify current teaching and communication approaches to ensure effective learning and behavior change communication. Specific modifications that could help the process include training health agents and *colvols* in the principles of adult learning, providing visual communication material, and training health agents in providing the group with local and contextual examples to accompany the theoretical aspects of the topics discussed. Also, in addition to the usual classroom-like activities, the sessions could be used to facilitate innovative activities such as participatory recipe trials. The venue could also possibly be used to set in place mechanisms that can *support* behavior change, like peer groups to encourage and support exclusive breastfeeding.

## Supporting program activities

The promotion of resources to support translation of knowledge into behaviors and child outcomes can be achieved by a variety of supporting program activities. Some examples of potential activities that could enhance the effectiveness of our preventive BCC strategy include the following:

- Initiate and support community childcare initiatives to assist working parents with their childcare responsibilities. This type of initiative may also become a source of income for those mothers who run the day care centers. Other initiatives could include identifying a safe spot in markets where substitute caregivers can care for young infants when mothers are attending to their market activities. This would allow market mothers to exclusively breastfeed for the first half of infancy and to continue, on demand, frequent breastfeeding up to 2 years of age and beyond.
- Provide microcredit programs to increase resource availability within households and communities.
- Promote food-based interventions to increase the production and intake of micronutrient-rich animal foods and fresh fruits and vegetables; and explore the possibility of using some preservation techniques such as solar drying to extend the life of micronutrient-rich fruits and vegetables beyond their season of high availability.
- Promote overall poverty reduction programs and activities to increase access to water, sanitation, and health services.

## Next steps

The information provided by this formative research will be used to assist World Vision in the design and development of a BCC program to *prevent* infant and young child malnutrition in the Central Plateau of Haiti. The study findings will be presented at a workshop to be held in Haiti in October 2002, which will involve key decision-makers and program staff from World Vision-Haiti, as well as other stakeholders working in the area of child nutrition in Haiti. The workshop will be used to discuss the design of the preventive BCC program, and more specifically the steps required to fully develop the strategy. This will include planning the production of communication and training material, developing a training curriculum for World Vision staff, and designing the BCC program implementation plan. World Vision will assume all responsibilities related to the implementation of the strategy in the Central Plateau region. The IFPRI-Cornell team will assist in designing the strategy and in developing the implementation plan.

**Table 1. Infant and child feeding practices in Haiti compared to best practices, and constraints and opportunities for behavior change in Central Plateau**

Goals	Practices to promote	Practices in Haiti	Facilitating conditions for behavior change	Issues that may affect capacity for behavior change
<i>A. Infant feeding from 0 to 6 months of age</i>				
<b>Exclusive Breastfeeding (BF)</b>				
<ul style="list-style-type: none"> <li>■ <b>Ensure exclusive BF</b></li> <li>■ <b>Prevent bacterial contamination</b></li> </ul>	<ul style="list-style-type: none"> <li>■ Early initiation of exclusive BF (EBF)</li> <li>■ Feeding of colostrum</li> <li>■ On demand BF</li> <li>■ Avoidance of pre- and post-lacteal feeds</li> <li>■ Using expressed breast milk if needed</li> <li>■ Avoidance of baby-bottles</li> </ul>	<ul style="list-style-type: none"> <li>■ <i>Positive:</i></li> <li>■ BF widely practiced</li> <li>■ Reported to be mostly on demand</li> <li>■ <i>Non optimal:</i></li> <li>■ Pre-lacteals and post-lacteal liquids and gruels widely used</li> <li>■ Complementary liquids and foods introduced at a <u>very young age</u></li> <li>■ Widespread use of baby bottles</li> <li>■ <i>Not enough information:</i></li> <li>■ Timing of initiation of BF</li> <li>■ Colostrum use</li> </ul>	<ul style="list-style-type: none"> <li>■ Experienced, successful positive deviant mothers (who EBF) exist in communities</li> <li>■ Positive deviant mothers had received information from health agents, media, health center staff</li> <li>■ EBF moms report it is cheaper to EBF and child is healthier</li> <li>■ No objection to expression of breast milk – some mothers do it; but training needed</li> </ul>	<ul style="list-style-type: none"> <li>■ Water-based liquids and teas given to treat colic (<i>gaz</i>)</li> <li>■ Gruels given because mothers need leave home for work or other activities</li> <li>■ Mothers' time and employment constraints</li> <li>■ Mothers are concerned about feeling too weak and depleted if they EBF</li> <li>■ Concept of <i>let cho</i> (prevents mothers from breastfeeding, but seems to be only in the short term)</li> <li>■ Milk expression rarely practiced, unknown in some areas</li> </ul>
<i>B. Feeding practices for infants and young children 6-24 months of age</i>				

Breastfeeding				
<ul style="list-style-type: none"> <li>■ <b>Ensure sustained, frequent, on demand BF up to 24 months of age and beyond</b></li> </ul>	<ul style="list-style-type: none"> <li>■ Continue to BF frequently and on demand</li> <li>■ Using expressed breast milk if needed</li> <li>■ Avoidance of baby-bottles</li> </ul>	<ul style="list-style-type: none"> <li>■ <i>Positive:</i></li> <li>■ Mothers traditionally continue to BF up to 24 months of age</li> <li>■ <i>Non-optimal:</i></li> <li>■ Widespread use of baby bottles</li> <li>■ <i>Not enough information:</i></li> <li>■ Mothers may not always BF on demand because of need to leave home for work or other tasks</li> <li>■ Children whose mothers are frequently absent may not receive sufficient nutrients from breast milk</li> </ul>	<ul style="list-style-type: none"> <li>■ No objection to expression of breast milk, but training needed</li> </ul>	<ul style="list-style-type: none"> <li>■ No need for behavior change, but continue promotion of continued BF up 24 months and beyond</li> <li>■ <i>Potential constraints to frequent, on demand BF:</i></li> <li>■ Mothers do need to leave home to work and/or go to markets</li> <li>■ Milk expression rarely practiced, unknown in some areas</li> </ul>

<b>Complementary Feeding</b>				
<ul style="list-style-type: none"> <li>■ <b>Provide foods to complement breast milk and to allow adequate intake of energy and micronutrients</b></li> </ul>	<ul style="list-style-type: none"> <li>■ Feed child special energy- and nutrient-dense foods of appropriate texture and consistency for age</li> <li>■ From 6 months on, gradually increase amounts and quantity of foods as child gets older</li> <li>■ Increase number of times child is fed CF as he/she gets older (at least 2-3 times/d for 6-8 mo old; 3-4 times/d for 9-24 mo old)</li> <li>■ Feed a variety of foods (gradually increase variety with age); animal foods should be eaten daily, or as often as possible</li> <li>■ Practice responsive feeding, applying the principles of psychosocial care (assisted feeding, interactive feeding style, encouragement to eat, etc.)</li> <li>■ Continue to BF and feed CF to child during diarrhea; ensure fluid replacement</li> </ul>	<ul style="list-style-type: none"> <li>■ <i>Positive:</i></li> <li>■ Mothers continue to BF and give liquids when child has diarrhea</li> <li>■ <i>Non optimal:</i></li> <li>■ Complementary foods (CF) of low energy and very low nutrient-density</li> <li>■ No “special” complementary food for child; gruels are consumed by all family members</li> <li>■ Low frequency of feeding CF, child often not fed evening meal</li> <li>■ Frequency of feeding is low (2-3 times/d) and does not seem to increase with age</li> <li>■ Evening meal not fed to young children</li> <li>■ Variety of foods seems low; animal foods consumed infrequently and in small amounts; low intake of vitamin A fruits and vegetables</li> <li>■ Mothers reduce feeding of CF during diarrhea</li> <li>■ <i>Insufficient information at this point on:</i></li> <li>■ Psychosocial care (needs to be assessed through observations, which was beyond the scope of the present study)</li> </ul>	<ul style="list-style-type: none"> <li>■ No cultural barriers to feeding young children animal foods</li> <li>■ Mothers know that eggs, liver are good for child</li> <li>■ Mothers usually feed child when they are present</li> <li>■ Mothers leave prepared food for child when she has to leave</li> <li>■ Fathers seem involved in childcare and feeding</li> <li>■ Good recognition of importance of fluid replacement during diarrhea</li> </ul>	<ul style="list-style-type: none"> <li>■ Lack of availability and access to food, especially animal foods and micronutrient-rich fruits and vegetables</li> <li>■ Overall poverty, lack of economic resources</li> <li>■ Poor access to water, sanitation, health services</li> <li>■ Time constraints of caregivers to prepare “special foods”</li> <li>■ Belief that evening meal is bad for child (causes indigestion)</li> <li>■ Lack of recognition of importance of high feeding frequency for young children</li> <li>■ Belief that children are ready for family foods and family meal patterns by 12 months of age</li> <li>■ Some cultural barriers to feeding young children specific types of fruits/vegetables</li> </ul>

## 1. INTRODUCTION

### 1.1. Background

This report describes the formative research process undertaken in Haiti to assist World Vision in the development of a Behavior Change Communications (BCC) program aimed at the *prevention* of childhood malnutrition in the Central Plateau. The research is part of a larger evaluation being conducted by the International Food Policy Research Institute (IFPRI) and Cornell University in collaboration with World Vision-Haiti, to compare two models for delivering integrated food and nutrition programs with a take-home food ration component. The two models, which will be implemented by World Vision-Haiti, are: 1) the traditional *recuperative* approach, whereby children are targeted to receive food supplements when they are identified as malnourished (i.e., their weight-for-age is below  $-2SD$  of the median of the reference population); and 2) the *preventive* approach, which targets food supplements to all children below 2 years of age, in an effort to intervene before growth retardation occurs, and thus, to prevent, rather than cure, malnutrition.

As part of the project, the IFPRI-Cornell team is assisting World Vision-Haiti in designing and implementing a fully developed preventive model. The preventive BCC program will be fully implemented by World Vision-Haiti, with technical assistance for the design and development by the IFPRI-Cornell team. Within this larger goal, the formative research activities were intended specifically to produce insights and information for adapting the current recuperative education model to the needs of a preventive behavior change communications program. The first step in this process, which was initiated in November-December 2001 and has been reported previously (Menon et al., 2001), was to gather information on the existing nutrition and health education models currently used in Haiti. Following this, a rapid qualitative study was conducted in January 2002 to gather information on general patterns of infant and child feeding practices, which were used to guide the development of the baseline quantitative survey for the evaluation (Menon et al., 2002) and to guide the design of the formative research.

The results of this formative research study will be presented at a workshop in Haiti, which will involve key decision-makers and program staff within World Vision-Haiti, as well as the U.S. Agency for International Development (USAID) and other private voluntary organizations (PVOs) working in the area of child nutrition in Haiti. The workshop will focus on discussing the design, technical and operational aspects of the BCC strategy and, more importantly, on developing the strategy for its implementation by World Vision-Haiti in the Central Plateau.

### 1.2. Objectives of the formative research

The overall purpose of the formative research described in the present report was to augment the findings of the previous qualitative studies and to provide a strong foundation upon which to build the BCC program to prevent malnutrition among infants and young children. Because the preventive model targets 0-24 month-old children, the formative research activities were designed to obtain more in-depth information on children in this age range, and to explore the feeding and caring practices of Haitian mothers during this vulnerable period. The specific objectives of this study were:

- To provide a knowledge base about infant and young child feeding and care that would serve as the foundation for a BCC program;
- To develop enriched complementary foods to be promoted in the BCC program, using locally available and affordable ingredients;
- To identify possible avenues and delivery systems for inserting preventive BCC activities into the current structure of World Vision program activities in the Central Plateau of Haiti.

### **1.3. Structure of the report**

The report is structured as follows. The rationale for a BCC program is described in Section 2, followed by a section that summarizes the key findings of the previous qualitative study carried out in January 2002 (Section 3). Section 4 describes the topics addressed in the current formative research, the methods used to gather the information and the communities included in the study. Findings of the individual and group interviews on child feeding and care patterns and on the resources and constraints to optimal caregiving practices are presented in Section 5. Section 6 presents the results of the group recipe trials carried out in the communities to develop new, enriched complementary foods to be promoted in the behavior change communications (BCC) program. The final results section (Section 7) reports on observations and interviews to document program implementation issues and to identify potential vehicles and delivery points for the BCC program. Finally, the last section (Section 8) discusses the implications of the research for World Vision's program in the Central Plateau and provides suggestions for focusing and delivering the preventive BCC intervention.

## **2. RATIONALE FOR A BEHAVIOR CHANGE COMMUNICATIONS (BCC) STRATEGY TO REDUCE CHILD MALNUTRITION**

In children, positive changes in health and nutrition manifest themselves in many forms, including improvements in growth and development and reductions in morbidity and mortality. Each of these outcomes is the result of complex interactions between familial caregiving behaviors and the biological underpinnings of health and nutrition. For example, in order to protect a child from a vaccine-preventable disease, such as measles, the family must know when and where to take the child for the vaccination, must have the resources to carry out these actions, and the vaccine itself must be safe and effective. The availability of the vaccine is powerless to prevent the disease in the child without the parental behaviors.

Similarly, to enable children to grow normally, there are many parental caregiving behaviors related to food that are essential to ensuring adequate nutritional intake. These behaviors include obtaining and selecting foods that meet nutritional requirements, preparing them safely and in a form that is appropriate for the child's age, and feeding them in a manner that encourages adequate intake. In order to engage in these critical caregiving behaviors, parents need access to the foods their children require, they need access to fuel, water and other materials to prepare and preserve these foods, and time and physical energy to carry out the activities. They also need knowledge. These are essential underpinnings of nutrition and health-giving behaviors, which in turn are the prerequisites for child health and well-being. Because caregiving behaviors are the links between resources and knowledge, on one hand, and child health on the other, programs that seek to improve child health and nutrition must, by definition, change caregiving behaviors. Programs that aim to improve child outcomes by improving childcare behaviors are collectively referred to as behavior change communications (BCC) programs. A recent review of complementary feeding programs provides evidence that BCC programs can be effective in reducing child malnutrition in a variety of contexts (Caulfield, Huffman, and Piwoz 1999). A more recent review of nutrition programs addressing a variety of nutritional issues also indicates that, in the case of vitamin A, for instance, BCC programs are slightly more cost-effective, in terms of cost per lives saved, than supplementation, and much more cost-effective than fortification (ACC/SCN 2001). The review also provides a basis for understanding the various factors that influence the success of behavior change communications programs to achieve their goals. The authors found that the success of BCC programs depends not only on the design, targeting, and outreach of the program, but also on contextual factors, such as community involvement and political commitment.

The successful programs reviewed by Caulfield and collaborators had used very similar approaches to program design. These approaches all included a number of stages of formative research, including a review of existing materials related to infant feeding in the program areas, ethnographic research to understand current infant feeding behaviors and their motivations, an assessment of current complementary foods, and recipe trials to develop enriched complementary foods. Additionally the development of program strategies in all cases used a comprehensive approach, which took into account contextual facilitating factors and the findings from the formative research. These programs showed substantial improvements in caregiver knowledge and recall of program messages, increased intakes of complementary foods and, furthermore, improvements in child nutritional status (height-for-age and weight-for-age) that

were similar to improvements seen from food supplementation studies. Even taking the problematic design of some of the program evaluations into account, the authors estimated that BCC programs could improve child nutritional status by as much as 0.1 to 0.4 Z-scores.

Some of the features of the programs that could have contributed to these successes are likely to be their attention to the local context within which the program was to operate, an in-depth understanding of infant feeding practices that was based on solid formative research, and a program strategy that used a comprehensive approach in its design and implementation. Almost all the programs reviewed, for instance, used very clear key messages that were age-appropriate and action-oriented and that would allow caregivers to make easy changes in infant feeding that were adapted to the child's stage of development. The programs also used multiple approaches to reach caregivers, usually combinations of mass media and individual advice and counseling. In addition, they used a variety of communications methods, such as radio spots, cooking demonstrations, story telling and drama, and all of these were accompanied by appropriate visual communications materials like posters, counseling cards, and take-home cards on infant feeding.

The success of BCC programs also depends on consideration of the various resources or constraints that facilitate or impede upon achieving the expected change in behavior. Specifically, there is a large body of empirical epidemiological research, as well as strong theoretical models on the determinants of nutrition and health outcomes, that supports the proposition that improving nutritional conditions in populations requires both improvements in resources and improvements in knowledge within the household. In particular, either one alone is rarely sufficient to bring about significant improvements in health and nutrition in conditions of poverty and underdevelopment.

The preventive BCC program to be developed in the current research is intended to provide families with a resource (i.e., the donated food commodities) and, at the same time, provide them with a knowledge base that can support behavior change to *prevent* child malnutrition. In addition to these aspects, other contextual factors needed to allow the transformation of both resources and knowledge into improved childcare practices and child health should be acknowledged. Specifically, these include the other resources needed to ensure that caregivers and families are able to provide adequate care to their children, such as caregiver's time, mental and physical health, social support, and a minimum level of economical resources (Engle, Menon, and Haddad 1999). Although some of these issues cannot be directly addressed through the current preventive BCC program model alone, they are factors that will be acknowledged and investigated further in the program operations research and the overall evaluation of this program in Haiti.

Thus, the research presented in the present report describes some of the preliminary stages of formative research that were identified as critical in the review: ethnographic research on infant feeding and its determinants, an assessment of currently used complementary foods, recipe trials to develop modified recipes for complementary foods that can be promoted through a BCC program, and an understanding of program activities. The formative research will also provide some understanding of the contextual factors that are likely to influence the successful adoption of the recommendations of the BCC program. Further development of this formative research

into a strong BCC program to prevent child malnutrition will depend strongly on the outcomes of the planning workshop to be held in Haiti with World Vision in October 2002.

### 3. SUMMARY OF FINDINGS FROM PREVIOUS QUALITATIVE RESEARCH AND IDENTIFICATION OF TOPICS REQUIRING FURTHER INVESTIGATION

The overall goal of the qualitative research carried out in early January 2002 (Menon et al. 2002) was to gather information on community norms and general patterns of infant and child feeding practices and care. The goals of the study were mainly to provide preliminary information that could be used in the design of the baseline survey for the evaluation and to provide a basis for the design of this more in-depth formative research study.

Interviews with key informants and with young mothers were carried out to investigate the following topics: maternal knowledge, attitudes and practices regarding child feeding, maternal dietary restrictions during lactation, and maternal time, workload and childcare arrangements. A brief summary of the results of the initial research is presented below.

#### 3.1. Infant and child feeding practices

Current infant and child feeding recommendations (Dewey and Brown 2002; Dewey 2002) are that infants should be exclusively breastfed starting from soon after birth and up to 6 months of age. Starting at 6 months of age, complementary foods should be gradually introduced in the diet, while frequent, on demand breastfeeding should be continued until 2 years of age or beyond. Figure 3.1 depicts the progression of infant feeding practices by age and shows that the introduction of complementary foods should be done gradually and the quantity, frequency, and variety of foods should be increased as the child gets older. For the average healthy breastfed infant, complementary foods should be provided 2-3 times at 6-8 months of age and 3-4 times per day at 9-23 months of age. If energy density or amount of food per meal is low, more frequent feedings may be required. Dietary diversity is also recommended to ensure that nutrient needs are met, and it is recommended that meat, poultry, fish, or eggs be eaten daily, or as often as possible. The consistency of foods should also be adapted to the infant's requirements and abilities, and responsive feeding should be practiced, applying the principles of psychosocial care (Dewey 2002).

Our findings from the qualitative study showed that breastfeeding was widely practiced among mothers interviewed, and was generally highly valued for the benefits it provides to the child. Mothers reported breastfeeding up to two years of age on demand, or as frequently as they could manage it. They, however, also reported giving infants apparently low nutrient dense, starchy gruels like porridges made with salt crackers or wheat flour, *beginning at a very early age*. As infants reached the age when foods to complement breast milk are biologically required for normal growth, the types of preparations that were commonly given appeared to be low both in energy and nutrient density, and particularly so in essential micronutrients such as iron, zinc, and vitamin A. Although fish (herring and sardines) was reported to be used in many of the bean and vegetable preparations, it was not clear how much of these potentially rich sources of micronutrients was actually given to infants and young children.

The findings also showed that “colic” or “gas” was a common concern and that the way in which it was managed affected infant feeding. Families gave young infants various liquids and foods in

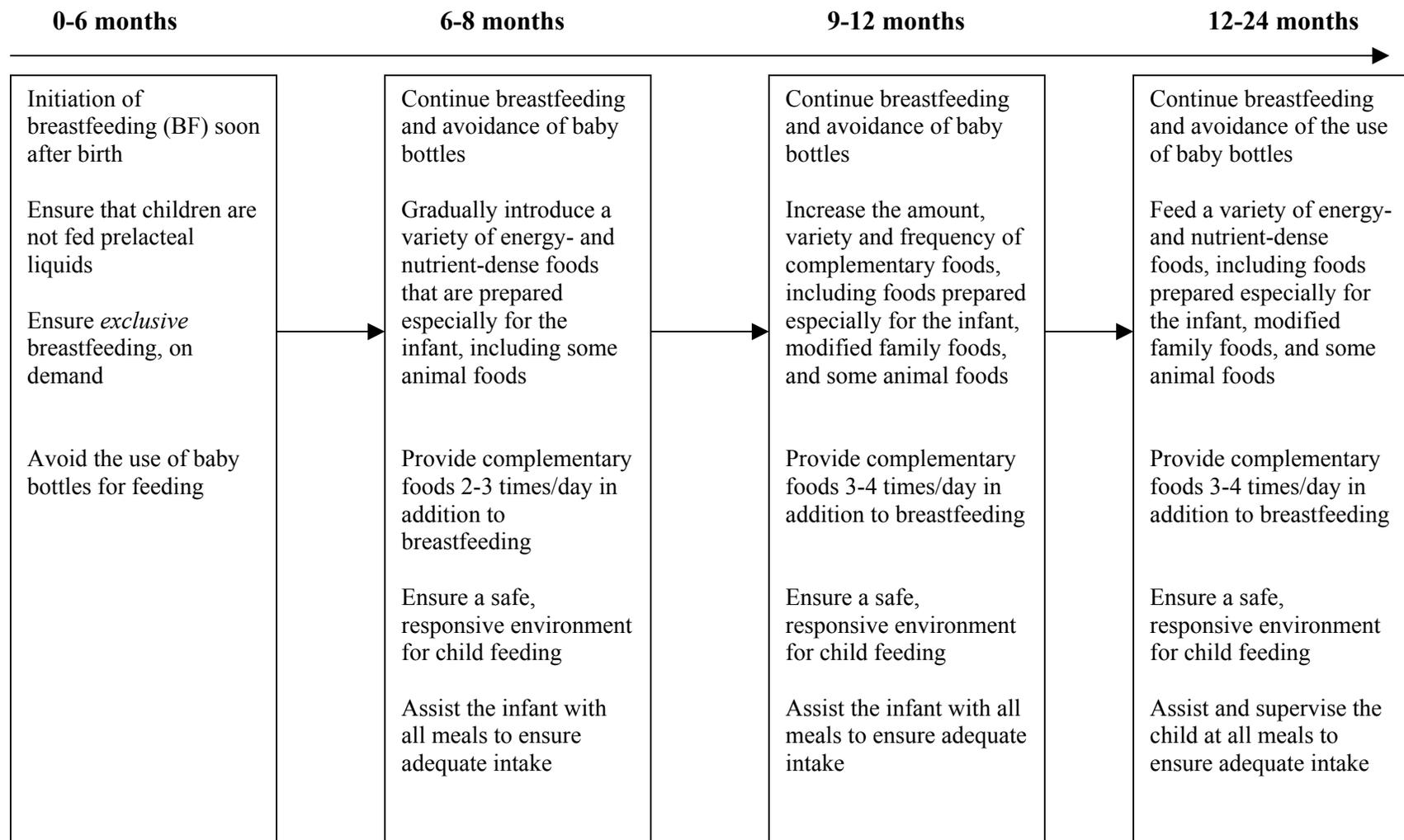
order to avoid or to cure symptoms that are interpreted as symptoms of colic or gas. These liquids or foods were often given to infants at a very young age.

To meet their nutrient requirements, older infants and young children need to be fed more frequently than do older children and adults. However, in the initial study there was a suggestion that the frequency with which young children are usually fed is based on family meal patterns and household food availability. There was also some indication that children are usually not fed an evening meal, but a full investigation of this was beyond the scope of the previous qualitative research.

Overall, the results of the first phase of research suggested that the current infant and child feeding patterns departed from international feeding recommendations, especially with regard to exclusive breastfeeding up to six months of age, and the complementation of breast milk with frequent feeding of energy- and micronutrient-dense complementary foods.

The first phase of research raised a number of questions related to infant feeding that are further investigated in this stage of formative research. These include issues related to the role of colic in the early introduction of foods and liquids, the nutrient composition and mode of feeding of the early complementary foods, the timing and patterns of feeding young children during the day, and the rationale for those behaviors.

**Figure 3.1. The progression of infant and child feeding, by age**



Source: Adapted from (Ruel and Menon 2002).

### **3.2. Maternal dietary restrictions during lactation**

Interviews with key informants in the previous study suggested that there were a number of dietary restrictions for lactating women. For example, foods that are white in color or that contain blood apparently are to be avoided by lactating women. This includes foods such as white peas, okra, blood, liver, tripe, certain types of fish, crabs, white potatoes, manioc and fresh cow's milk. Since these restrictions were not explored in the interviews with mothers, however, we were unable to determine how well they were adhered to and whether they affected the dietary quality of lactating mothers. Considering that some of these foods are high in bioavailable micronutrients, it is possible that these dietary restrictions affect the nutrient intake of lactating mothers and possibly their health, nutritional status and lactation performance. More information will be needed to assess whether or not these restrictions are widely adhered to, and whether they do result in dietary deficits. An additional reason to be concerned about these dietary changes is the fact that many mothers reported introducing liquids and foods in their young infant's diet before 6 months of age because they felt tired and depleted and they were worried of losing too much weight. Thus, it is possible that dietary restrictions are reducing maternal intake of energy and essential micronutrients at a time when daily requirements are significantly higher because of the extra demands of breast milk production.

Thus, additional information is necessary to better understand the implications of the dietary restrictions during lactation in terms of changes in dietary patterns and nutrient intakes. This in turn will determine whether these restrictions are likely to affect the mothers' health, nutrition and lactation performance and how to address these issues in the behavior change intervention.

### **3.3. Women's work and childcare arrangements**

The findings from the initial study suggested that mothers utilized a variety of substitute childcare when they were away from home, either for work or for fulfilling other household responsibilities. It was found that children are left in the care of other siblings or an older adult in the family when mothers need to leave home, and that mothers usually leave some prepared foods to be fed to children during their absence.

Additional information on maternal employment and time spent away from home will be needed to better understand some of the constraints to optimal breastfeeding and complementary feeding practices. Additional information will also be needed on the role and responsibilities of substitute child caregivers, and on the level of maternal control over them.

## 4. METHODS

This section describes the topics addressed in the present phase of formative research, the methods used to examine these various topics, and the communities included in the study.

### 4.1. Topics addressed

The formative research described in this report examined some of the same topics addressed in the previous qualitative work and included additional ones. The goal was to examine the specific issues of interest in greater depth, seeking to understand the underlying determinants and motivations of the patterns identified, as well as verifying their generalizability.

Table 4.1 presents the themes explored in the present research and also summarizes the methods used to study each of them. Selection of the themes was based primarily on the gaps identified in the previous qualitative study and the need for additional information to help guide the development of the preventive behavior change communications (BCC) program to be implemented by World Vision in the Central Plateau region of Haiti.

The topics addressed and the specific focus of each one are summarized below:

- *Breastfeeding.* Information was gathered to continue to explore the constraints to exclusive breastfeeding and to identify, from discussions with positive deviant mothers (i.e., mothers who did exclusively breastfeed), some culturally appealing arguments that could be used in the BCC program to motivate mothers to adopt exclusive breastfeeding. Reactions to the idea of expressing breast milk were also investigated.
- *Complementary feeding practices.* More in-depth information on patterns of introduction of complementary foods, mode of feeding and meal patterns was gathered, as well as information on food prescriptions and proscriptions at different ages. More specifically, in addition to exploring *what* children are fed, information was gathered on the social and behavioral aspects of feeding, which include *when, where, and how* children are fed (see Section 5 for more information on this focus). Further, information was gathered on the perceptions of caregivers on the stages of development of infants, specifically to understand the implications of these stages in terms of their influence on caregiving behaviors.
- *Feeding during illness.* Information on the types of diarrhea identified in the population and on feeding during diarrhea and other related illnesses was gathered.
- *Maternal diet during lactation.* Additional information on maternal dietary restrictions during lactation was gathered to assess whether these restrictions are widely adopted and whether they are likely to result in dietary deficits among lactating women.
- *Maternal work and alternative childcare use.* A potentially important constraint to optimal child feeding practices is the absence of the mother from home when she has to work or carry out other household responsibilities. Information was therefore collected on maternal work patterns, the frequency and duration of separations from their young children, the type of childcare substitutes used, and the level of maternal overall control over childcare responsibilities.
- *Recipe trials.* Recipe trials were carried out in a number of communities to develop new and enriched complementary foods using locally available ingredients and traditional recipes. The main objective of the recipe trials was to develop new complementary foods that would

have a more adequate energy and nutrient density, but that could still be prepared from locally available and affordable foods.

- *World Vision program implementation.* Information on the implementation of program activities and on the patterns of usage of program food commodities was collected to help design a delivery system for the BCC and to assess the possibility of using some of the donated foods in recipe trials.

**Table 4.1. Overview of topics and methods**

No.	Topic	Methods used	Communities where data were collected
1.	<b>BREASTFEEDING</b> <ul style="list-style-type: none"> <li>■ Exclusive breastfeeding (when, where, why)</li> <li>■ Expression of breast milk</li> </ul>	<ul style="list-style-type: none"> <li>■ 4 Interviews with positive deviant mothers</li> <li>■ 2 Group interviews with mothers of children 0-6 months old</li> <li>■ Other group interviews               <ul style="list-style-type: none"> <li>○ 4 with mothers</li> <li>○ 1 with mothers and fathers</li> <li>○ 1 with grandmothers</li> </ul> </li> <li>■ Individual interviews               <ul style="list-style-type: none"> <li>○ 1 mother</li> </ul> </li> </ul>	<i>Hinche:</i> Bassin Zim, Trois Bois Pin, Pablocal, Madame Brun, Doco <i>Thomonde :</i> Tierra Muscadi <i>Lascahobas:</i> Savane Perdue, Fond Pierre, Casse
2.	<b>COMPLEMENTARY FEEDING</b> <ul style="list-style-type: none"> <li>■ Pattern of introduction and mode of feeding (what, why, when and who)</li> <li>■ Food prescriptions and proscriptions</li> <li>■ Meal patterns</li> </ul>	<ul style="list-style-type: none"> <li>■ Individual interviews               <ul style="list-style-type: none"> <li>○ 4 mothers</li> </ul> </li> <li>■ Group interviews               <ul style="list-style-type: none"> <li>○ 7 with mothers</li> <li>○ 2 with grandmothers</li> </ul> </li> </ul>	<i>Hinche:</i> Bassin Zim, Coloroche, Trois Bois Pin, Madame Brun <i>Thomonde:</i> Tierra Muscadi <i>Lascahobas:</i> Savane Perdue, Fond Pierre, Casse
3.	<b>FEEDING DURING ILLNESS</b> <ul style="list-style-type: none"> <li>■ Types of diarrhea</li> <li>■ Feeding and home treatment for each type of diarrhea and stomach ache</li> </ul>	<ul style="list-style-type: none"> <li>■ Group interviews               <ul style="list-style-type: none"> <li>○ 3 with mothers</li> <li>○ 1 with grandmothers</li> </ul> </li> <li>■ Individual interviews               <ul style="list-style-type: none"> <li>○ 2 mothers</li> </ul> </li> </ul>	<i>Hinche:</i> Pablocal, Bassin Zim <i>Lascahobas:</i> Casse, Fond Pierre
4.	<b>MATERNAL DIET DURING LACTATION</b> To assess likelihood of dietary deficits, which could affect lactation performance and maternal nutrition and health	<ul style="list-style-type: none"> <li>■ Group interviews               <ul style="list-style-type: none"> <li>○ 2 with mothers</li> <li>○ 1 with grandmothers</li> </ul> </li> </ul>	<i>Hinche:</i> Bassin Zim <i>Lascahobas :</i> Savane Perdue
5.	<b>MATERNAL WORK AND ALTERNATIVE CHILDCARE USE</b> <ul style="list-style-type: none"> <li>■ Maternal work patterns (frequency, duration of absence)</li> <li>■ Organization of childcare substitutes</li> <li>■ Role of fathers</li> </ul>	<ul style="list-style-type: none"> <li>■ Individual interviews               <ul style="list-style-type: none"> <li>○ 3 mothers</li> </ul> </li> <li>■ Group interviews               <ul style="list-style-type: none"> <li>○ 4 with mothers</li> <li>○ 1 with mothers and fathers</li> </ul> </li> </ul>	<i>Hinche:</i> Bassin Zim, Coloroche, Doco <i>Thomonde:</i> Tierra Muscadi <i>Lascahobas :</i> Fond Pierre
6.	<b>RECIPE TRIALS</b> To develop new and enriched complementary foods (recipes, mode of feeding, pattern of introduction)	<ul style="list-style-type: none"> <li>■ Group recipe trials in three stages               <ul style="list-style-type: none"> <li>○ 3 initial group discussions</li> <li>○ 3 recipe trials with tasting and discussion</li> <li>○ 3 follow-up discussions to assess feasibility</li> </ul> </li> </ul>	<i>Hinche:</i> Bassin Zim, Trois Bois Pin <i>Thomonde:</i> Tierra Muscadi
7.	<b>WORLD VISION PROGRAM IMPLEMENTATION</b> <ul style="list-style-type: none"> <li>■ Program activities at different delivery points</li> <li>■ Roles, responsibilities and time allocation of health program staff</li> <li>■ Patterns of utilization of services by beneficiary families</li> </ul>	<ul style="list-style-type: none"> <li>■ Observation of various program activities:               <ul style="list-style-type: none"> <li>○ 2 Rally Posts</li> <li>○ 2 Food distribution</li> <li>○ 6 Mothers' clubs</li> </ul> </li> <li>■ Individual interviews               <ul style="list-style-type: none"> <li>○ 6 Program personnel</li> <li>○ 10 Program beneficiaries</li> </ul> </li> </ul>	<i>Hinche:</i> Madame Brun, Bassin Zim, Marmont <i>Thomonde:</i> Cachiman <i>Lascahobas:</i> Casse <i>La Gonâve:</i> Ti Palmiste, Trou Luigène, Mare Sucrin, Anse à Galets, Palma

## 4.2. Methods used

The methods used in this phase of formative research were based on the WHO Focused Ethnographic Study methodology (WHO 1994) and the Designing by Dialogue manual (Dickin, Griffiths, and Piwoz 1997). Specific data collection methods were selected depending on the themes being explored and the types of participants.

The research was undertaken in the Central Plateau region of Haiti, where the BCC program is to be implemented. Observations of World Vision program activities and interviews with program personnel and beneficiaries (for topic 7) were also undertaken on La Gonâve, an island 30 kilometers west of the capital of Port-au-Prince, where World Vision has been distributing food rations for 8 years.

The research team included a senior nutritional anthropologist (Pelto, G.), two postdoctoral nutritionists (Menon, P. and Loechl, C.) a Haitian qualitative research consultant (Metellus, E.) and the principal investigator of the IFPRI-WV-Cornell evaluation (Ruel, M.T.). The study design and research tools were developed by Cornelia Loechl and Purnima Menon, with the advice and input of Gretel Pelto, Marie Ruel, and Elisabeth Metellus. Field-testing was done in May and data collection took place between May and July 2002.

Ethical approval for the study activities was obtained from the Cornell University Commission on Human Subjects. Informed consent was obtained from all study participants before any data collection was conducted.

Three different methodological approaches were used: 1) semi-structured interviews with individuals or groups; 2) semi-structured observations; and 3) group recipe trials. A brief description of the three methods used to explore the topics of interest is provided below.

### 4.2.1. Interview-based data collection techniques

Data collection relied primarily on interview-based methods, with all interviews conducted in Haitian Creole, and translated into French. The interviews included both group and individual interviews. The group interviews<sup>1</sup> were done primarily to obtain information on normative perceptions and prescriptions while individual interviews were done to obtain information on actual practices of mothers of young infants. The interviews were based on a semi-structured interview guide with extensive probing to explore issues in detail and to improve the reliability of the information. Extensive field notes were taken and all interviews were transcribed the same day. The interview guides are presented in Appendix 1 (in French).

Individual interviews were conducted with mothers of infants between 0 and 12 months of age, program personnel and program beneficiaries. Group interviews were conducted with groups of mothers, fathers, grandmothers, and some mixed groups. Details about the specific methods and number of interviews used to explore each theme are presented in Table 4.1.

<sup>1</sup> Group interviews were conducted rather than focus group discussions because of the exploratory nature of the research. Focus group discussions are by definition intended specifically to *obtain feedback* on specific topics, rather than *explore perceptions* related to different topics. Group interviews are more suitable for this latter objective, and thus were used in the present study.

In addition to these interview-based methods, a food-rating exercise was developed as a way to obtain detailed information on the perceptions related to foods that were appropriate for children at different ages. For this game, photographs were taken of specific foods consumed widely in the areas, and were numbered and laminated for use as “food cards.” These cards were then used in the group interviews as the basis for starting a discussion on the appropriateness of various foods for the health of young infants and children. Women chose or rejected different foods and then discussed the reasons for doing so. The food rating games were guided by specific questions and probes to explore ideas and perceptions in detail.

#### **4.2.2. Observations of program activities and interviews with program staff and beneficiaries**

In order to assist World Vision in the development of the preventive BCC program, the research team needed a better understanding of how the existing (curative) program is currently being implemented. More specifically, the team needed to understand the specific activities and the staff time allocation at the different delivery points currently used by World Vision for the different components of its program. Towards this objective, the team observed program activities and interviewed program personnel and beneficiaries at the three main delivery points (the Rally Posts, the food distribution points and the mothers’ clubs).

In addition, interviews were conducted with program beneficiaries to obtain their perceptions about the current program and to obtain information on the use of the donated foods. Program personnel (health agents) were also interviewed to find out about their roles, responsibilities, and perceptions related to the modification of the current program to include other BCC activities.

#### **4.2.3. Group recipe trials to develop new recipes for complementary foods**

Recipe trials are participatory cooking sessions conducted with small groups of mothers and their children with the aim of developing special complementary foods for infants and young children. Specifically, special recipes are proposed, prepared, tasted, and discussed to evaluate their acceptability, feasibility, and affordability for including them in the diets of young children (Dickin, Griffiths, and Piwoz 1997). This technique of developing enriched complementary foods that are based on locally known recipes as well as local ingredients has been used in a number of countries with adaptations to each context (Bentley et al. 1991; Kanashiro et al. 1991; Piwoz 1994).

In our study, the recipe trials began with a first recipe demonstration, conducted by the participants for the research team, to learn how infant foods were usually prepared. A group of mothers applied their usual preparation methods to demonstrate current recipes for various foods that had been previously identified as widely fed complementary foods: salt cracker gruel, bread soup, mashed plantain with fish sauce, and wheat flour gruel. This was followed by the three-step participatory process described below:

- A first visit to prepare the trial with the group. Specific activities included: exploring potential improvements of currently fed complementary foods and discussion an array of

suggested ingredients to enrich the complementary foods, creating new recipes, and preparing for the actual recipe trial.

- The recipe trial itself, followed by a tasting session and feedback on the recipes, techniques, perceived feasibility, and affordability.
- Follow-up visit for feedback on home-based preparation of the improved recipes and the experience of feeding the improved recipes to children and other family members.

The complete three-step process was carried out in three separate zones.<sup>2</sup> Specific question guides were developed to facilitate the collection and organization of information at each stage. These are presented in Appendix 2.

The participants of the groups in Bassin Zim and Tierra Muscadi were identified by the research team whereas the Marmont group was organized by a community volunteer (*colvol*)<sup>3</sup> and the trials were carried out in her backyard. The other two trials were conducted in one of the participants' yard. Different approaches were applied for the provision of the ingredients for the recipe trials. The ingredients were either purchased by the participants in quantities they normally used, with cash assistance from the research team. Alternatively participants brought ingredients from home gardens or the research team bought food from local markets. This was done to ensure that women would use quantities that were feasible and normative for the recipe and to avoid a situation where a large quantity of a special ingredient would be used because it had been made available by the research team. This would have made the developed recipe impossible for women to replicate in their homes and would not have yielded accurate information on the feasibility and affordability of the modified recipes.

In addition to bringing ingredients for the recipe trials, other parts of the trial were also supported by the participants. For instance, some trials were hosted in the homes of participants. Fuel and cooking utensils were provided jointly by all participants in the group. Even the arrangements for these logistical issues were worked out by the participants themselves at Step 1 of the recipe trials in each zone. Thus, the entire process was highly participatory and was owned by the women themselves. The research team served mainly to facilitate the process of development and discussion and to ensure that all steps were documented.

At the end of each recipe trial session, participants and their children tasted the recipes that were prepared. Often, other neighbors and children assisted in the tasting sessions. Specific issues related to the acceptability of the recipe, feasibility of home-preparation under daily conditions, and affordability of the recipe were explored through feedback interviews conducted at the end of the tasting session.

---

<sup>2</sup> The three-step recipe trial process was conducted in the following zones: 1) Bassin Zim, with a group of 2 mothers and 3 grandmothers and their children or grandchildren (1-36 month old); 2) Tierra Muscadi, with a mixed group of 5 mothers and 3 fathers and their children (1.5-11 months old); 3) Marmont (Trois Bois Pin), with a group of 5 mothers and their children (8-11 months old).

<sup>3</sup> World Vision has a system of community volunteers called *colvols* (collaborateur volontaire) who assist the Health Agents in their duties and who are paid a small incentive (approximately US\$25/month). The term *colvol* is used throughout this report.

The final step of the recipe trials included a set of follow-up interviews with each group of participants, usually about 2-3 weeks after the recipe trial session (Step 2). These interviews gathered data on which of the recipes had been prepared at home between the time of the recipe trial and the follow up visit. The interviews explored the feasibility and affordability as well as any problem that may have come up during the preparation or consumption of the recipes in the home setting of each participant. Further, the interviews were used to assess whether participants had adhered to the originally developed recipe or had made any further modifications to the recipes.

Finally, the data from all the recipe trials were combined for analysis of the feasibility, acceptability, and affordability of the various recipes developed by the group trials. The cost and nutrient content of each recipe was assessed and the information will be used to identify a list of promising recipes for promotion in the BCC program.

### 4.3. Study communities

A total of 11 communities from the Central Plateau were included in the study. Six of them were lowland (administratively belonging to the Hinche Commune) and five of them were from mountain areas (two of them administratively belonging to the Thomonde Commune and three to the Lascahobas Commune). Table 4.2 lists the communities included and the zones they pertain to. The regions and communities were selected to represent the different areas included in the overall project. The town of Hinche is about 120 kilometers from the capital city of Port-au-Prince.

The lowland communities were generally accessible by road and all were within 6 kilometers from the main road. The main crops cultivated in these areas are staples such as corn, sorghum, beans, cassava, and sweet potatoes. The highland communities, on the other hand, were less accessible by road, were more remote and less densely populated, and their access to water and health services was more limited. Vegetable production was more common in the mountain areas as was tobacco, which was not cultivated at all in the lowland communities included in the study.

**Table 4.2. Communities and zones included in the present study**

Lowland Communities (zones)	Highland Communities (zones)
Madame Brun (Madame Brun)	
Coloroche (Marmont)	Casse (Casse)
Trois Bois Pin (Marmont)	Fond Pierre (Pareidon I)
Doco (Cherival)	Savane Perdue (Pareidon II)
Pablocal (Pablocal)	Tierra Muscadi (Tierra I)
Bassin Zim (Bassin Zim)	Cachimán (Tierra I)

Five communities from La Gonâve Island were included in the study of World Vision's program implementation. Two communities were located on the coast (Trou Luigène and Anse à Galets), and three in the mountains (Mare Sucrin, Ti Palmiste, Palma). Lack of rainfall during the last few years has negatively affected the crop production on the island. In addition, the flat lands of the island suffer from problems of erosion. The main food crops and growing seasons are the same as in Central Plateau but the population of La Gonâve is less self-sufficient in food

production. World Vision has been involved in food distribution on La Gonâve Island since 1994. Observations of program activities and interviews with program personnel were also carried out in some communities of Central Plateau where the program had started to distribute food (see Table 4.1 for specific communities).

## 5. RESULTS

This section presents the findings of the first 4 research topics (see Table 4.1), which were addressed through individual or group interviews.

For infant and child feeding practices, the framework of analysis proposed by Pelto et al. (Pelto, Levitt, and Thairu, in press) is used. This framework is described in the following paragraphs.

The phrase “infant feeding practices” refers to a complex set of behaviors that include many social and biological components (see Figure 3.1). To facilitate the description, analysis, and understanding of the many different elements of feeding practices, it is useful to have a framework that can be used to organize data on these various elements. In the sections that follow, we have utilized the framework proposed by Pelto et al. (in press), in which the major dimensions are categorized under the headings of *what*, *who*, *when*, *where*, *how*, and *why*.

The dimension labeled “what” refers to the actual foods that are given to infants (i.e., breast milk, breast milk substitutes, and foods that complement breast milk) and is primarily concerned with the nutritional features and qualities of foods fed to infant at various stages. “How” is concerned with several aspects of feeding, particularly the way in which caregivers interact with children when they are being fed, which is sometimes referred to as “feeding style.” Other elements that are included under the heading of “how” include the utensils that are used to offer food, as well as food preparation and preservation activities. “When” refers primarily to the scheduling of feeding, including frequency and the relationship of frequency to infant appetite. “Where” is concerned with the feeding environment and includes issues of distraction, safety, comfort, and potential for interaction. “Who” directs attention to the relationship of the child to the individual who is feeding him or her, whether it is the mother or other adult with whom the infant has a primary attachment, another familiar adult, an older child, or a daycare worker or hired caregiver. “Why” is a large dimension that includes cultural beliefs (e.g., concerning what foods are good or bad for infants or how to feed sick children), economic determinants and constraints, social determinants (particularly maternal time allocation and workload), structural features that affect availability of foods for infants (transportation, markets, etc.), and health issues (e.g., maternal health, child health status).

### 5.1. Breastfeeding

With breastfeeding, the *what* and *who* dimensions of feeding are already well-defined, and the challenges to ensuring successful breastfeeding require an understanding of the other socio-behavioral dimensions. Thus, it is important to understand the following issues for designing an effective BCC intervention in the Central Plateau:

- *Why* are most women unable to achieve the levels of exclusive breastfeeding that are recommended and why those who exclusively breastfeed actually manage to do so?
- *Where* is breastfeeding done and where is culturally unacceptable to do?
- *How* has the minority of women who exclusively breastfeed been able to achieve their success?

In order to obtain answers to these questions, our interviews with mothers included several women who were “positive deviant” mothers in the sense that they had managed to exclusively breastfeed in situations where most other women had not. Two of these “positive deviant” mothers in Bassin Zim were identified during a group interview with lactating women. Group interviews with mothers of young infants, grandmothers, and fathers also yielded rich information on perceptions related to practices that sustain and encourage exclusive breastfeeding.

### 5.1.1. When?

Overall, the breastfeeding women interviewed indicated that they usually breastfed on demand when they were at home. The only time when breastfeeding was not done on demand was related to the concept of *let cho* (literally, warm or hot milk) or *let si* (sour milk). This was considered to happen when women had returned from a long walk in the heat, and it was believed that children who were fed *let cho* or *let si* could develop an upset stomach. In such situations, women reported that the common practice was to express a small amount of the breast milk, discard it, and then resume normal breastfeeding.

Our interviews specifically investigated this concept, but using the terminology of *let gate* (spoiled milk). This had been revealed as a reason for discontinuing breastfeeding or for feeding other foods in the Grande Anse region of Haiti (Bette Gebrian, personal communication). Our interviews revealed that *let gate* was not as prominent in the construction of the quality of breast milk among women in our study as in the Grande Anse region. It should be noted that the health communications materials developed by CARE and used by WV in this area address this issue specifically and attempt to reassure women that breast milk cannot spoil in the breast.

### 5.1.2. Why?

This section addresses the questions of why women who did exclusively breastfeed did it, and explored local perceptions of why it may be difficult for women in this context to exclusively breastfeed.

The interviews with the positive deviant mothers who exclusively breastfed their infants for at least 4 months revealed that all but one of these women had done it for the health of their child. The other woman was mostly motivated to exclusively breastfeed because of its contraceptive benefits. Positive deviant women had received information on the benefits of exclusive breastfeeding from various sources—health agents, radio programs, and health center staff. In addition, all of the women had been exposed to women who had exclusively breastfed and had observed that their infants were particularly healthy. Interestingly, the women also spoke of the fact that when they first heard about exclusive breastfeeding, they did not believe it was possible to practice it. However, their experiences with practicing exclusive breastfeeding (in spite of some of the logistical constraints it posed) and the benefits that they saw with their own infants appeared to have strengthened their resolve to continue. Specifically, three of the four positive deviant mothers interviewed said that they had spent less money on hospital visits with their exclusively breastfed child compared to their other (non-exclusively breastfed children).

The constraints to exclusive breastfeeding that were expressed both by women who exclusively breastfed and those who did not were: a perception of weakness caused by frequent and exclusive breastfeeding; the need to work and go to the market and the difficulty of taking the child along; and child-related factors such as gas and colic, which are usually treated with a variety of teas. The positive deviants stressed that exclusive breastfeeding was demanding on their time because they had to be “available to the child” at all times and could not leave their homes for extended periods of time. Factors that were reported as facilitating the process of exclusively breastfeeding will be addressed in the section on *how*.

### 5.1.3. Where?

The dimension of *where* in the case of breastfeeding refers to the physical settings within which it is possible (or not possible) to breastfeed a child. One of the specific questions investigated here was what were the types of places where women felt they could take their breastfeeding infants while they were breastfeeding. Our interviews with the positive deviants and the groups of women revealed that it was acceptable to take breastfeeding infants to church and to the family farms where women often worked. However, it was not acceptable to take infants to the marketplaces where women went to sell their produce and buy other items. Since market activities appear to take women out of their homes for the longest time and thus pose the greatest deterrent to ensuring successful breastfeeding, we investigated further to identify reasons for the perception that taking infants to a marketplace was unacceptable.

Women reported that in most cases, the markets that they frequented were far from their homes, and entailed walking one to three hours in each direction. They felt that the routes were treacherous and that the sun was too hot for the young infants. Other reasons included poor hygiene at the markets as well as insecurity with respect to frequent fights in marketplaces. They also reported that they feared the presence of people with malevolent intentions at the markets (“*move je ka fè timoun lan mal*”) who could cast a spell on their babies (similar to the concept of “evil eye” in other developing countries).

### 5.1.4. How?

Our interviews with positive deviant women yielded useful information on how these women had been able to achieve successful exclusive breastfeeding at least for up to four months. The women interviewed frankly acknowledged the difficulty of trying to breastfeed exclusively, particularly in terms of the toll it took on their freedom to work outside their homes. At the same time, the better health of their children was a tangible benefit and appeared to motivate their perseverance at exclusively breastfeeding.

The interviews also revealed the presence of a number of supporting factors that allowed these women to breastfeed exclusively for as long as they did. Interestingly, these factors were fairly uniform across this sample of women, and included the following:

- Having adequate resources to pay for someone to do their shopping and some housework (usually 15-25 Gourdes—equivalent to US\$0.53-\$0.89);
- Physical support from their husbands;

- Emotional support from peers and observation of positive role models, more specifically other women who had been breastfeeding exclusively and who had healthy infants; and
- Not having to go back to work as early as other women, who usually returned to work around 2 months after delivery.

Our results imply that in order to ensure that women can exclusively breastfeed their infant, a program will have to do more than inform women of the benefits of exclusive breastfeeding. Specifically, the program will have to address the economic constraints that force women to return to work soon after delivery, and the importance of social support to maintain successful exclusive breastfeeding. Additionally, the program should focus on the power of positive role models from the community and highlight the fact that some mothers are able to successfully breastfeed in spite of living in similar conditions and with the same daily constraints as other mothers from the same community.

#### **5.1.5. Expression of breast milk**

In our interviews with groups of mothers and grandmothers, as well as in interviews with individual women, we explored perceptions about the practice of expressing breast milk and leaving it behind to be fed to the infant. The rationale for doing this was that all the women reported that they always felt the need to leave some type of prepared food for the child when they left home for their market activities or other work. Usually this was a gruel (the salt cracker gruel in many cases) or a sweetened liquid. Recognizing that expressed breast milk is a much more desirable alternative to both gruels and sugary juices, we felt that it was important to identify how women felt about expressing breast milk and leaving it behind for an alternate caregiver to feed it to the infant later on.

Our interviews revealed a range of opinions on this topic. At one end, there was a group of women who reported having practiced this regularly, whereas at the other end, there were women who could not conceive that this was even possible. It was encouraging to note that most women, however, were positive about it; many had heard about the practice but in most cases they had not tried it themselves.

In general, we found that the practice of expressing breast milk and leaving it behind to be fed to the infant was more acceptable in zones where women had heard about expressing breast milk either from the health center, the radio, or from other women (Bassin Zim, Casse, Fond Pierre, etc.), and less acceptable where women had never heard about it or seen anyone doing it (Doco). Unfortunately, the messages about using expressed breast milk had not gone to the next step of giving women explicit instructions and training on how to do it, which made it difficult for women to practice it. A number of women who had heard about it often were reluctant to try it on their own without getting more training first. They also expressed some doubts about how long the expressed milk could safely be stored. Program messages in Haiti have been informing women that it is feasible to store expressed breast milk for up to eight hours, but the women interviewed were not convinced. Previous research has demonstrated that breast milk can indeed be bacteriologically safe when stored in appropriate containers for up to eight hours at moderate temperatures (15 to 27 degrees C) and for four hours at high temperatures (30 to 38 degrees C) (Hamosh et al. 1996; Igumbor et al. 2000). Thus, it appears that programs in Haiti can safely

recommend storage in appropriate containers for up to 4 hours because temperatures do not exceed 38 degrees C.

## 5.2. Complementary feeding

In order to enhance our understanding of complementary feeding patterns, we conducted group and individual interviews with mothers of children 0-24 years old and with grandmothers. Specifically, we were interested in collecting additional information on the timing of introduction and use of different types of liquids and foods in children's diets, and the rationale for using these products at different ages. We were also interested in improving our understanding of young children's meal patterns and in identifying potential constraints to increasing meal frequency in infants and young children.

The results are presented below using the same dimensions described earlier, i.e., *what*, *why*, *when*, *who* and *how*. Since the choice of foods for young children is highly age-dependent, the dimensions of *when*, which relate to the child's age, are dealt with in the *what* subsection. The issue of meal patterns within a day (another component of *when*) is presented in a subsection dedicated to the *when*.

### 5.2.1. What?

Our previous qualitative research on the patterns of infant feeding was conducted only in the Hinche Commune. The present study extended the research to two other communes (Lascahobas and Thomonde) and found that the general pattern of introduction of foods was very similar to that of the Hinche commune—long duration of breastfeeding, early complementation with the same starchy gruels (salt cracker gruel or wheat flour gruel), and low consumption of animal foods.

Table 5.1 shows the types of liquids and complementary foods most commonly fed to young infants and the ages at which they are introduced in the diet. Specifically, these are: 1) water-based liquids with or without sugar (water, sugar water, sweet teas); 2) cereal gruels with some type of fat (salt cracker gruel and bread soup); 3) cereal gruels with sugar, but no fat (wheat flour gruel); and 4) mashed plantain or manioc gruel with a fish sauce.

Note that liquids are generally offered to infants within their first few weeks of life and that even cereal-based gruels are introduced as early as in the first month. The gruels are mostly cereal-based and likely to be very poor in bioavailable micronutrients, although some of them may be of relatively high energy-density (especially the ones that contain oil, although this clearly depends on the amount of oil used). The specific nutrient composition of these gruels is discussed in the section describing recipe trials (Section 6).

Findings presented in Table 5.1 confirm the concerns that arose from results of the previous qualitative study concerning early infant feeding. Clearly, exclusive breastfeeding is rarely practiced and mothers tend to complement (and to some extent substitute) breast milk for nutrient-poor liquids and gruels from a very early age. These practices are likely to greatly increase the vulnerability of young infants to infectious diseases, poor growth, and delayed

cognitive and motor development. In addition, mothers report introducing family foods to young infants as early as from four months of age, which is also a far from ideal practice. Young infants have particularly high energy and nutrient requirements, while at the same time having limited gastric capacity and motor skills. Thus, they require to be fed special foods of adequate nutrient density, consistency and texture, and they need to be fed with higher frequency than adults.

**Table 5.1. Types of liquids and foods, by age of introduction**

<i>What is fed</i>	<i>What it is</i>	<i>When it is fed</i>
<b>1. Water-based liquids</b>		
Boiled water	Water	1-2 weeks after birth
Sugar water	Water with sugar	1-2 weeks after birth
Sweet tea	Water, tea, sugar	1-2 weeks after birth
<b>2. Cereal gruels/soups with source of fat</b>		
Salt cracker gruel ( <i>bouillie de bon bon sel</i> )	Water, salt crackers, butter, sugar, salt	1-3 weeks after birth
Bread soup ( <i>soupe de pain</i> )	Water, bread, oil, spices, vegetables, salt	1-2 months after birth
<b>3. Cereal gruels with sugar, no fat</b>		
Wheat flour gruel ( <i>bouillie de farine France</i> )	Water, wheat flour, sugar, flavorings (vanilla or cinnamon)	1-2 months after birth (earlier in some cases)
<b>4. Mashed plantain or manioc gruel with fish and fat</b> (Banane ecrasée, <i>Bouillie de manioc</i> )	Mashed plantain or manioc gruel with fish sauce (made with small amount of dried fish cooked in oil and water)	2-3 months after birth
<b>5. Family foods</b> like bean sauce, cornmeal, etc.		4 months onwards
<b>6. Family foods</b> like rice, beans, vegetables, etc.		12 months onwards

### *Results of food rating exercise*

A food rating exercise was conducted as part of the group interviews to obtain information on perceptions related to the addition of animal foods and other micronutrient-rich foods to the diets of young children. Groups of women were shown photographs of local foods and asked to choose foods that they considered especially good and foods they considered inappropriate for infants between 6 and 12 month. The food rating exercise was conducted with three groups—two groups of mothers of young children and one group of grandmothers—using pictures of about 20 local foods.

The results presented here focus specifically on micronutrient-rich foods such as eggs, organ meats (like liver), and vegetables like pumpkin and sweet potatoes.

### *Animal foods*

The food rating exercises with all three groups revealed that there was no cultural barriers to feeding infants and young children animal foods, including eggs, organ meats, and other meats. The constraints most widely reported were those of resource availability, and in the case of organ meats, availability in the markets. In the case of eggs, the results showed that the yolk of the egg

was considered most appropriate for infants between 6 and 12 months of age. Almost all mothers identified eggs as a food that was good for the health of infants and young children. However, their concern about the expense related to feeding eggs to children suggests that it is in fact not a common practice. Very few participants mentioned the beliefs articulated by some of the key informants in the previous study that giving eggs to young infants would spoil their teeth, or that eggs would cause convulsions.

The market cost of an egg is 2 gourdes (equivalent to US\$0.07), which is approximately half the cost of a local measure (*gode*) of millet and one-third the cost of a local measure of maize. Thus, if the cost of one egg was measured in terms of the additional staple food that could be purchased with 2 gourdes, it is substantial. Additionally, many of the women in both group and individual interviews had other young children, often not much older than the youngest child, and it is possible that it is difficult for them to conceive adding an egg only to the portion of the youngest child.

Liver was also identified as a “good” food for infants and young children, but as in the case of eggs, it was perceived to be expensive. In addition to cost, a major constraint to its use is its lack of availability in small portions in the markets. It was reported that liver is usually sold whole or in a set with all other organ meats and it was very expensive (50-60 gourdes: US\$1.78-\$2.14) to buy a whole set. However, some women mentioned that they had been able to buy a piece of cooked liver from *griot* (fried pork) vendors in the market, so this could be an option to suggest to women. However, before this option is suggested, the safety of the prepared meat needs to be assessed.

#### *Micronutrient-rich vegetables and fruits*

Locally grown and available micronutrient-rich vegetables include pumpkin, sweet potato, carrots, and green leafy vegetables like spinach. Of these three vegetables, only spinach and carrot were identified by the women as foods that were considered good for infants between 6 and 12 months. Carrot is widely given to infants, mostly in the form of carrot juice (considered especially beneficial when children have diarrhea). Spinach is used in cooking but is usually cooked in stews and soups and it is not clear from the interviews whether children are actually fed the vegetable or not.

Pumpkin and sweet potato were both considered inappropriate foods for young children because they were both reported to have a laxative effect. Thus, both of these vegetables were not usually fed to infants. However, some women mentioned that it was possible to give children a small piece of mashed pumpkin from a soup but never a large portion of it. The addition of a small portion of pumpkin to a mashed plantain dish commonly fed to young children was tested during the recipe trials and was found to be well accepted (see Section 6). Thus, it is possible that the perceived inappropriateness of pumpkin for infants relates more to quantity rather than to the food itself.

Mangoes are available from April through July in the study areas and are widely consumed by older children. However, it was not identified as a food that “helps young children be healthy.” Reasons included that mangoes were sweet, and if children ate these then they would not eat any

salty food. Contrary to many other developing countries where mangoes are widely available, women in our sample did not express the belief that mangoes caused diarrhea in young children. This should facilitate the promotion of mangoes for young children because of its high content of pro-vitamin A.

In addition to the micronutrient-rich foods mentioned above, a number of staple foods were identified as good for the health of infants and young children. Among these were maize, spaghetti, vermicelli, plantain, and beans. All of these foods are considered to give infants strength (*fòs*) and help them grow (*byen grandi*).

### 5.2.2. Why?

The food rating exercise and other interviews also provided some insights into the reasons for the pattern of introduction of foods reported above. Contrary to the findings from the previous qualitative study, gas was not identified as a reason for giving foods to very young infants. It was, however, identified as a potential reason for giving the child various *teas* (see Section 5.3). A primary factor affecting the introduction of specific new foods to the child's diet relates to child's age. The gruel made of salt crackers, and liquids like sugar water, are introduced very early in infancy in part because there is a perceived need to provide lactating women with some respite from nursing, as well as to calm a crying infant. The process of lactation is believed to take a significant toll on a woman's health, and the early introduction of gruels and liquids is meant to reduce this burden.

The introduction of additional foods later on in infancy (3 months onwards) was associated with the need to provide foods for the infant when the mother returns to market activities. Buying and selling at local markets and markets that are far away necessitates long absences from home, and while women continue to breastfeed when they are at home, a number of preparations are used to feed infants when they are absent. These foods usually include gruels like the wheat flour gruel, bread soup, and sometimes even mashed rice and beans.

### 5.2.3. When?

The question of *when* children are fed relates to meal patterns, and results from individual and group interviews are combined.

The women interviewed were asked specifically about the types of foods they fed to children at different times of day. The selected times of day included opportunities for a morning meal, a late morning snack, the afternoon meal, a late afternoon snack and dinner.

The data revealed that infants under one year of age are usually fed a special meal that is prepared for them earlier in the morning than the family morning meal. This was usually reported to be done when the family morning meal was not ready early enough or when the infant was too young to eat what was prepared at the family morning meal. Thus, foods like gruels, bread dipped in coffee, and bananas are fed to young infants as a morning meal. A number of women reported that they did give their 9-24-month-old children late morning snacks, but these were restricted to when the child cried or specifically asked for some food

before the afternoon meal was ready. Typical snacks included pieces of bread, salt crackers, and mango (which was in season during the study).

The family afternoon meal was usually prepared to be ready any time between noon and 3 p.m., and women reported that they fed older infants (6 months onwards) the same foods that were cooked for the family afternoon meal. Very few women mentioned the need to give children a late afternoon snack; in fact, most women said that they usually fed the child a snack in the morning, before the afternoon meal was ready. This could be because the family afternoon meal was usually prepared late in the afternoon, and the gap between the morning meal and the afternoon meal was longer than that between the afternoon meal and supper.

Our findings related to evening meals confirmed that infants are rarely fed any substantial foods in the evenings. Most of the women reported that infants were either breastfed in the evening, before going to bed, or were given light foods like lemonade and bread, or a light gruel. In some cases, the women reported that this was because there was not enough food or money to prepare an evening meal for the family. However, they also said that an evening meal for the child would be a light gruel or sugar water because a heavier meal would give children indigestion (*gonfleman*).

The group interviews with older women revealed their prescriptions related to the timing and preparation of special meals for young children. According to them, special foods need to be prepared for children only up to the age of one year. The special foods they were referring to were usually the gruels made of salt crackers or white flour. The older women felt that after the child was one year old, there was no need to prepare a special meal any more.

The interviews related to the influence of stage of development on feeding patterns indicated that the appearance of the teeth was a major stage in terms of its influence on feeding patterns. Essentially, the appearance of the teeth indicated that infants could now be fed other foods. The appearance of the canine teeth (between 18 and 24 months, for the children of the women interviewed) was seen as the most critical stage in the eruption of teeth, and was seen as a sign that breastfeeding could be stopped completely. The period of teething itself was seen as associated with symptoms like diarrhea, and in one group interview, the women indicated that the eruption of the canines was the most problematic stage of teething.

In summary, children are fed mostly according to the timing of family meals and are fed special foods only in situations where they cannot (or should not) partake of the foods that are prepared for the family. Specifically, special gruels are prepared for children who are too young to eat family foods, or in the evenings, when it is believed that children should not be fed heavy foods. Snacks are usually intended to keep the child's hunger satisfied until the next meal is ready and thus, are small portions of crackers, bread, or fruit. The data thus indicate that the feeding of infants and young children is designed to integrate their eating patterns into the family meal patterns as soon as possible. The family eating patterns, in turn, are structured around women's time and household food availability. The notion of special foods and feeding more frequently to provide extra nutrients to infants and children is largely absent and will need to be stressed in the BCC program.

#### 5.2.4. Who?

The section on maternal work patterns and alternate caregivers presents details of how women organize childcare when they are not at home. Our results related to child feeding indicate that in general, the mother feeds the child when she is at home. However, when she is not at home, feeding the child is the duty of an alternate caregiver. In most cases, this seemed to be the child's father or grandmother, and in some cases an older sibling. In all cases, the mother reported that she usually left some prepared food behind for the child to be fed in her absence, usually a gruel. In some cases, she also reported that the alternate caregivers would prepare something for the infant.

#### 5.2.5. How?

Data on the *how* dimensions of child feeding (mode of feeding, mother-child interaction during feeding, etc.) would ideally have been collected using extensive observations of child feeding sessions, ensuring that data were gathered for children in each age group (6-8, 9-11, and 12-24). Within the time and financial constraints of this study, however, it was not possible to conduct an adequate number of structured observations of feeding sessions and the information reported here is mostly from the interview data.

Our interviews had revealed that infants and small children are fed from separate bowls and plates than the rest of the family. This is an encouraging practice because it ensures that caregivers can monitor the amount of food children are served and the amount that they consume. In situations where families eat from a common plate (e.g., in many African countries), it is extremely difficult to control how much young children are consuming.

Information on the mode of feeding of liquids (juices, expressed breast milk) and thin gruels is available from a number of interviews (group and individuals) and indicates that the use of baby bottles is fairly widespread. In fact, in two group interviews, one with mothers and another with grandmothers, participants indicated that the use of bottles for storing and feeding expressed breast milk was preferable to the use of a cup as they felt that a baby bottle would be less likely to get contaminated than a cup. In three individual interviews and one group interview, mothers indicated that they actually used baby bottles to leave behind juices, expressed breast milk, and other liquids for their infants when they had to go out. It was also alarming to note that in one case, the use of the baby bottle to store and feed expressed breast milk was on the advice of the health agent.

Our data do not provide an estimate of the extent of use of baby bottles in these communities and the quantitative baseline survey will provide more information on this aspect of infant feeding. However, data on the use of baby bottles in the Haiti EMMUS (2000) showed that 25% of infants between 0 and 1 month of age had already been fed using a bottle and this increased to about 42% by 11 months of age for the entire country. This is clearly an issue of concern and the avoidance of baby bottles, and the use of clean cups and spoons as an alternative, will have to be promoted through the preventive BCC program.

### 5.3. Feeding during illness

#### 5.3.1. Diarrhea

Ensuring adequate fluid replacement and adequate nutrient intake during and after episodes of diarrhea are critical to prevent dehydration and to replace lost nutrients resulting from diarrhea and from increased requirements associated with fever. The group and individual interviews conducted with women who had children between the ages of 6 and 24 months were used to obtain information on feeding practices during episodes of diarrhea.

Three different types of diarrhea were identified in our interviews: 1) teething diarrhea; 2) diarrhea caused by “microbes” or bacteria (*mikrob*); and 3) diarrhea caused by indigestion and flatulence (*gonfleman*). In one of the interviews, there was no recognition of the diarrhea caused by microbes, but the participants indicated that children could also get diarrhea due to “hot milk” (*let cho*), which occurred when a nursing mother spent too much time in the sun and did not drink enough water before breastfeeding her child again.

The symptoms of each of these types of diarrhea appeared well-defined in terms of the types of stools they were associated with. Treatment for each type of diarrhea was also different and well-defined. For example, the “teething diarrhea” was said to be characterized by stools that contained mucus and were watery, while the diarrhea caused by “microbes” was said to be characterized by loose stools, but not as watery as with the diarrhea caused due to indigestion. Treatment for all three types of diarrhea involved fluid replacement, and usually a reduction in the amount of solid foods, but continued breastfeeding. Other health seeking behaviors, however, differed between the types of diarrhea. For example, mothers did not feel compelled to seek treatment for teething diarrhea because they were confident that the symptoms usually went away after the tooth had erupted. For other types of diarrhea, medical care (health agent, health clinic, doctor, etc.) was usually sought after two or three days of fluid replacement and continued breastfeeding if symptoms persisted.

Our results were encouraging in showing that the need for fluid replacement was well-recognized in this population for all three types of diarrhea, regardless of symptoms or perceived cause. However, the preventive program will need to stress that care-seeking patterns should also be the same for all types of diarrhea. Also, it is important to stress the need for encouraging adequate food intake for children with any type of diarrhea, and especially so during the convalescence period after an episode of diarrhea or any other illness.

#### 5.3.2. Stomachache

The concept of stomach pain (*doule vant*) emerged from interviews that were designed to elicit information on the perceptions related to colic (“gaz”) and its implications for infant feeding practices. The first phase of qualitative research on patterns of infant feeding had revealed that “gaz” was an important determinant of the early introduction of teas and some gruels to children.

The findings in the present study reinforced that teas are indeed a treatment for colic but that the early introduction of gruels is primarily related to the need for women to go back to their market

activities as soon as possible after their child is born. At the same time, the concept of stomachache emerged from these interviews. Stomachache was reported in association with either *gaz* or another ailment called *fredi*. Symptoms of *fredi* included stools of greenish color accompanied by stomach pains.<sup>4</sup>

The home treatments for *fredi* and stomachaches were similar in terms of the types of teas and extracts that were used to treat these ailments. These included teas made of cloves, garlic, and also some made of herbs. The other form of treatment included wrapping items like cloves, indigo, or garlic (separately or together) in a thin cloth or a leaf, heating this in coals, squeezing it to obtain an extract and then mixing the extract with some breast milk.

In the case of *fredi*, it was reported that if it did not get cured in two days with the local treatment, the child would be taken to the dispensary or health center. However, in the interviews where this concept emerged, women indicated that it was usually cured by the home treatments and that after two days of treatment, the stools returned to their normal color, a sign that the *fredi* was cured.

The concern about the use of teas to treat stomachaches associated either with *gaz* or *fredi* is the risk of contamination of the water or the container used to serve the tea, as well as the disruption of exclusive breastfeeding. As far as *fredi* is concerned, it does not seem to be associated with watery stools and therefore it probably does not require active fluid replacement.

The design of the behavior change communications program should take into account the role of teas and other liquids for treatment of various ailments as well as for fluid replacement during diarrhea. These practices appear to be strongly entrenched and may be a major constraint in efforts to promote exclusive breastfeeding.

#### **5.4. Maternal diet during lactation**

Two group interviews, each with five lactating mothers of infants 0-6 months of age in Bassin Zim and Savane Perdue, as well as one interview with a group of eight grandmothers in Bassin Zim, were used to assess food beliefs and proscriptions during lactation. The interviews revealed that the food beliefs around the time of lactation identified in the first study appeared to be normative and well adhered to, possibly because of the perceived vulnerability of the state of the mother at this time. The food restrictions are prescribed primarily for women during the first three months of lactation.

Some of the food proscriptions are related to the potential detrimental effects of particular foods on the infant, but most are related to their perceived effects on the lactating mother. The restrictions include starchy roots (yams, sweet potatoes), pulses (white beans), vegetables (tomatoes, onions, okra, carrots, pumpkin, eggplant, cabbage, white chayote, fruits—melon, citrus fruits, avocado), fish (except one type named “paroket”), and cow’s milk. Women often associate the white color of the food with the restriction.

---

<sup>4</sup> *Fredi* was reported to be caused by leaving the child’s clothes wet without washing and drying them well, or by letting the infant sit naked on soil that was cool and humid.

In terms of the effects of some foods on the nursing infant, mothers and grandmothers agreed that foods like yams and pumpkin are clearly to be avoided because of their laxative effects on the infant. For the yams, one group also indicated that they were to be avoided because they gave “gaz” to the infant. Restrictions for sweet potatoes and okra with respect to the child were an issue only in one group, who referred to their laxative effects.

In general, foods are restricted for lactating mothers either because they are thought to cause stomach or abdominal pains or because they affect mothers’ vagina in some ways. All three groups insisted on avoidance of fish because it caused stomach pains and induced water production in the vagina. Crabs were also mentioned in one group as a food to be avoided because it caused abdominal pains.

Only grandmothers mentioned cow’s milk as a potential cause of white vaginal discharge, and only when it was consumed alone. None of them, however, knew of a lactating mother who had experienced this problem. It is likely that milk is not consumed very often in these communities.

White chayote, a specific type of mango (“baptiste”), avocados, onions, and okra are considered as cold foods that can cause stomach aches pains (“*li bay mal du mèr*”). In one group in Bassin Zim, the women were convinced that okra consumed as a sauce makes the vagina slippery. According to the mothers in Savane Perdue, white chayote, besides causing stomach pains, has the same effect as the fish, i.e., inducing the production of water by the vagina. Other foods that cause abdominal or stomach pains are eggplants, white beans, and yams. Lactating mothers, however, could consume okra and eggplants when mixed with other foods or fried in the case of okra. Mango “baptiste” could be eaten during lactation when the mother was not feeling hot.

The group in Savane Perdue mentioned also citrus fruits being too acid to be consumed during lactation as well as melon and tomatoes because they affected the vagina. Carrots and cabbage are to be avoided but they did not know the reasons for it.

In two groups the women talked also about the foods that lactating mothers should eat. These include papaya in order to increase the production of breast milk or leafy vegetables in general to increase the blood production and to protect the body; beans (black or congo) and liver because of their high content of vitamins and especially iron (mothers’ own words), cereals (corn, millet, rice), starchy roots (manioc) and plantain because they give strength; meat, cow’s milk, and eggs that are good for the development of the child. Recommended dishes are cooked plantain with meat, vegetable soup with meat and staples, and rice or corn with a bean sauce.

Our interviews confirmed the existence of a large number of cultural beliefs about dietary restrictions during lactation in this population. It is clear that the beliefs exist and that many mothers adhere at least to some of the dietary restrictions. It is impossible, however, to determine from the qualitative work whether these restrictions result in poorer dietary quality during lactation or whether mothers still manage to maintain adequate energy and nutrient intakes by consuming foods that are not subject to these restrictions. It is important to remember also that these restrictions are mainly for the first three months of lactation. Although this is a relatively short period, this is a period of great demand on the mothers’ nutrient reserves because they are recovering from the demands of pregnancy and labor, while at the same time having to maintain

successful lactation. Additional research, possibly quantitative, will be needed to explore the real implications of dietary restrictions during lactation on maternal diets, nutritional status, health, and levels of energy. It is important for the successful promotion of exclusive breastfeeding to ensure that mothers are meeting their daily energy and nutrient requirements and that they have the physical capacity to practice exclusive breastfeeding without depleting their nutrient reserves. These aspects need more investigation and will be addressed in the operations research next year.

## **5.5. Maternal work and alternate childcare use**

This section presents findings related to patterns of women's work in the communities studied and the implications of these patterns for child feeding.

### **5.5.1. Maternal work patterns**

We used group and individual interviews to explore the patterns of women's work and to assess how women organized their childcare responsibilities. Overall, we found that the two main occupations for women in this region of Haiti were agriculture and market activities. The agricultural activities are primarily related to tending the family farms or home gardens, and in many cases this involves working alongside with husbands. Market activities are referred to as *petit commerce* in Haiti and this implies the buying of products in one market and selling them in another. In some cases, women also sell their own produce in these markets.

The market system in this area of Haiti is organized in terms of weekly (or biweekly) markets held in different towns in the region. The buying and selling at the weekly markets is done mainly by women who often travel long distances on foot or horseback to get from one market to another or from home to the markets and back.

The poor accessibility of the markets in terms of distance and mode of transportation implies that women have to stay away from home for long periods of time to carry out their market activities. In our interviews, this ranged from a minimum of 5 hours up to 24 hours in some rare cases. Women reported being away from home anywhere from 2 days a week to seven days a week, depending on which markets they frequented for their income-generating activities.

### **5.5.2. Organizing childcare**

Most women in our sample were involved in market activities. For these women, childcare was a key constraint because they did not feel comfortable taking their child along when they went to work in the markets. The small number of women who worked on their family land, however, indicated that they usually took their children with them when they went to work in the fields and that they usually left them in a shady spot while they worked.

Our interviews suggested that market women delayed their return to work until their child was between 2 and 3 months of age, unless economical constraints forced them to return in order to earn money to purchase food for their family. Infants were usually left in the care of their fathers and/or their grandmothers. In some cases, women reported leaving their infant with an older sibling who could feed and take care of the infant. In most cases, women reported that they left

some prepared food for the infant to be fed by the alternate caregiver. In a majority of cases, this was a gruel, lemonade, or sugar water. Only one woman reported that she had expressed breast milk and left it behind for the child and she had done it only until the child was 3 months old, at which time she switched to gruels.

One of the aspects that was not investigated in our research is whether the fathers in turn left the infants with someone else when they had to leave to work or to attend to other household responsibilities. Our interviews with mothers on their work patterns did not yield information on this issue.

One disturbing finding related to the use of childcare alternatives was that in one group interview, women felt that a very young infant (2-3 months old) could easily be left with an alternate caregiver since, according to them, children at that age “cry for the breast and not for the mother.” Between 5 and 6 months, they said it was more difficult to leave a child with someone else, even though they often did so, because by that age, the child was “crying for the mother.” However, from when the child was about 10 months old, women indicated that it was again easy to leave the child with someone else because by then, the child could eat everything. These findings, taken with other information on feeding children, suggest that the pattern of early introduction of gruels and liquids is in fact designed to ensure that infants get used to consuming foods other than breast milk, which in turn makes it easier for women to return to work as early as when the infant is two months old.

The information related to the stages of child development revealed that the stage when children began to sit up on their own was perceived by mothers as an indication that the child could now be left with someone else. Also, group interviews with mothers revealed that this was perceived as a stage when the child did not have to be watched as much as before, which allowed mothers to do their work around the house. Women indicated that this happened when girls were 2.5 months old and boys were 3.5 months old.

Our findings highlight the acute trade-offs that mothers face in their dual roles as caregivers and income generators. In this population, maternal employment may truly be a key constraint for exclusive breastfeeding and to a lesser extent for adopting optimal complementary feeding practices from the time the infant is 6 months of age. As seen in many other cultures, mothers do attempt to protect their young infant by staying at home for as long as they can economically afford it, but among resource-constrained populations, this period is rarely longer than two or three months after birth. Thus, unless mothers extract and appropriately store breast milk for feeding the infant in their absence, exclusive breastfeeding is almost impossible. Although the situation may be less complex when the infant reaches 6 months of age and starts consuming complementary foods, absence of the mother for extended periods of time is still likely to interfere with the recommendation to continue on demand breastfeeding at least until the child reaches 24 months of age. Information from our *quantitative* baseline survey should shed light on the importance of market work among women in this population, and on how frequently and for how long mothers have to be separated from their young infant to carry out their income generating activities. Although the qualitative study indicated that most working mothers could rely on adult relatives to assist them with their childcare responsibilities, it is not clear what happens when the substitute child caregivers themselves (such as the fathers, for example) have

to work and leave the home. The quantitative baseline survey will also provide more information on these aspects.

### **5.5.3. The role of fathers as caregivers**

In order to understand the caregiving roles played by fathers, we conducted interviews with groups of fathers to see how they viewed their responsibilities towards their children. Two group interviews (Marmont and Casse) and one interview with a couple (Doco) provided the data for this topic.

The interviews revealed that fathers had a very broad view of their caregiving roles and did not think of themselves solely as providers of income and food. The provision of food and money, imparting moral and spiritual guidance to their children, taking their children to the health center when they were ill, and ensuring that their children were well-educated were among the responsibilities that they defined for themselves. They were also actively involved in the care and feeding of younger children, including bathing, cleaning, feeding and preparing food, and in a number of other activities. However, this occurred mainly when mothers were away from home, and mothers were, as in many other cultures, perceived as the primary caregivers of the children.

The groups of fathers interviewed all expressed a deep interest in learning more about caring for their children and even suggested that they felt neglected by program activities that were typically targeted only to women. They suggested that a weekly meeting forum for men would be an acceptable and feasible venue for them to attend in order to obtain information about how to improve their caregiving skills. One practical suggestion was to have separate mothers and fathers clubs held at different times of the day so that at least one parent could attend the club if the other was working or away at the time of the club meeting.

The fathers who were interviewed in our study were mostly involved in agricultural activities and tended their farms in the morning, usually returning home at noon for a break, and again later in the afternoon for their meal. Unfortunately, our interviews do not provide further information on the detailed schedules of the fathers and who they left the child with in case they also had to be at work. At the same time, agricultural work is more flexible in terms of timing than market activities and it is possible that parents can adjust their working patterns to accommodate their childcare responsibilities.

Overall, our results on the roles of fathers suggest that fathers play a greater role in childcare than has been acknowledged in the planning of program activities. Given the extent to which they participate in daily care activities for their children, it will be imperative to include fathers in the behavior change communications program.

## 6. RESULTS OF RECIPE TRIALS

The use of recipe trials to develop enriched complementary foods using local ingredients is well-developed and has been used with success in a number of countries. Usually, recipe trials start with the identification of the commonly fed local complementary foods and use a participatory approach to enrich these recipes. This is accomplished through group discussions of the local recipes, feasible options to enrich them, and actual trials to test the acceptability of modified recipes (Dickin, Griffiths, and Piwoz 1997). In some countries (e.g., Nigeria), the recipe trials have been combined with an approach called Trials of Improved Practices (TIPS) (Dickin, Griffiths, and Piwoz 1997) where follow-up interviews also investigate the feasibility of preparing the enriched recipes in home settings as well as other behavioral modifications to usual patterns of complementary feeding.

In this setting, we conducted the recipe trials in three phases (described in the methods section) that included discussion of enrichment options, testing of actual recipes, and follow-up feasibility interviews. The results are presented with a preliminary description of currently fed complementary foods, followed by a description of the recipes developed and tested through the recipe trials process. For each modified complementary food, issues related to its acceptability, feasibility, and affordability are also discussed. The section concludes with a discussion of the nutritional qualities of the complementary foods.

### 6.1. Complementary foods currently fed to infants and young children

As reported in Section 4, mothers in our survey usually prepared three main types of complementary foods: 1) cereal gruels with some type of fat (salt cracker gruel and bread soup); 2) cereal gruels with sugar, but no fat (wheat flour gruel); and 3) mashed plantains with a fish sauce. The main ingredients included in these gruels were presented earlier in this report (Table 5.1) and detailed recipes are available in Appendix 3.

Two of the gruels were selected for modification through recipe trials: the wheat flour gruel and the mashed plantain with fish sauce. The reasons for choosing these two recipes are the following:

- The salt cracker gruel is usually fed to very young infants and is used as a breast-milk replacement and to give some relief to breastfeeding mothers. This is made especially for the young infant and mothers stop using it after the infant is about 4 months old as he or she starts receiving other gruels or bread soup. It was decided that rather than attempting to enrich the salt cracker gruel, the education and behavior change program should actively try to discourage the use of this product for young infants as part of its promotion of exclusive breastfeeding in the first half of infancy. In particular, we felt that modifying this recipe could run the risk of providing justification for mothers to continue the practice of early complementation. In order to avoid this, the salt cracker gruel was not considered as a potential vehicle for improving complementary foods.
- The bread soup was not considered for modification because it appeared to be of low nutrient density to start with.

- The white flour gruel and the mashed plantain with fish sauce seemed to be better candidates, among other things, because they are given to infants from the ages of 3-6 months until the child consumes family foods. In many cases these dishes are considered family foods and are prepared for the entire household.
- The wheat-soy-blend (WSB) food commodity distributed by World Vision is a type of flour similar to the flour currently used to prepare the white flour gruel. Thus, new and enriched gruels could be prepared using donated foods targeted to the child.

Note that there was no recipe identified, which was prepared *only* for the young infant, as a special complementary food in this population, with the exception of the salt cracker gruel. As mentioned earlier, this type of gruel had to be discouraged both because of its poor nutritional quality and because of its improper use with very young infants. Ideally we would have been able to identify a special food to enrich, which was consumed only by the infant, because it is much less costly to enrich a small amount of food to be fed to a young infant than to enrich a food consumed by an entire household. However, in the face of having only salt cracker gruel as the “special infant food,” we decided to work with other, more promising recipes, even if they were more widely consumed within the household.

The recipe trials also explored the options of adding special ingredients like a beaten egg or extracted breast milk to a portion of the gruel served to the under-two child.

## **6.2. Modified recipes developed during the recipe trials**

The following section presents the modified recipes that were developed using the recipe trials. For each recipe, a description of the recipe is presented along with post-trial findings related to the acceptability, perceived feasibility of preparation, and perceived cost of the recipe. Following this, a summary of the two- or three-week follow-up interviews conducted to assess whether mothers had prepared the recipe at home is presented. Details of each recipe are presented in Appendix 4.

### **6.2.1. Millet gruel with black beans and groundnuts – Bassin Zim**

#### *Description*

This gruel was made of millet flour and was enriched with pounded beans and groundnuts. The recipe was developed with the women’s group as a modification of the usually prepared wheat flour gruel. Millet is a staple cereal and is cultivated in the area of the study. Thus, women were familiar with making light millet gruels with water and sugar, although they did not usually add beans or groundnuts to the gruel. They were, however, interested in trying the modified recipe. The participants decided to use black beans, because this variety of beans is also cultivated in the area and is perceived to be richer in nutrients, especially iron, than other varieties of beans.

#### *Post-trial tasting and feedback*

The feedback of the group after the trial was very positive in terms of the taste, texture, color and smell. One of them suggested that she would have cooked the gruel longer. The women thought

that the gruel had a chocolaty taste and they preferred this to the gruel made with wheat flour. They all agreed that this recipe took longer to prepare, especially the pounding of beans, and that it is more expensive than the wheat flour gruel. However, they affirmed that these factors would not be a constraint to trying the recipe at home. They also informed us that prices of beans and groundnuts are lower during the harvest season, i.e., between July and October, and that it would be easier to buy these ingredients at that time.

The participants indicated that they could prepare the millet gruel one to three times a week for the whole family, depending on the resources available. According to the women, children can only eat this preparation from the age of 9 months on, because the millet is heavy and the groundnuts can “inflate their stomach.”

### *Follow-up feasibility interviews*

A first follow-up visit was conducted three weeks after the recipe trial. At this visit, it was revealed that none of the participants had tried the recipe at home. The major constraint for all of them was the lack of money to buy the beans and the peanuts. One woman also mentioned that the preparation was time- and energy- consuming. At this time, it was suggested to them that they prepare the recipe only for the youngest child if it was too expensive to prepare it in large amounts for the whole family.

A second follow-up visit was done three weeks after the first one. Each of the three women interviewed reported that they had prepared the gruel at home, but they indicated that this was in order to remember the recipe. Two of them prepared it twice and another woman only once. All the women had modified the proportions of millet, beans, and groundnuts that had been agreed upon during the recipe trial (5/8 versus 2/8 versus 1/8); two mothers had used the same quantities of beans and groundnuts and another made the gruel of 2/4 of millet and 1/4 of beans and groundnuts, respectively. In addition, they had added cows milk at the end, which made the gruel thinner than the recipe developed earlier.

The women reported that the entire family, i.e., between six and ten persons, shared the gruel and both adults and children liked it very much. However, as with the first follow-up visit, the women pointed out the same constraints to preparing this gruel more often—the lack of money to buy beans and the time and energy-consuming preparation technique.

### *Summary*

Although this recipe was well accepted and appreciated in terms of taste, its low feasibility with respect to the time and energy necessary for preparation and the high costs of the ingredients (see Table 6.1) made it difficult for women to prepare it at home. In addition, the participants of this group felt that the enriched recipes should be prepared for the whole family because all family members were perceived as needy, making the overall cost of preparation higher. Note that the youngest child of the three women participating in the second follow-up interview was over two years old; this may have made it difficult for mothers to understand why they should prepare the enriched recipe only for their youngest child.

### **6.2.2. Wheat flour gruel with black beans and groundnuts – Bassin Zim**

#### *Description*

This recipe was developed to enrich the original wheat flour gruel with pounded black beans and groundnuts. The proportions of wheat, beans, and groundnuts decided upon during the recipe trial were different from those of the previous preparation: 4/6 versus 1/6 versus 1/6, i.e., less bean flour was used.

#### *Post-trial tasting and feedback*

Acceptance of this gruel was good on the whole in terms of taste, texture, color, and smell. The women liked the taste, but they still preferred the millet gruel. In terms of cost and feasibility of home-preparation, the women identified the same problems as with the millet gruel, that it was costly and time-consuming.

According to the women, the enriched gruel made of wheat flour could be given to children from the age of 5 months on. Wheat flour is less heavy than millet, which is why it could be introduced earlier. Also, the gruel had to be fed in the morning; otherwise the groundnuts can “inflate the child’s stomach.”

**Table 6.1. Summary of recipes tested through recipe trials**

No.	Name of recipe and or behavior change	Place where developed/tried	COMMENTS ON RECIPE			
			From Discussion after Recipe Trial			From follow-up interviews
			Acceptability	Feasibility (No. of preparation steps + cooking time)	Cost <sup>a</sup>	Whether actually tried, at home
1.	Millet gruel with black beans and groundnuts	Bassin Zim	Very good	10 steps + 45 minutes	11.5 gourdes	Yes
2.	Wheat flour gruel with black beans and groundnuts		Very good	7 steps + 25 minutes	11 gourdes	No
3.	Millet snack (“Cham-cham”)		Excellent	9 steps + 15 minutes	> 20 gourdes	Yes
4.	Wheat flour gruel with black beans and dried fish	Marmont	Less liked than sweet version and mothers thought it was too thick for a 6 month old	4 steps + 35 minutes	9.25 gourdes	Yes
5.	Wheat flour gruel with black beans and sugar		Good but mothers thought it was too thick for a 6 month old	4 steps + 35 minutes	8.25 gourdes	Yes
6.	Mashed plantain with pumpkin and fish sauce		Good	2 steps + 35 minutes	13 gourdes	Yes
7.	Wheat flour gruel with black beans, sugar and oil	Tierra Muscadi	Good, consistency fine too	4 steps + 35 minutes	11.25 gourdes	Yes
8.	Mashed plantain with pumpkin and fish sauce		Excellent	2 step + 35 minutes	17.5 gourdes	Yes
9.	Addition of an egg to the wheat flour gruel		Good	1 step + 35 minutes	6.25 gourdes	Yes
10.	Addition of expressed breast milk to the gruel		No information	Depends on the gruel made	Cost of the gruel made	Yes

<sup>a</sup> Exchange rate: 28 gourdes = US\$1.

### *Follow-up feasibility interviews*

In the two follow-up visits, it was revealed that none of the participants had tried the recipe at home. The constraints mentioned were the same as for the millet gruel: the lack of money to buy the beans and peanuts and, in addition, the time and energy consuming preparation technique.

### *Summary*

Although this recipe is also well accepted and its feasibility is better, i.e., less preparation steps and cooking time needed than for the gruel made of millet, the time taken to pound the beans and groundnuts as well as the cost of buying them appeared to be too high (see Table 5.1) for the women to prepare this recipe at home.

### **6.2.3. Millet snack (cham-cham) – Bassin Zim**

#### *Description*

This *cham-cham* snack is a powder that is usually made of corn, groundnuts, and sugar and given to children to consume as a snack. Because millet, rather than corn, was available at the time of the recipe trials, the research team discussed with the participants the possibility of trying the recipe with millet. The suggestion was well accepted by the participants.

#### *Post trial tasting and feedback*

The millet snack was well appreciated by children and adults, though two of the women thought that the preparation with corn provided more energy. Women indicated that during the corn harvest season, they usually prepare the snack once or twice per day and if they don't have enough sugar, they add salt. The participants indicated that children could be fed the corn snack from the age of 8 months on, while the millet version could be fed only to children older than 12 months. Also, the women suggested that the millet snack should only be fed to children in the morning, as it could increase the risk of "inflating the child's stomach" if it was fed later in the day.

When asked if this powder could be preserved and mixed with water to prepare a thick gruel for younger infants, the women indicated that it was possible to store the millet snack for a year but that they didn't think it should be used to prepare a gruel. The reason for this was that the grain was not pounded very fine for the snack and they thought that corn or millet fiber particles could still be present in the powder and that this was not appropriate for young infants

#### *Follow-up feasibility interviews*

An initial follow-up visit showed that the millet snack had been prepared in three households a few times since the recipe trial. It had, however, been prepared by the older children in the household rather than the mother herself. Moreover, the recipe had been modified to accommodate the availability of ingredients in the homes where they were prepared. For

example, in one case the snack contained only millet and sugar, whereas in another household it was made with millet and salt only because neither groundnuts nor sugar were available.

### *Summary*

As with the previous recipes, the taste of this recipe was acceptable in the post-trial tasting sessions. However, it was perceived as being quite expensive (because of the groundnuts) and time-consuming in its preparation (because of the millet), especially for a snack (see Table 6.1). This could be one reason why the snack was usually prepared without groundnuts.

#### **6.2.4. Wheat flour gruel with black beans and dried fish – Marmont**

##### *Description*

This recipe was planned as a modification of the gruel that was most frequently prepared for young children (the white wheat flour gruel). The women had never added beans, but they were interested in trying it when it was proposed by the research team. The group preferred to add beans to a salty version of the gruel made of wheat flour and dried fish, and similar to the group in Bassim Zim, they insisted on using black beans for its perceived nutritional benefits over other types of beans.

During the recipe trial itself, the group decided to add one part of bean flour to two parts of wheat flour (proportion 1:2). This proportion was considered affordable and they said it would be feasible for them to try the recipe at home. They added a slightly bigger piece of dried fish (provided by the research team) than they would usually use for this amount of gruel. During the preparation, the research team also requested that mothers prepare a thicker gruel, using less water than usual.

##### *Post-trial tasting and feedback*

The women liked the taste of the gruel and the younger children ate it too. However, the older children (around the age of 5 years) did not like it at all, possibly because it was not a taste they were habituated to. One disappointing factor was that all the women thought that the gruel prepared with less water than usual was too thick for a 6-month-old infant but would be acceptable for an infant starting from the age of 8 months. The group felt that this gruel was easy to prepare at home and indicated that it would be possible for them to prepare this two times a week. They did not expect the pounding of the beans to be a constraint.

##### *Follow-up feasibility interviews*

In the group follow-up interviews three weeks after the recipe trials, all five women said that they had prepared the recipe quite frequently in their homes. Sensing that there might have been some peer pressure to report positive practices with this group, especially since the trials were conducted in the courtyard of a World Vision *colvol*'s home, the research team returned the next day to interview the women individually in their homes.

The individual interviews revealed that the women had indeed prepared the recipes in their homes. One woman had prepared it every other day, another 1-2 times per week, and a third woman 3 times per week. One other had made it twice and another one only once since the recipe trial.

All the women had roasted and pounded a large amount of beans at one time, which they then used a number of times to prepare the gruels. They used the same proportion of wheat flour to bean flour and one local measure of dried fish and had used the same preparation method as during the recipe trial. However, four women had made the gruel less thick than during the trial. One woman mentioned the time and energy-consuming preparation technique of the beans to be a constraint to preparing the gruel more frequently.

Two mothers had fed the gruel to the youngest child/children and another one had also served a small quantity to the older children. Two mothers with only one child each said that the child ate the gruel but that they had consumed the leftovers. Those mothers who had prepared this recipe just once or twice felt that their children rejected this salty version and therefore stopped preparing it. Two other women said that their children did not really like this preparation but ate it anyway. Only one mother believed that her child really liked the gruel.

### *Summary*

This recipe, for a savory wheat flour gruel, enriched with groundnuts and beans, was accepted by mothers and young children but less liked than the sweet version of the gruel (see 6.2.5). It was less time-consuming and less costly than the first two recipes (see Table 6.1) and it had been prepared by all the women at home at least once, if not a few times.

### **6.2.5. Wheat flour gruel with black beans and sugar – Marmont**

#### *Description*

The idea for this recipe emerged during the trial of the previous recipe, which was a salty version with beans and dried fish. When we discussed the possibility of preparing a sweet version, i.e., adding sugar instead of fish, the participants were eager to try this gruel as well.

The group decided to keep the same proportion of bean flour to wheat flour (1:2). This time we did not limit the use of water for the gruel.

#### *Post-trial tasting and feeding*

In spite of not having restricted the amount of water that the women could put into the gruel, the feedback after the tasting showed that the gruel was still too thick for three of the women. All the mothers preferred this sweet version to the salty version, but the younger children did not seem to have a preference.

### *Follow-up feasibility interviews*

In the group follow-up visit three weeks later, all five women said that they had prepared the recipe at home frequently. As with the previous recipe, the group responses were followed-up and verified in individual interviews with the women in their homes the following day.

The individual interviews found that one woman had prepared the gruel every other day and another twice weekly. One mother had prepared it five times and yet another one twice since the recipe trial. Only one of the mothers had not cooked it at all, because she felt that her child had rejected this sweet gruel during the tasting session after the recipe trial. For the preparation, the women roasted and pounded a large amount of beans that they then used to prepare the gruels several times. They used the same proportion of wheat flour to bean flour and used the same preparation method as during the trial. Four of the women also added some vegetable oil or butter to increase the caloric density, as suggested by the research team. Two mothers also added cow's milk.

All the women prepared the gruel to be less thick than during the recipe trial. Three mothers fed the gruel to the youngest child/children and one of them also served small quantities to the older children. One mother with only one child said that the child had eaten the gruel but that she had consumed the leftovers. All the mothers felt that their children liked this sweet gruel very much.

### *Summary*

This sweet wheat and bean flour gruel was highly appreciated for its taste. It was also slightly less expensive than the salty version of the gruel (see Table 6.1). The mothers and their children preferred this sweet gruel to the salty version that included fish. The repeated preparation of the gruel in the homes of the participants indicates that this might be a feasible gruel to promote.

## **6.2.6. Mashed plantain with pumpkin and fish sauce – Marmont**

### *Description*

This recipe was developed with the aim of increasing the micronutrient density of the complementary foods fed to young children. Thus, using the preparation of mashed plantain with dried fish sauce as a starting point, the addition of a small amount of mashed pumpkin was suggested to the participants. The women had never added pumpkin before to the mashed plantain, only to light soups and they were worried at first about the laxative effect of the pumpkin. However, they got interested when the research team explained the reason for adding the pumpkin (vitamin A) to the plantains. Pumpkins are easily available in this area, either grown in the garden or sold in marketplaces.

The research team also probed for other mashed variations, like using regular and sweet potatoes instead of the plantains. Potatoes, however, are not cultivated in this area and the use of sweet potatoes was strongly rejected because of their laxative effect. Four of the five women had not started giving sweet potatoes to their youngest child.

During the recipe trial itself, the group decided to use a slightly smaller amount of pumpkin than of plantains in order to maintain the taste of the plantains. For the sauce, they used two local measures of dried fish.

#### *Post-trial tasting and feedback*

The taste of the recipe made with mashed plantains, pumpkin, and fish sauce was liked by all the participants. Also, the women agreed that this preparation could be given to children from the age of 7 months on. They also said that this recipe is the easiest out of the three to practice at home (see Table 6.1). Plantains and pumpkin are available seasonally in the garden, so costs for this recipe are considerably reduced.

#### *Follow-up feasibility interviews*

In the follow-up visit three weeks later, all five women said that they had practiced the recipe at home. One woman prepared the mashed plantains once a week, another woman cooked it four times, one twice, and two only once since the recipe trial. They used the same proportion of plantains to pumpkin and added one local measure of dried fish to each preparation. They also described the same preparation method as the recipe trial. Two mothers cooked the recipe for the youngest child only and three said that they prepared plantains and pumpkin for the whole family, but mashed the part for the child.

One mother felt that her child did not accept this preparation at all. Two other women said that their child did not really like it, but ate it anyway and that the children preferred the gruels to this recipe. One mother mentioned that their children did not have any problems eating it and only one had the impression that her children liked the mashed plantains with pumpkin.

#### *Summary*

The mashed plantain with pumpkin and fish sauce appeared to be a feasible recipe to improve the vitamin A content of the foods consumed by infants and young children. While the feasibility trials were encouraging in that all the women had tried the recipe at least once, they did not prepare it very often. The main constraints were poor acceptance by the child and the end of the pumpkin-harvesting season. One woman appreciated the less time-consuming preparation technique compared to the tried gruels but was unable to afford the pumpkin more often in order to prepare the recipe.

### **6.2.7. Wheat flour gruel with black beans, sugar, and oil – Tierra Muscadi**

#### *Description*

In Tierra Muscadi, the participants were willing to try a gruel with bean flour added to it. However, they showed a preference for trying a sweet recipe rather than a salty one since they said that they prepared a salty version of the wheat flour gruel only when they did not have enough sugar to make a sweet version. At the same time as adding beans to the wheat flour gruel, the research team pursued the possibility of adding some oil to this gruel to increase the caloric

density. This suggestion was received positively and was included in the plans for the trial of this recipe. Also, at the recipe trial, in addition to making the traditional wheat flour gruel with the added bean flour and some additional oil, the women were asked to reduce the amount of water they traditionally used for this recipe.

#### *Post-trial tasting and feedback*

The final product was well appreciated in terms of its taste and color (in spite of the brown color due to the black bean flour). The participants said that they would prepare the gruel of the same consistency for children from the age of 4 months on.

All the participants indicated that they would like to prepare this gruel in their homes and suggested that the only constraints might be the lack of resources to be able to buy black beans, as well as the additional time it would take to prepare the flour from the beans. However, as with the participants in Marmont, they discussed the possibility of preparing a larger quantity of the bean flour and storing it for future use. The addition of oil to the gruel appeared to be acceptable.

#### *Follow-up feasibility interviews*

The two-week follow-up interviews indicated that only two participants had tried the new recipe for the gruel at home; one had prepared it for her infant a number of times while the other had prepared it so that she could test the recipe with her family. The participant who had prepared the new recipe for her infant a number of times had made the gruel *only* for the infant, not for the rest of the family. Also, her mother, who had been present at the recipe trials, said that she had also been making the gruel for the infant.

Of the remaining five, three suggested that they did not have enough money to buy the beans necessary to make a flour for the gruel. Two of the women said they had not had the time to try the recipe and it was too time-consuming to go through the numerous steps required to make the bean flour.

#### *Summary*

Overall, it appears that the addition of bean flour to the gruel is more time-consuming and costly than the original recipe. One problem is that this gruel is seldom prepared only for a young infant and is made for the entire family, and adding bean flour to a recipe for the entire family increases the real and perceived costs substantially when compared to adding it for only a child. The only woman who had been able to make the enriched recipe for her child had only one child, while the others who did not try the recipe at home had more than four children each.

### **6.2.8. Mashed plantain with pumpkin and fish sauce– Tierra Muscadi**

#### *Description*

A modified version of the mashed plantain with fish sauce recipe was tried in Tierra Muscadi as well, to explore the possibility of adding pumpkin to improve the vitamin A content of the

recipe. Although pumpkin is considered to have a laxative effect for young children, the women were willing to try adding a small piece of pumpkin to the mashed plantain.

The recipe was prepared as with the recipe in Marmont, using the mashed plantain with added mashed pumpkin and serving it with a fish sauce. In this community, mothers added some tomato paste to the sauce, which further enriched the nutritional value of the recipe. The women, however, indicated that usually they did not have enough money to add tomato paste to the recipe.

#### *Post-trial tasting and feedback*

The post-trial tasting and discussion showed that this was the most appreciated recipe and it was liked by all the participants as well as their children. Furthermore, they found the recipe to be affordable because adding pumpkin did not increase the price of the gruel by more than 2 gourdes (US\$0.07). Also, pumpkin was often available in home gardens and the women felt they could prepare this twice a week.

#### *Follow-up feasibility interview*

At the follow-up discussion, 3 out of 4 women had prepared the recipe at home for their families. In all cases, their families had liked the recipes. Two of the women had prepared the recipe without the pumpkin more often than with the added pumpkin and indicated that it was not easy to get the pumpkin as not everyone had it in their gardens. Also, it was not possible to buy pieces of pumpkin (rather than a whole pumpkin) during this season and a whole pumpkin cost 10-15 gourdes. The one woman who had not tried the recipe stated that it was because she did not have pumpkin in her home garden.

#### *Summary*

In general, the plantain recipe with added pumpkin and fish sauce was considered feasible and acceptable, even though previous discussions had suggested that infants are not to be fed pumpkin as it had a laxative effect. Although more women had tried this recipe compared to the others, issues of availability and affordability still emerged as concerns for the continued use of this recipe. Communications related to the possibility of using other vegetables in the same way as pumpkin was used in this recipe could use a local agricultural calendar to suggest different options for the different growing seasons.

### **6.2.9. Addition of an egg to the wheat flour gruel– Tierra Muscadi**

#### *Description*

In an effort to include more animal foods in the diet of the youngest child in the household, the research team explored the possibility of adding an egg to a portion of the gruel for an infant/young child. Although the participants mentioned that they had never done this before, nor had they thought of it, they were willing to try it at the recipe trials. They were used to the idea of adding an egg to mashed plantains as well as to bread soup but had not considered adding it to

gruels as well. Thus, at the recipe trial, a beaten egg was mixed into the portion of the wheat flour gruel with beans that was traditionally served to an infant (1/2 cup) and cooked briefly.

#### *Post-trial tasting and feedback*

During the discussion the women mentioned that, usually, only the egg yolk is given to young infants, since the white of the egg was considered “too hard” for an infant. However, they were pleased with the result of adding a beaten egg to the gruel as they could not discern the white from the yolk. Both the infants and the mothers who tasted the gruel with the egg liked it very much and the mothers indicated that it would be feasible for them to prepare the modified recipe in their homes at least two times a week.

#### *Follow-up feasibility interview*

The two-week follow-up interview revealed that two of the women had added an egg to their infant’s portion of the gruel. One of the women had tried it once and another had tried it thrice. Both women indicated that their infants had liked the gruel with the beaten egg very much.

#### *Summary*

The recipe trials showed that the addition of egg (and potentially other foods) only to the portion destined for the infant was acceptable both culturally and from the point of view of taste. Follow-up interviews showed that this was feasible within the home setting as well, even for one participant who had six children in addition to the youngest child for whom she modified the gruel.

### **6.2.10. Addition of expressed breast milk to the gruel – Tierra Muscadi**

#### *Description*

The possibility of adding expressed breast milk to the infant’s portion of gruel was explored in Tierra Muscadi. Although the women had not heard of this before, they were willing to try adding expressed breast milk to the gruels they made for the infant at the recipe trials.

Two of the women who were lactating were interested in trying the addition of expressed milk to the salt cracker gruel that they were already feeding their infants. Thus, a salt cracker gruel was prepared at the recipe trial and some expressed breast milk was added to the portion that was served for an infant.

#### *Post-trial tasting and feedback*

The process of expressing breast milk itself posed no problems for the women and they had no problems doing the expression in front of the entire group. The infants who were fed the gruels appeared to like the taste of it and ate well. In general, both the men and the women present at the trial considered this a feasible option for enriching the gruel and improving its taste.

### *Follow-up feasibility interviews*

The follow-up interviews indicated that one of the women who had tried this modification had done it thrice since the recipe trial. She did not face any problems and found that her infant liked the gruel very much. She did not, however, have the opportunity to leave plain expressed breast milk for someone else to feed her infant because she did not have to leave the infant with anyone during this period.

One issue related to the use of the salt cracker gruel for this demonstration is that although this was the recipe used for the trial, it was discussed at the trial that this could be done for any of the gruels. However, the woman who had tried it had done it only with the salt cracker gruel, and had never tried it with other gruels. They indicated that they had prepared it “just as it had been shown,” suggesting that the example used at the recipe trials was perceived by them to be “instructions” rather than just an example. The women who had tried the recipe had very young infants (2 months and 1.5 months old) and the feeding of anything other than breast milk to women with infants as young as this should be actively discouraged.

### *Summary*

In general, the trial revealed that the practice of expressing breast milk for addition to gruels is both acceptable and feasible for women to do. However, this should be promoted for the gruels fed to infants over 6 months old, and the use of the salt cracker gruel should be discouraged for all infants under 6 months. The feasibility of expressing larger quantities of breast milk to be left behind for a child is not yet known, even though it appears to be acceptable, at least for this group of women.

#### **6.2.11. Observations regarding the choice of recipe trial participants**

The results of the recipe trials with the three different groups reveal that women of the Marmont group practiced the modified recipes more often than the mothers of the two other groups in Bassin Zim and Tierra Muscadi.

In the Marmont group, compared to the two other groups, the presence of a number of supporting factors could have allowed these women to prepare the modified recipes more often at home. These include a higher level of training and knowledge of the women (two were daughters of a *colvol*, one had attended a cooking course, and another one a sewing training); and fewer children (three had only one child each). Additionally, they appeared to have a better understanding of the importance of cooking special recipes for young children only, were relatively young mothers, lived close to the marketplaces, and also, all had children who were in the 8 – 12-month age group (when gruels are most likely to be consumed). Also, the mother of one child who was often sick in the past appeared more open and receptive to enriched recipes. This mother reiterated in the follow-up interview that the child is doing better than before and the same woman had also explained the preparation technique to a neighbor.

The two other groups (Bassin Zim and Tierra Muscadi) we had worked with were quite heterogeneous with respect to the age of the youngest child, the age of the women themselves, and the number of children they had. It is recommended that future recipe trials should be conducted with as homogenous groups of women as possible, at least ensuring that women with children of the same age group are addressed at the same time.

### **6.3. Nutritional quality of the complementary foods**

Our analysis of the nutrient content of the currently fed complementary foods and the modified recipes is based on current WHO recommendations for complementary feeding (Dewey and Brown 2002). The ability of the complementary foods to meet the requirements for infants at different ages is assessed in terms of energy density as well as micronutrient density (particularly iron, zinc, and vitamin A). The analysis was done using a software program called Food Processor 7.1 (ESHA) and utilized USDA food composition values.<sup>5</sup>

#### **6.3.1. Energy density**

The current WHO recommendations suggest that breastfed infants between 6 and 8 months of age should receive at least 356 Kcal/day from complementary foods (Dewey and Brown 2002). For 9-11-month-old infants, energy from complementary foods should be 479 kcal/d and for 12-23 month-old children, 772 kcal/d. These guidelines are based on children receiving average amounts of breast milk at each age. If infants and young children consume more or less breast milk than average, their energy requirements from complementary foods will differ accordingly. These recommendations also assume good maternal nutritional status and adequate breast milk intake and composition of breast milk.

The number of times infants and young children should be fed complementary foods depends on the average energy density of their diet (kcal/g of main complementary food) and the amount they consume at each feeding. Thus, children fed diets based on low-density gruels (or other complementary foods) have to be fed more often than children fed high-energy dense complementary foods, and/or they have to be fed larger amounts at each feed. Given their limited gastric capacity, infants and young children may be unable to consume sufficiently large amounts of complementary foods at each feed to fulfill their energy requirements. Similarly, given the time constraints of caregivers in developing countries, it is unrealistic to think that infants and young children can be fed more than 4-5 times per day. Thus, low-energy diets (say, below 0.6 kcal/g) are considered inappropriate for infants and young children in developing countries because they drastically increase the risk that these children will not meet their daily energy requirements. Increasing the number of meals per day is not only unpractical, but it may also displace breast milk intake, and therefore is not recommended.

Taking these factors into consideration, current recommendations are that infants 6-8 months of age should be fed complementary foods 2-3 times/d and 9-11 and 12-24 month-old children, 3-4 times/day.

---

<sup>5</sup> Calculations for the wheat flour gruels used nutrient composition values for non-fortified wheat flour since the levels of enrichment (if any) of wheat flour in Haiti are unknown.

Table 6.2 presents the nutrient content of the currently fed complementary foods and the modified recipes developed during the recipe trials in terms of average serving size. The first four recipes listed represent the currently fed complementary foods, and the following nine recipes represent the modified recipes. Ideally, the calculation of energy density should be presented in terms of number of kilocalories per one gram of the prepared complementary food. However, we did not have the exact weight of the final cooked food, but rather, the total volume (in cups). Therefore we present the data on energy density in terms of kcals per serving size. Serving sizes are based on child age and on our discussions following each recipe trial, which indicated that 6-month-old infants usually consume approximately  $\frac{1}{2}$  cup of the gruels or mashed plantain; 9 month-old infants, about  $\frac{3}{4}$  cup; and 12-month-old children, 1 cup.

Thus, the energy content of the different recipes is analyzed with respect to the number of servings needed of each of the recipes at the three different age groups to attain the level of energy required from complementary foods (Dewey and Brown 2002).

**Table 6.2. Summary of the nutritional qualities of currently fed complementary foods and of modified recipes**

No.	Name of recipe	Place	NUTRITIONAL QUALITIES PER SERVING SIZE/NUMBER OF SERVINGS NEEDED <sup>a</sup>								
			Per ½ cup (serving size for 6-8 months old infant)							Per ¾ cup (serving size for 9-11 months old infant)	Per 1 cup (serving size for 12-23 months old child)
			Kcal	Protein (g)	Fat (g)	Vitamin A (RE)	Iron (mg)	Zinc (mg)	Servings needed	Servings needed	Servings needed
<b>Traditional recipes</b>											
1.	Salt cracker gruel	Bassin	300	4.7	6.1	0	2.8	0.41	1.2	1.1	1.3
2.	Bread soup	Zim	86	2.2	4.5	11.2	0.6	0.04	4.1	3.7	4.5
3.	White flour gruel		95	1.5	0.14	0.02	0.4	0.12	3.8	3.4	4.1
4.	Mashed plantain with fish sauce		228	2.5	17.0	1.5	0.37	0.1	1.6	1.4	1.7
<b>Improved recipes</b>											
1.	Millet gruel with black beans and groundnuts		134	3.7	2.7	0.17	1.8	0.25	2.7	2.4	2.9
2.	Wheat flour gruel with black beans and groundnuts		133	3.2	2.5	0.17	0.67	0.34	2.7	2.4	2.9
3.	Millet snack ( <i>Cham-cham</i> )		319	9.9	13.7	0	3.4	0.79	1.1	1.0	1.2
4.	Wheat flour gruel with black beans and dried fish	Marmont	163	6.0	4.3	0.31	1.0	0.57	2.2	2.0	2.4
5.	Wheat flour gruel with black beans and sugar		183	4.8	0.4	0.31	1.2	0.52	1.9	1.7	2.1
6.	Mashed plantain with pumpkin and fish sauce		105	1.8	4.5	48.6	0.5	0.18	3.4	3.0	3.7
7.	Wheat flour gruel with black beans, sugar and oil	Tierra Muscadi	146	4.0	1.2	0.31	1.06	0.46	2.4	2.2	2.7
8.	Mashed plantain with pumpkin and fish sauce		112	3.0	6.2	45.3	0.55	0.27	3.2	2.9	3.5
9.	Addition of an egg to the wheat flour gruel		158	6.2	4.4	67.0	1.36	0.54	2.3	2.3	3.1

<sup>a</sup> *Servings needed per day for infants aged 6-8 months to attain the level of energy required from complementary foods, assuming a low intake of breast-milk energy. Total energy requirement is based on new U.S. longitudinal data averages plus 25% (2 SD) according to Dewey and Brown (2002).*

The last three columns in Table 6.2 show the number of servings needed of each of the complementary food to meet the energy requirements of infants and children of different age groups. The salt cracker gruel has the highest energy density, while the bread soup and the mashed plantain preparations have the lowest energy density. Based on our calculations, it appears that even some of the modified recipes would have to be fed to 6-8 month old infants at least 3 times a day in order to meet their energy requirements (assuming average intakes of breast milk). After 12 months of age, some of these preparations would have to be consumed 3-4 times per day. These feeding frequencies are not excessive, however, and thus, it appears that the energy density of the improved preparations is generally acceptable.

It is interesting to note that the original recipe of the mashed plantains with fish sauce is more energy dense than the modified recipes. The higher energy density is, however, a function of the larger amount of vegetable oil used to prepare the accompanying fish sauce in the original preparation in Bassin Zim. The two groups that prepared the modified recipes of the same dish in Marmont and Tierra Muscadi added less fat than the original recipe and therefore they have lower energy densities. It may be advisable to retain the amount of fat used in the original recipe to increase the energy density of the improved recipe.

The energy density of the commonly fed bread soup and the gruel made of white wheat flour is low and requires a feeding frequency above the recommendations for infants 6-9 months and children 12-23 months (4.1 and 4.5 for bread soup at 6-9 and 12-23 months, respectively). One of the main objectives of the recipe trials was to develop recipes that would increase the energy density of the currently fed foods, and this was achieved in all but one case (the mashed plantain recipe). The energy and protein density of each of the modified enriched gruels is more than that of the two original gruel recipes. The sweet and salty versions of the gruels made of wheat flour and beans have higher energy densities than the original version that did not contain the added beans and groundnuts. It can be seen from Table 6.2 that approximately 3 servings of the recipe developed in Bassin Zim are needed to meet the energy requirements of infants 6-8 months old, compared to 4 servings of the original recipe. The gruel made of millet, beans, and groundnuts also has a similar energy density.

The gruel recipes developed in Marmont that added some oil to the wheat flour gruel, in addition to beans and fish (or beans and sugar), are of a higher energy density than the Bassin Zim recipe that used groundnuts and beans. Thus, approximately 2 servings per day of these gruels are needed to meet the energy requirements of infants who are 6-8 month old, and 9-11 months old. This increases to 2.5 servings (1 cup size) for 12–23-month-old children, a significant improvement over the 4 one-cup servings required of the original wheat flour gruel recipe. Also, adding an egg to one serving of the original recipe for the wheat flour gruel raises both the energy density as well as the protein content by as much as adding beans and dried fish to the wheat flour gruel. Adding an egg to the wheat flour gruel enriched with beans and sugar would further increase the energy density and decrease the number of servings required to meet energy requirements.

The millet snack (*cham-cham*) has the highest energy, protein, fat, iron, and zinc contents. However, this powdery mixture is eaten as a snack, is consumed only in small quantities, and is not consumed by infants before 8 or 12 months of age.

In the case of the mashed plantain recipes, the original preparation used much more oil than the modified recipes and thus had a greater energy density than the modified recipes (with pumpkin). Communications related to the modified versions of this recipe will thus have to stress the use of additional oil to prepare them so that they will have a high enough energy density in addition to their added micronutrient content.

Relative to cost, the cheapest improved preparation is the wheat flour gruel with an added egg. This recipe is cheaper than adding black beans and dried fish, or black beans and sugar to the wheat flour gruel, and is clearly cheaper than all preparations that include a source of fish. In terms of acceptance and energy density, this is also a very promising preparation for children at all ages. Even if the fish preparations are more expensive, the unique nutrient composition of fish is worth the effort of trying to promote its use, at least once or twice a week if families can afford it. Further exploration of the availability of chicken or other small livers, which may be more affordable than larger livers, should be pursued.

### **6.3.2. Protein, vitamin A, iron, and zinc density**

In addition to assessing energy density, it is also critical to evaluate the protein and micronutrient density of the complementary food recipes. In particular, vitamin A, iron, and zinc are critical micronutrients for the growth, development immunity, and health of infants and young children. The micronutrient density of complementary foods is usually expressed in terms of amount of the micronutrient per 100 kcals of the complementary foods. Table 6.3 provides the average densities of selected nutrients in the recipes, compared to the average recommended micronutrient densities of the recipes. This is done only for infants between 6-8 months of age, as an illustration.

The data presented in this table show that the protein density of all preparations more than met the recommended density for 6-8 months old infants. The modified recipes have a higher protein density than the recipes of the foods that are currently fed. The mashed plantain dishes have the lowest protein densities compared to the gruels, except in Tierra Muscadi, where the group had used more dried fish than in the other groups. The highest protein density was achieved by the addition of an egg to the wheat flour gruel. This gruel was also high in vitamin A because of the addition of the egg. The only other preparations that achieved the desired vitamin A density were the ones that contained even small amounts of pumpkin to the mashed plantain. None of the other recipes included significant amounts of vitamin A. Again, the possibility of adding some type of liver to the diet would greatly help increase the vitamin A intake of these infants, as well as the promotion of intake of non-citrus orange-colored fruits when they are in season.

**Table 6.3. Summary of nutrient densities of currently fed complementary foods and of modified recipes**

	AVERAGE RECOMMENDED	NUTRIENT DENSITIES (PER 100 KCAL)												
		1	2	3	4	1	2	3	4	5	6	7	8	9
	Nutrient densities based on Dewey and Brown (2002) for 6-8 months infants with average level of breast-milk intake	Salt cracker gruel	Bread soup	Wheat flour gruel	Mashed plantain with fish sauce	Millet gruel with black beans and ground-nuts	Wheat flour gruel with black beans and ground-nuts	Millet snack ( <i>Cham-cham</i> )	Wheat flour gruel with black beans and dried fish	Wheat flour gruel with black beans and sugar	Mashed plantain with pumpkin and fish sauce	Wheat flour gruel with black beans, sugar and oil	Mashed plantain with pumpkin and fish sauce	Addition of an egg to the wheat flour gruel
		Bassin Zim	Bassin Zim	Bassin Zim	Bassin Zim	Bassin Zim	Bassin Zim	Bassin Zim	Marmont	Marmont	Marmont	Tierra Muscadi	Tierra Muscadi	Tierra Muscadi
Protein (g)	<b>1.0</b>	1.58	2.5	1.55	1.08	2.77	2.41	3.09	3.66	2.63	1.74	2.75	2.64	3.94
Vitamin A (RE)	<b>31</b>	0	13.02	0.03	0.66	0.12	0.12	0	0.19	0.17	46.2	0.21	40.55	42.55
Iron (mg)	<b>7.5<sup>a</sup></b>	0.93	0.72	0.41	0.16	1.35	0.50	1.08	0.61	0.68	0.49	0.73	0.49	0.86
Zinc (mg)	<b>1.6</b>	0.14	0.05	0.13	0.05	0.18	0.26	0.25	0.35	0.28	0.17	0.31	0.24	0.34

<sup>a</sup> Assuming low bioavailability of iron (Brown, Dewey, and Allen 1998).

Iron and zinc densities—known to be “problem” nutrients in infants and young children in developing countries who are fed nonfortified foods—are tremendously inadequate in all our recipes, whether traditional or improved. Although adding an egg to the wheat flour gruel almost doubled the iron and zinc content of the usual recipe, and adding dried fish to the wheat flour and bean gruel increased its zinc density, iron and zinc densities of the modified recipes were still grossly inadequate. Note that the recommended iron densities used here were for diets low in bioavailable iron because Haitian infants have a low intake of bioavailable heme iron (from animal sources), an apparently low intake of promoters of absorption of non-heme iron such as ascorbic acid (because of their low intake of fresh fruits and vegetables), and a high intake of inhibitors of non-heme iron (e.g., phytates from plant-based foods).

Thus, it appears that it is extremely difficult, even from the modified enriched complementary foods, to supply enough iron and zinc to meet the iron and zinc requirements of Haitian infants and young children. Animal products such as liver and dried fish and other meats are possibly the best candidates to increase the concentration of bioavailable iron and zinc in the diet, but the amounts of these foods that infants usually consume are less than needed to supply adequate iron and zinc. The donated wheat-soy blend (WSB) being distributed through World Vision’s program is fortified with iron and zinc and is likely to provide larger amounts of these nutrients than the foods currently used to prepare gruels. The potential of donated commodities to contribute to closing the iron and zinc gap for infants and young children in Haiti is discussed below.

One thing to be noted about the foods prepared for the infants and young children is that they all contained extremely high levels of sodium. The recommended intake of sodium for infants under one year of age is only 80 mg/day (Fomon, 1993), while all the foods prepared contained between 690 and 2,050 mg of sodium per cup. The potential danger of excessive sodium in infants’ foods is related primarily to its role in increasing the susceptibility of infants to dehydration. However, the levels of sodium in the body also depend on other factors such as water intake and the implications of the seemingly excessive levels of sodium in these Haitian infant foods will have to be further evaluated.

#### **6.4. Possible nutritional contribution of WSB**

Our recipe trials were conducted in program areas where distribution of the donated foods for children (the WSB) had not begun yet. Therefore, we were not able to explicitly develop recipes using the donated foods. However, our interviews with program beneficiaries in La Gonâve suggested that the WSB was traditionally used to prepare gruels for the children that were similar to the wheat flour gruel. We have calculated the potential contribution of the WSB to improving the micronutrient content of the wheat flour gruel, based on the assumption that a similar quantity of WSB would be used to prepare the gruel.

Our calculations indicated that substituting the WSB for the wheat flour in the plain wheat flour gruel (original recipe demonstrated in Bassin Zim) would add substantial amounts of micronutrients to the diets of the infants and children. Specifically, substituting the WSB for wheat flour would increase the protein density to 3.26 grams/100 kcals, the vitamin A density to 106 RE/100 kcal, the iron density to 2.7 mg/100 kcals, and the zinc density to 0.78 mg/100

kcal. Although this will contribute to more than meeting the recommended protein and vitamin A densities, it will still not completely fulfill iron and zinc requirements. Thus, recipe trials with the WSB will be pursued, and possibilities of further increasing their iron and zinc densities with other ingredients will be explored.

Another aspect that makes WSB attractive for developing special complementary foods for infants and young children is the fact that the WSB gruel was not much appreciated by adults. This suggests that the WSB gruels could in fact be promoted successfully for infants and children under 2 years of age as a type of complementary food specially prepared for them using the donations targeted to them by the World Vision program to improve their growth and development. Further recipe trials to assess this will be conducted with the WSB once the distribution starts in the program areas.

## 7. WORLD VISION PROGRAM IMPLEMENTATION

The purpose of obtaining information on the implementation of the program activities conducted by World Vision in Central Plateau and in La Gonâve was to familiarize ourselves with the operational aspects of the program, with a special emphasis on the educational and behavior change activities currently included in the program. All program activities that included a BCC component or that could contribute useful information to assist in the design of the behavior change communications program were studied. The overall aim was to identify potential delivery points and vehicles for the implementation of the new BCC program being designed by our team in collaboration with World Vision. The three following types of activities were carried out:

- Observations at three delivery points: Rally Posts, food distribution points and mothers' clubs,
- Interviews with program implementers at the local level (health agents and *colvols*),
- Interviews with program users (beneficiaries).

### 7.1. Observations at different delivery points

#### 7.1.1. Rally Posts

The operations of two Rally Posts in Central Plateau were observed towards the end of July 2002. The program activities at both Rally Posts included an education activity at the beginning of the session, as well as immunization and growth monitoring activities. The education component and the growth monitoring activities will be discussed here.

##### *Education sessions at the Rally Posts*

According to the World Vision implementation plan for the program, the Rally Posts are a primary point of contact for education activities with program participants, and the education sessions are activities to be carried out at the beginning of the Rally Post. Our observations showed that this was indeed the way the Rally Post program was implemented, but because women tended to arrive at different times throughout the morning, the education sessions were in fact conducted with very few women. In the two Rally Posts observed, the education sessions included only 5 and 6 women, respectively, out of a total of 38 and more than 50 women who came to the two Rally Posts observed. Thus, a large proportion of women had no opportunity to participate in the education session.

The two education sessions observed discussed the topic of vaccinations and diarrhea, respectively. However, the topic for the month according to the World Vision calendar was nutrition (three groups of foods). The health agent in charge indicated that because some mothers attended various education sessions, including those at the Rally Posts, the Mother's Clubs and the community meetings,<sup>6</sup> she preferred to alternate topics between the different delivery points.

---

<sup>6</sup> Community Meetings are general community meetings held by Health Agents and/or *colvols* and that are open to all community members (beneficiaries as well as non-beneficiaries of the World Vision Program). Topics discussed include health, nutrition, and the environment.

The health agent who led the education sessions in the two Rally Posts observed was very animated and tried a number of techniques to open up the dialogue with mothers and to encourage them to participate in the discussions. The nutrition content of the education was accurate, but no visual aids were available to guide the discussion and to emphasize the messages. In order to capitalize on the motivation of the Health Agent to ensure that the communication is really effective, revisiting the organization of the education sessions and counseling at the Rally Posts is essential.

### *Growth monitoring*

The growth monitoring activities appeared to be the most time-consuming of all the activities at the Rally Post. For each child who was weighed, their weight and grade of malnutrition was noted in a World Vision register as well as on their health card. The health agents calculated the child's nutritional status based on the old health card that used the Gomez classification. The new cards have Z-scores, which the health agents reportedly felt less comfortable with than the Gomez classification. A number of children did not have health cards.

After the weighing was done, the health agents informed mothers about their child's nutritional status and/or weight ONLY in some cases. In most cases the mother was not given any information or advice at all, irrespective of whether her child was well-nourished or malnourished. In some cases mothers were told that the child was malnourished, but they did not receive any advise or counseling about what to do to improve the situation. In other cases where the child was clinically malnourished and was detected by the health agent, mothers were advised to take the child to the dispensary. Overall, there was very little individual counseling of mothers based on the nutritional status of the child, which clearly defeats the main purpose of the growth monitoring activities.

It should be pointed out that the atmosphere at the time of the growth monitoring was not very conducive to effective counseling or communication. With a large number of women and children in the area, and children crying as they were being weighed, the ambience was possibly too distracting for the health agent to be able to focus clearly on one case at a time.

### **7.1.2. Food distribution points**

The purpose of observing the food distribution activities was to evaluate the potential for using this venue as well for behavior change communications. Two food distribution points were observed, one in La Gonâve and the other in Central Plateau. The basic protocol for distributing food to program beneficiaries was the same in both settings and appeared to be functioning efficiently. The various controls at different points ensure that the system is not misused. Beneficiaries are first called to the starting point, where their name and beneficiary status is verified and they are required to sign for the food they will receive. They then move from one commodity distribution point to another to receive each commodity. At the end of the line, a food monitor checks the amounts that they have received and signs their beneficiary card.

In La Gonâve, the food distribution was done per *localité* (zone) and only enough food for 25 pregnant or lactating women and 54 infants was brought to the distribution point. In Central Plateau, the distribution appeared to be more centralized, and food for 179 women and 484 infants was available. At La Gonâve, it is mandatory for the beneficiary or the child's mother to be present for the food to be received, while at Central Plateau this did not seem to be the case. Anyone could come to receive the food as long as they had the beneficiary card with them.

The food distribution point observed in Central Plateau was very crowded compared to the distribution point in La Gonâve and beneficiaries had often been waiting the whole morning for their turn to be called. Also, since it is more centralized than La Gonâve, it is likely that people had traveled over a longer distance to receive their food. From the point of view of controlling and managing the food commodities, the setting in Central Plateau appeared more efficient but from the point of view of program participants, it implied longer travel distances and longer waiting times for the food.

Given the generally distracting and crowded atmosphere, attempting to hold an educational session or counseling with individuals or groups at the food distribution points would probably not be an efficient way of ensuring effective communication. However, the structured progression of beneficiaries through the food distribution system could make it possible to distribute brochures or handouts to beneficiaries based on their child's current age and health status.

### **7.1.3. Mothers' Clubs**

The World Vision program uses Mothers' Clubs (*clubs de mères*) as a way of bringing women together in a group setting to discuss issues related to health, hygiene, nutrition, or the environment. These clubs are held at least once a month and are currently implemented primarily under World Vision's Area Development Program (ADP) in La Gonâve and parts of Central Plateau. Since it is planned that the same type of forum will be used in the areas where our evaluation will be conducted, it was felt that the structure and function of the mothers' clubs was important to understand from the point of view of their actual (and potential) role in behavior change communications. Thus, the IFPRI-Cornell research team did observations of six mothers' clubs, four on La Gonâve and two in Central Plateau.

The mothers' clubs were held in a variety of locations, including the WV health center and a participant's home, and they were facilitated by the health agents. They lasted about 30 minutes, with a range between 20 and 45 minutes. The attendance at the clubs ranged from between 11 to 30 women, sometimes accompanied by their children and, in rare situations, by their husbands. Each discussion session started with a prayer and ended with a thematic song based on the discussion topic for the day. The time in between was spent explaining the topic of discussion for the day and discussing with mothers to ensure their understanding. The topic discussed was the "topic of the month," as defined by the World Vision calendar.

In all cases, the set up of the discussion group, which used classroom-like arrangements, was mostly inappropriate for effective BCC and, in addition, all sessions were based on a lecture-type approach to teaching. The health agents, however, did their best to animate the group and to get

mothers involved in the discussion. For instance, they repeated the issues that were discussed a number of times, and asked questions to the group and to individual women to motivate them to participate. Some health agents also used models and examples to explain concepts like the concept of a balanced diet as taught in Haiti (i.e., the three groups of foods, which are compared to the three stones needed to cook over a fire). The design and format of the sessions, however, with their focus on instruction rather than discussion, limit the opportunities to engage the women fully.

Most of the health agents used their own notes or the CARE Riches guide as a reference manual either before or during the discussion. In two of the discussion groups on La Gonâve, the health agents used flannel cards with pictures of foods on them to discuss the three food groups. In most cases, however, the health agents did not have any materials to assist the process of communication. They indicated that they would appreciate having such materials made available to them in the future.

In summary, as with the Rally Posts, the health agents who chaired the mothers' clubs were seen to be motivated and knowledgeable about the theoretical aspects of the topics they discussed with mothers. They were, however, insufficiently trained in the use of contextual and local examples that would help to engage women in the discussion and would bring the topics of discussion into the context of the women's daily lives. Also, having an education session designed in the format of a lecture in a classroom-type of setting is possibly not highly conducive to adult learning. Also, the duration of the mothers' clubs may also be too short to really engage women in a discussion and to work out behavioral solutions to health and nutrition issues faced by the communities.

## **7.2. Utilization of program services by beneficiaries**

Interviews were conducted with 10 program beneficiaries, 6 in Central Plateau and 4 on La Gonâve. These interviews were conducted to obtain information on the utilization of program food commodities and educational services by the beneficiaries.

### **7.2.1. Food rations**

Our interviews were focused specifically on the use of the food rations and the time that the food rations lasted. The food commodities distributed through the World Vision program include the following:

- Soy-fortified bulgur (SFB) for pregnant and lactating women
- Wheat-soy blend (WSB) flour for infants and children
- Lentils
- Oil

The distribution in Central Plateau has been primarily for pregnant and lactating women, whereas in La Gonâve, households have been receiving rations for malnourished children between the ages of 24 and 59 months and for all children between 6 and 23 months of age.

We found that in general, most women prepared the same dishes using the food rations. SFB was usually cooked with the lentils or other beans in the same fashion as the Haitian dish of rice and beans. Other uses included cooking it separately and serving it with a sauce made of the lentils or to use it for porridge. The WSB was used primarily to make a gruel similar to the wheat gruel described in the recipe trials (Section 6). One woman had used it to make dumplings that were added to soups and another had used it to make a fried snack (“*marinad*”). One woman added sugar to the WSB and the children consumed this powder as a snack, like the *cham-cham*.

Interviews in La Gonâve raised some concern about the use of SFB because three of the four women interviewed mentioned that they usually washed the SFB in bowls and threw away the yellowish particles (the soy portion) that floated at the top. This was not common in Central Plateau, where only one of the six women interviewed indicated that they threw away the soy portion. In this area women mentioned that they had learnt (from their health agent or at the school canteens) that it was important not to throw away the yellow particles in the SFB. We also asked program beneficiaries if they had ever sold any of the food they received in their monthly ration. Only two women confirmed that they had sold some of their food ration and the reason they gave was that they needed the money to purchase other items such as sugar, milk, and other items needed for cooking the foods received in the rations.

In general, the foods were highly appreciated by the beneficiaries with regard to their quality, taste, and cooking time. The lentils were particularly appreciated because they took less time to cook than local beans. Beneficiaries reported that the WSB did not taste like the white flour normally used for the gruels, and some of the adults reported that they did not like the taste of the WSB gruel. However, overall, it was reported that children did consume it. Only mothers in Central Plateau, where the distribution of WSB had started only this year, insisted that most of children did not really enjoy the taste of the gruel made with WSB but they indicated that children did eat it anyway. Interestingly, the mere fact that adults do not particularly like WSB and that children do tolerate it makes it an attractive donated food because it is more likely to reach its targeted beneficiaries (infants and young children) than a more popular food like oil or lentils, which ends up being shared among all family members.

The SFB was in most cases consumed in two weeks, along with the lentils and the vegetable oil. Three of the five households that had received WSB for a child reported having used it all within two weeks, whereas the ration lasted for one month in two other families. In two households, the gruel made of WSB was fed to the children only, whereas in the others the WSB was prepared for the whole family. One of the two households where the ration lasted for one month had received a double ration because they had two under-five malnourished children.

### **7.2.2. Program health and education services**

The 10 women interviewed were regular attendees at Rally Posts. This was to be expected because some of the interviews were conducted at the food distribution points, and program beneficiaries cannot receive food benefits without having attended at a Rally Post. In fact, two women mentioned specifically that the food is an incentive for them to attend the Rally Post. Most of the beneficiaries interviewed were also regular attendees at Mothers’ Clubs. Reasons reported by a few mothers for not attending the Mothers’ Clubs were that they were held too far

away from their home, or that they did not have substitute childcare. All the mothers who attended the Mothers Clubs meetings mentioned (without being probed for it) that the club meetings were held close to their homes, suggesting that distance and location of the club meetings is an important determinant of regular attendance.

Without exception, the women indicated that they were interested in knowing more about health in general, as well as about child health and how to care better for their children. When asked about potential venues for disseminating more information to them, they mentioned the Mothers' Clubs or other women's groups close to their homes, or home visits from health staff. Additionally, all the women cited members of the formal medical establishments (including program health agents and nurses) as their primary sources of information on health and nutrition, suggesting that these are highly valued and respected sources of information. This is certainly encouraging for the program, but at the same time, it puts the onus of responsibility on the program planning and training process to ensure that health agents and program nurses are trained well enough to be able to address people's questions and to negotiate workable solutions with them. Further research related to these aspects of program utilization will be conducted as part of the program operations research that is planned for Years 2 and 3 of the larger IFPRI-WV-Cornell evaluation project.

### **7.3. Roles and responsibilities of health agents and colvols**

In most behavior change communications programs, the contact between the program and community is established through program frontline workers. In the case of World Vision, these are Health Agents (called *agents de santé*), "*colvols*" (program volunteers), and mother assistants. Health Agents are part of World Vision staff and receive a monthly salary. *Colvols* are community volunteers, whose primary responsibility is to assist the Health Agents in their duties, and they receive only a small monthly incentive from World Vision. Mother assistants are also community volunteers but they are not remunerated at all by the program. Their duties are also to assist the Health Agents as well as the *colvols*.

Interviews with program staff were carried out to obtain information on the roles of different program staff members and to understand their responsibilities and time allocation. Five individual and one group interview were conducted with a number of health agents and *colvols*, both in Central Plateau and La Gonâve. The interviews sought information about their main responsibilities, activities, and time allocation. They were also asked to provide their opinions and perceptions regarding World Vision's plan to strengthen and increase the educational and behavior change component of the program.

#### **7.3.1. Main activities**

The health agents and *colvols* facilitate a number of program activities in the communities they serve and the interviews suggest that their activities are fairly uniform across zones. The types of activities include organizing and running Rally Posts, Mothers' Clubs, community meetings, and home visits. In addition, the health agents and *colvols* working in areas covered by World

Vision's Area Development Program also conduct activities like meetings with parents of sponsored children and weighing of sponsored children in schools.<sup>7</sup>

The three health agents interviewed indicated that they covered a large program area and that they each conducted between 3 and 5 Rally Posts per month. Each Rally Post session attends between 30 and 50 women. As described in Section 7.1.1, activities at the Rally Posts include a group nutrition education session, growth monitoring, and immunization of children under five years of age. The *colvols* reported having very similar responsibilities as the Health Agents.

Health agents are also responsible for facilitating the Mothers' Clubs, which can amount to 3 or 4 per week and up to 12 per month. The health agents and *colvols* interviewed also reported conducting home visits to women, particularly those who were registered at the Rally Posts but had not attended during a particular month. One day a month was reserved for home visits, but two of the health agents indicated that they did home visits more frequently, up to three or four times a month.

Finally, health agents are also responsible for organizing and holding community meetings to discuss topics related to health and nutrition. These meetings are general community meetings dedicated to health, nutrition, and the environment, and they can be attended by anyone in the communities, including nonprogram beneficiaries. Although they are scheduled to be held every month, the health agents indicated that the meetings were not always held monthly because they did not have the time or because the communities were not interested.

Thus, both the health agents and the *colvols* have numerous contacts with the communities they work with, and for any one community, they have at least one contact via a Rally Post, one to two via the Mothers' Club, one via food distribution, and one more via the community meeting, for a total of four to five. In addition to this, the home visits that they do on one or more days per month add even greater contact points with the communities where they work.

### **7.3.2. Training**

Health agents and *colvols* are supposed to receive an initial training when they begin their employment or work as volunteers with World Vision. This training, however, is only provided to health agents and *colvols* when they are recruited from the community. Most health agents, however, have been trained for three months at a special school (Ecole Normale des Agents de Santé), or are unemployed auxiliaries (nurse assistants with two years of training) who accept an assignment as health agents. In addition to this formal training, Health Agents and *colvols* receive a monthly training/refresher course in the specific topic that they are expected to address in their education sessions each month. These refresher courses are facilitated by World Vision's regional coordinators for Maternal and Child Health. The *colvols* indicated that they also received day-to-day training from the health agents they were working with.

---

<sup>7</sup> Privately-funded child sponsorship donations are used to fund Area Development Programs, which are child-focused and multisectoral, and include activities in maternal and child health, agriculture, education, and community grass-root development.

All health agents interviewed indicated that they would like to receive more extensive training to improve their skills and ability to help the communities they are working with.

### **7.3.3. Motivation**

The data revealed that the health agents and *colvols* interviewed in this study were highly motivated and committed to fulfill their responsibilities. In spite of not receiving a salary from the program, the *colvols* displayed immense motivation. They alluded to the fact that they were working without a salary but that they still enjoyed their work and the opportunities to help their communities.

When asked for reactions to the possibility of increased contact time with the communities, they all felt this was a good idea but the *colvols* indicated that they would like additional compensation if their contact time and responsibilities were to be increased.

The health agents and *colvols* were asked to speak about issues that they thought should be addressed to improve the BCC program. Three main concerns emerged:

- All workers indicated that they would benefit from having access to more communications materials to use for their education sessions.
- Two of the health agents, one in Central Plateau and another in La Gonâve, suggested that transportation facilities for them (mules, for instance) would help them reach a larger number of people as they worked in communities where the households were very dispersed.
- Finally, all health agents and *colvols* indicated that they would like to receive additional training.

In conclusion, it appears that the World Vision program implementation staff is highly motivated and enjoys the work with communities. At the same time, it is clear that their effectiveness as behavior change agents could be improved significantly by providing them with additional training and education and communication material.

## 8. OPTIONS AND OPPORTUNITIES FOR THE DEVELOPMENT OF A SUCCESSFUL BEHAVIOR CHANGE COMMUNICATIONS PROGRAM IN CENTRAL PLATEAU, HAITI

This final section reviews the main findings of the study as they relate to the development of a successful behavior change program for the prevention of malnutrition in Central Plateau. Three key aspects of program development are addressed:

- *Specific behaviors to be targeted by the BCC program:* This includes prioritization of a set of behaviors from those identified in our research as being non-optimal and potentially detrimental for the child, and encouraging those behaviors found to be optimal. This process also requires taking into account the factors highlighted in the formative research as potential “facilitators” of behavior change, as well as the factors that may negatively affect the capacity for behavior change.
- *Programmatic aspects* that need to be taken into account in designing and planning the implementation of the preventive BCC program. This includes the identification of program delivery points for the BCC and the design and production of specific communications approaches and materials for these different venues, taking into account the existing program structure and activities.
- *Supporting program activities* that are not directly related to BCC but that can make the BCC program more effective by ensuring the availability of household and community resources.

These programmatic options will be further refined and discussed at a workshop to be held with World Vision, Haiti, in early October 2002. The workshop is expected to lead to decisions about program options to adopt in the short term and the long term in order to ensure an effective behavior change communications strategy that can *prevent* childhood malnutrition.

### 8.1. Key behaviors to be targeted in the BCC program

This section provides a summary of feeding practices that were identified in our research as requiring improvement because they depart from current international infant and child feeding recommendations. In addition to this, those practices that were identified as positive practices are also addressed for continued promotion through the BCC program. Table 8.1 summarizes our findings related to child feeding practices in Haiti and contrasts these practices with current recommendations, highlighting both the positive and the non-optimal practices observed in this population. In addition, the table summarizes the factors that may facilitate behavior change for some practices, as well as those that may negatively affect the ability to achieve the expected behavior change.

**Table 8.1. Infant and child feeding practices in Haiti compared to best practices, and constraints and opportunities for behavior change in Central Plateau**

Goals	Practices to promote	Practices in Haiti	Facilitating conditions for behavior change	Issues that may affect capacity for behavior change
<b>A. Infant feeding from 0 to 6 months of age</b>				
<b>Exclusive Breastfeeding (BF)</b>				
<ul style="list-style-type: none"> <li>■ <b>Ensure exclusive BF</b></li> <li>■ <b>Prevent bacterial contamination</b></li> </ul>	<ul style="list-style-type: none"> <li>■ Early initiation of exclusive BF (EBF)</li> <li>■ Feeding of colostrum</li> <li>■ On demand BF</li> <li>■ Avoidance of pre- and post-lacteal feeds</li> <li>■ Using expressed breast milk if needed</li> <li>■ Avoidance of baby-bottles</li> </ul>	<p><i>Positive:</i></p> <ul style="list-style-type: none"> <li>➤ BF widely practiced</li> <li>➤ Reported to be mostly on demand</li> </ul> <p><i>Non optimal:</i></p> <ul style="list-style-type: none"> <li>➤ Pre-lacteals and post-lacteal liquids and gruels widely used</li> <li>➤ Complementary liquids and foods introduced at a <u>very young age</u></li> <li>➤ Widespread use of baby bottles</li> </ul> <p><i>Not enough information:</i></p> <ul style="list-style-type: none"> <li>➤ Timing of initiation of BF</li> <li>➤ Colostrum use</li> </ul>	<ul style="list-style-type: none"> <li>❖ Experienced, successful positive deviant mothers (who EBF) exist in communities</li> <li>❖ Positive deviant mothers had received information from health agents, media, health center staff</li> <li>❖ EBF moms report it is cheaper to EBF and child is healthier</li> <li>❖ No objection to expression of breast milk – some mothers do it; but training needed</li> </ul>	<ul style="list-style-type: none"> <li>➤ Water-based liquids and teas given to treat colic (<i>gaz</i>)</li> <li>➤ Gruels given because mothers need leave home for work or other activities</li> <li>➤ Mothers' time and employment constraints</li> <li>➤ Mothers are concerned about feeling too weak and depleted if they EBF</li> <li>➤ Concept of <i>let cho</i> (prevents mothers from breastfeeding, but seems to be only in the short term)</li> <li>➤ Milk expression rarely practiced, unknown in some areas</li> </ul>
<b>B. Feeding practices for infants and young children 6-24 months of age</b>				

Breastfeeding				
<ul style="list-style-type: none"> <li>■ <b>Ensure sustained, frequent, on demand BF up to 24 months of age and beyond</b></li> </ul>	<ul style="list-style-type: none"> <li>■ Continue to BF frequently and on demand</li> <li>■ Using expressed breast milk if needed</li> <li>■ Avoidance of baby-bottles</li> </ul>	<p><i>Positive:</i></p> <ul style="list-style-type: none"> <li>➤ Mothers traditionally continue to BF up to 24 months of age</li> </ul> <p><i>Non-optimal:</i></p> <ul style="list-style-type: none"> <li>➤ Widespread use of baby bottles</li> </ul> <p><i>Not enough information:</i></p> <ul style="list-style-type: none"> <li>➤ Mothers may not always BF on demand because of need to leave home for work or other tasks</li> <li>➤ Children whose mothers are frequently absent may not receive sufficient nutrients from breast milk</li> </ul>	<ul style="list-style-type: none"> <li>❖ No objection to expression of breast milk, but training needed</li> </ul>	<p>No need for behavior change, but continue promotion of continued BF up 24 months and beyond</p> <p><i>Potential constraints to frequent, on demand BF:</i></p> <ul style="list-style-type: none"> <li>➤ Mothers do need to leave home to work and/or go to markets</li> <li>➤ Milk expression rarely practiced, unknown in some areas</li> </ul>

Goals	Practices to promote	Practices in Haiti	Facilitating conditions for behavior change	Issues that may affect capacity for behavior change
<b>Complementary Feeding</b>				
<ul style="list-style-type: none"> <li>■ <b>Provide foods to complement breast milk and to allow adequate intake of energy and micronutrients</b></li> </ul>	<ul style="list-style-type: none"> <li>■ Feed child special energy- and nutrient-dense foods of appropriate texture and consistency for age</li> <li>■ From 6 months on, gradually increase amounts and quantity of foods as child gets older</li> <li>■ Increase number of times child is fed CF as he/she gets older (at least 2-3 times/d for 6-8 mo old; 3-4 times/d for 9-24 mo old)</li> <li>■ Feed a variety of foods (gradually increase variety with age); animal foods should be eaten daily, or as often as possible</li> <li>■ Practice responsive feeding, applying the principles of psychosocial care (assisted feeding, interactive feeding style, encouragement to eat, etc.)</li> <li>■ Continue to BF and feed CF to child during diarrhea; ensure fluid replacement</li> </ul>	<p><i>Positive:</i></p> <ul style="list-style-type: none"> <li>➤ Mothers continue to BF and give liquids when child has diarrhea</li> </ul> <p><i>Non optimal:</i></p> <ul style="list-style-type: none"> <li>➤ Complementary foods (CF) of low energy and very low nutrient-density</li> <li>➤ No “special” complementary food for child; gruels are consumed by all family members</li> <li>➤ Low frequency of feeding CF, child often not fed evening meal</li> <li>➤ Frequency of feeding is low (2-3 times/d) and does not seem to increase with age</li> <li>➤ Evening meal not fed to young children</li> <li>➤ Variety of foods seems low; animal foods consumed infrequently and in small amounts; low intake of vitamin A fruits and vegetables</li> <li>➤ Mothers reduce feeding of CF during diarrhea</li> </ul> <p><i>Insufficient information at this point on:</i></p> <ul style="list-style-type: none"> <li>➤ Psychosocial care (needs to be assessed through observations, which was</li> </ul>	<ul style="list-style-type: none"> <li>❖ No cultural barriers to feeding young children animal foods</li> <li>❖ Mothers know that eggs, liver are good for child</li> <li>❖ Mothers usually feed child when they are present</li> <li>❖ Mothers leave prepared food for child when she has to leave</li> <li>❖ Fathers seem involved in childcare and feeding</li> <li>❖ Good recognition of importance of fluid replacement during diarrhea</li> </ul>	<ul style="list-style-type: none"> <li>➤ Lack of availability and access to food, especially animal foods and micronutrient-rich fruits and vegetables</li> <li>➤ Overall poverty, lack of economic resources</li> <li>➤ Poor access to water, sanitation, health services</li> <li>➤ Time constraints of caregivers to prepare “special foods”</li> <li>➤ Belief that evening meal is bad for child (causes indigestion)</li> <li>➤ Lack of recognition of importance of high feeding frequency for young children</li> <li>➤ Belief that children are ready for family foods and family meal patterns by 12 months of age</li> <li>➤ Some cultural barriers to feeding young children specific types of fruits/vegetables</li> </ul>

<b>Goals</b>	<b>Practices to promote</b>	<b>Practices in Haiti</b>	<b>Facilitating conditions for behavior change</b>	<b>Issues that may affect capacity for behavior change</b>
		beyond the scope of the present study)		

### **8.1.1. Exclusive breastfeeding for 0-6-month-old infants**

Breastfeeding is widely practiced in this population and appears to be on demand, at least when mothers are physically with their infant. However, the widespread use of complementary liquids and starchy gruels often fed with a baby bottle to very young infants raises serious concerns about the potential displacement of breast milk, the resulting nutrient inadequacy of the diet, and the excessive risk of contamination. The fact that positive deviant mothers—i.e., mothers who exclusively breastfed—were identified in the communities where the study took place is encouraging. These mothers can be used as “role models” who have successfully practiced exclusive breastfeeding, while sharing similar living conditions as other mothers from the same communities. Interviews with these positive deviant mothers also helped to identify some potentially powerful arguments as to why exclusive breastfeeding is a positive and beneficial practice. Among other things positive deviant mothers reported were that exclusive breastfeeding improved their infant’s health and reduced their health care costs. These ideas can be used to design powerful and locally relevant messages to promote exclusive breastfeeding.

Some aspects that will need to be considered, however, are the specific reasons for which mothers feel the need to feed their young infant various teas and gruels. The BCC strategy will have to address, for instance, the concerns that mothers have regarding colic (*gas*) and the need to use teas to relieve them. Also the fact that mothers and infants have to be separated to allow mothers to pursue their income-generating and other types of activities away from home has to be addressed carefully because it was one of the main reasons reported by mothers to give gruels to their very young infant. It will be important to try and promote the practice of expressing breast milk, with adequate training on how to do it, in order to attempt to overcome this constraint. Finally another aspect that will need to be carefully addressed is the felt lack of energy and the weakness reported by mothers when they “breastfeed all the time,” and their use of liquids and foods to complement breast milk to provide them some relief. It is possible that the quality of maternal diet during lactation is poor, especially because of the cultural dietary restrictions imposed to mothers during the first few months postpartum, and that exclusive breastfeeding truly results in poor maternal nutritional status, fatigue, and low resistance to infections. These aspects will need to be considered very carefully in the design of the BCC program and solutions or alternate strategies to address these potential constraints to behavior change will have to be addressed.

### **8.1.2. Optimal complementary feeding practices from 6-24 months and continued breastfeeding**

Mothers in our sample report breastfeeding until the child is two years of age or more, as recommended. They also seem to recognize the importance of continued breastfeeding and fluid replacement when the child has diarrhea. Complementary foods, however, are generally low in energy- and nutrient-density, and they include few micronutrient-rich foods such as animal products, fruits, and vegetables. The frequency of feeding also appears lower than recommended throughout the 6-24 months period, probably due in part to the belief that evening meals cause indigestion in young children as well as true economic constraints. There also seems to be no recognition of the need to increase the number of feedings of complementary foods as infants

age, and as the expected contribution of complementary foods to their nutrient requirements increases.

Although there appears to be no cultural barriers to feeding infants and young children animal source foods such as eggs, fish, or meat, lack of availability and access to these foods appears to be a major constraint. Also because the need for “special foods” for the young child is not well recognized in this population, it is difficult for caregivers to conceive using these expensive products only for the youngest child when all members of the family eat the same meal. Many factors seem responsible for the lack of “special” complementary foods in this population. These include an apparent lack of knowledge of the specially high energy and nutrient needs of infants and young children, the belief that children are ready to consume family foods as early as by 12 months of age, the time constraints of caregivers to prepare these special foods and the lack of overall resources to purchase, prepare, and store these special foods. The BCC program will have to find ways to overcome some of these factors because they are likely to affect the ability of families to adopt the proposed behaviors. The program will also have to address the issue of the frequency and timing of feeding infants and young children. The program will need to provide more information to families about the need to feed infants and young children small, but frequent and nutrient-dense meals and snacks, and will have to identify alternative approaches to increase feeding frequency while taking into account the time constraints of caregivers and other family members.

### **8.1.3. Promotion of specific enriched complementary foods identified in recipe trials**

The recipe trials documented the potential of various recipes to increase the energy- and nutrient-density of commonly fed complementary foods. Specifically, the nutrient analysis of the modified recipes showed that both the salty and the sweet versions of the wheat flour gruel with beans had great potential to help infants and young children meet their energy requirements. If these preparations were fed between 2 and 3 times a day (depending on the age of the child and the specific recipe used), in appropriate amounts (between ½ cup to 1 cup depending on age), infants and young children could meet their daily energy recommended intakes. Mashed plantain preparations with fish, prepared with extra oil (as in Bassin Zim), would also be appropriate to meet energy requirements if fed the recommended number of times at each age.

The improved recipes all fell short of meeting children’s iron and zinc daily requirements, however. Because of the small amounts of fish used in the recipes that included fish, even these more expensive preparations fell far short of meeting children’s high requirements for these micronutrients. For vitamin A, the addition of an egg to the wheat flour or other gruel significantly improved its content of vitamin A and was not overly expensive. In spite of the fact that recipes including fish were more expensive than other preparations and still did not fill the gap in terms of iron and zinc intake, the unique micronutrient and fatty acid composition of fish still makes it worth promoting, even if mothers can afford it only once or twice a week. Availability of liver appeared to be low in the region, especially because it could not be purchased in small, affordable amounts. Further exploration of the availability of smaller types of liver (e.g., chicken liver) is worth pursuing to identify locally available sources of animal foods rich in bioavailable iron, vitamin A, and zinc.

The other promising area that will be pursued in the near future is the development of preparations based on the use of donated commodities such as WSB, beans, and oil. WSB is fortified with a variety of micronutrients, including iron, zinc, and vitamin A. In La Gonâve Island, where WSB has been distributed for a number of years, mothers commonly use it to prepare a gruel for infants and young children similar to the traditional wheat flour gruel. Because adults do not appreciate this gruel as much as the traditional one, and because children actually do consume it, it may be a particularly attractive way to use the donated commodities specifically for young children who are the primary beneficiaries of the program (along with pregnant and lactating women). Reducing leakage of the donated commodities to other family members who may not need the extra energy and micronutrients as much as young infants could be an effective way of improving the program's impact on children's growth. Although our computations revealed that substituting the WSB for wheat flour would increase the nutrient density of the wheat flour gruel, however, iron and zinc intakes would still remain unmet if current recipes were used. Further ways to enrich the diet with bioavailable iron and zinc will need to be explored in our future recipe trials with WSB.

#### **8.1.4. Addressing the different models of diarrhea**

Our findings showed that household management of diarrhea (including whether or not families seek care, and which type of care they seek) is influenced by the type of diarrhea the child is thought to have. Thus, the BCC program will have to emphasize the fact that all types of diarrhea need to be taken seriously because they may be dangerous if they continue for more than a few days. Families seem to be familiar with the concept of fluid replacement, and its importance should continue to be emphasized in the BCC program for all types of diarrhea.

#### **8.1.5. General perceptions about child health and growth**

In addition to the foregoing specific issues for the BCC program, there are also larger issues related to perceptions about child health and growth that the program can address. The research results suggest that families are very concerned about the vulnerability of babies and are actively trying to protect them during the first year of life. However, after the first year mothers and other adults interviewed did not seem to perceive that the young child is still at serious risk of nutritional deficiency. Integrating young children into family meal patterns is a priority for rural Haitian families, possibly due to household resource and time constraints. The communication program will have to place a special emphasis on the need for continued attention to feeding frequency, types of food, and related caregiving behaviors for children between 12 and 24 months of age.

#### **8.1.6. Interactive feeding and psychosocial care**

The present study did not gather detailed information on some of the aspects of the *how* children are fed—i.e., the psychosocial aspects of feeding including feeding style, encouragement to eat, and the quality of mother/child interactions during feeding. Gathering information on these aspects of child feeding requires extensive observations in the homes during feeding episodes, which was beyond the scope of the present research. It is important to note, however, that these aspects will be addressed in the development of the BCC intervention. Box 1 summarizes some

best practice feeding behaviors of importance from a psychosocial perspective (Pelto, Levitt, and Thairu [in press]) that could be promoted through the BCC program.

**Box 1**

**Some best practice feeding behaviors—from a psychosocial perspective**

(Pelto, Levitt, and Thairu [in press])

1. Feeding with a balance between giving assistance and encouraging self feeding, as appropriate to the child's level of development
2. Feeding with positive verbal encouragement, without verbal or physical coercion.
3. Feeding with age-appropriate, as well as culturally appropriate, eating utensils
4. Feeding in a protected and comfortable environment
5. Feeding in response to early hunger cues
6. Feeding by an individual with whom the child has a positive emotional relationships and who is aware of and sensitive to the child's individual characteristics, including his or her changing physical and emotional states.

### **8.1.7. Targeting substitute caregivers**

Our study highlighted the importance of alternative caregivers, especially for mothers who work outside the home on a regular basis. Substitute caregivers include fathers, grandmothers, and older siblings, who are often given the responsibility to feed the child when the mother is absent. Thus, it is crucial that the BCC program be directed to all family members and to other adults who may have responsibilities for child feeding and caregiving.

## **8.2. Program implementation issues**

This section addresses each aspect of the World Vision program as currently implemented, and suggests possible modifications to the behavior change communication strategy currently in place at different delivery points. Many of the programmatic suggestions provided below are initial suggestions that will be discussed with World Vision at the workshop to be held in Port-au-Prince in October. These will then be prioritized and feasible program modifications will be incorporated into the preventive BCC model.

### **8.2.1. Program delivery points**

#### *8.2.1.1. Rally posts*

A number of program implementation issues were identified that, if modified somewhat, could contribute significantly to augmenting the effectiveness of communication at the Rally Posts. These are:

- *Reaching all participants by changing the timing of the BCC session.* In order to ensure that the coverage of the BCC program is high, and that BCC topics are discussed with all program participants, it will be important to ensure that the education/communication part of the program is held at a convenient time for participants. Currently the education sessions are held at the beginning of the Rally Post, when most of the participants have not yet arrived due to their long journey. It might be useful to consider moving the timing of the education session to a later time during the morning, and to consider the possibility of holding more than one education session as required to reach a larger number of participants.
- *Selection of monthly topics and design of discussion sessions.* We found that the health agents addressed different topics at their Rally Posts, although there is usually a theme topic for the month. They reported doing this because some of the participants had already been exposed to the theme of the month at other program venues. However, the sequence of materials to be discussed for one topic could be organized in such a way that messages presented at one distribution point reinforce with different communication techniques the messages on the same theme presented at other program venues. For example, the first education session of the month can be used to introduce a topic, whereas the other sessions can focus on concrete experience and/or problems encountered by participants in relation to the topic, and to identify and discuss feasible solutions. Health agents should be trained on the use of multiple communication techniques to approach the same topic and recognize the potential of this approach to foster behaviour change. Health agents should also have the autonomy and the necessary technical training to be able to address other topics in situations where a specific issue—say a sudden increase in diarrheal rates during a particular season—has to be discussed without prior preparation. Health agents should also have the necessary background to be able to accurately answer questions from participants about a range of nutrition and health topics.
- *Ensuring that individual counseling occurs along with growth monitoring.* The use of growth monitoring as an educational tool appears to be problematic in the context of the current program model. Our observations show that program workers are too busy weighing, charting, and noting the weight in two different places (a register and the mothers' health card) to be able to pay attention to individual children and to counsel their mother. In situations like this, growth monitoring becomes little more than a record-keeping process, and does not fulfil its role as an education and communication tool to help mothers visualize their child's progress and to develop solutions to tackle growth faltering when it occurs. This problem is common in programs that incorporate growth monitoring in this type of setting and has been widely documented in a number of developing country programs.

Our current plan for the preventive BCC program to be implemented in the Central Plateau is that age-based individual counselling in Rally Posts will completely replace growth-monitoring sessions (IFPRI 2001). Thus, the time that health agents and *colvols* currently spend on weighing, plotting, and recording the progress of a child will be used to counsel mothers on feeding and care practices, based on the child's age and current health status. Although we feel that this alternative is feasible and is likely to increase the effectiveness of the education/communication activities taking place at Rally Posts, interviews with program beneficiaries suggest that mothers are particularly interested in finding out the weight of their child and his/her progress. Thus, it may be that simple weighing and recording of the child's weight on the health card could still be done (possibly by a volunteer mother or a *colvol*), but

that health agents would dedicate a larger portion of their time to the education/communication components of the program and to the age-specific individual counselling of mothers.

#### 8.2.1.2. *Food distribution*

Observations at the food distribution points suggest that it is probably not efficient to hold group educational sessions or individual counselling of mothers in this setting, given the distracting and crowded physical environment. However, the structured progression of beneficiaries through the food distribution system could facilitate the incorporation of a system to distribute brochures, counselling cards, or handouts to beneficiaries based on their child's current age and health status. Also, this venue is ideal for informing program beneficiaries about the proper use of the donated foods like the WSB. Participatory recipe trials could be conducted in the program communities using the donated commodities and mothers could be informed about the potential uses of the product for preparing enriched complementary foods for their young child while they are waiting in line to receive their commodities.

#### 8.2.1.3. *Mother's Clubs*

The Mothers' Clubs are an excellent setting for group communication and discussions. However, observations of these clubs suggests that there are a number of implementation factors that should be addressed to maximise their potential as vehicles for behavior change communication. Some suggestions for making the communications strategy more effective at the mothers' club meetings include the following:

- Modify the current teaching and communication approach to ensure effective learning and behavior change communication. Specific suggestions include the following:
  - Train health agents and *colvols* in the principles of adult learning so that they can better understand the learning process of adults and be better-equipped with effective communication skills for this type of audience;
  - Provide visual communication material for use as an anchor to increase the comprehension and knowledge retention of the topics being discussed;
  - Train health agents in providing the group with local and contextual examples to accompany the theoretical aspects of the topics discussed;
  - Move from a physical classroom-like setting to a setting that can facilitate an environment of discussion rather than a lecture. Along with this, encourage women to talk about their personal views and experiences at the beginning of each session to facilitate discussion.
- Use innovative, non-classroom-like activities such as participatory recipe trials as an educational activity. Facilitating a recipe trial requires more time on the part of the health agent, but it should be noted that the recipe trial venue can be used for introducing a variety of educational topics within a context that is very familiar to these women. Also, women who participate in the recipe trials can be encouraged to disseminate information in their communities (this was done successfully by some of the participants in our trials).
- Use the venue creatively to set in place mechanisms that can *support* behavior change. For example, the Mothers' Clubs can be used to set up peer groups to encourage and support exclusive breastfeeding by bringing together women with children of the same age. The use

of peer counsellors and mother support groups has proven to be very successful in promoting exclusive breastfeeding in countries such as Bangladesh, Mexico, Honduras, and Guatemala.

### **8.2.2 Communication materials**

Successful behavior change communication requires the use of visual and audio material to support the behavior change communications initiated by the program staff. The development of successful BCC materials in turn requires the involvement of professional behavior change communications specialists who design and develop materials and messages based on formative research, test them among target communities for their understanding and comprehension, and then produce them in different formats for different audiences.

Suggestions for types of materials that can provide added orientation to the BCC topics being discussed by program staff include the following:

- Counseling cards based on the age and health status of the child that should be used in conjunction with individual counseling sessions.
- Visual materials like posters, charts, and billboards that can be displayed in communities, health centers, and other venues to orient program beneficiaries and community members to various topics that are discussed at BCC program venues.
- Take-home handouts that remind caregivers of the needs of children in different age groups, based on their health status.
- Radio spots that discuss the topics addressed at BCC program venues.

In addition to the BCC materials used for communication between program staff and program participants, there is also a need for developing training materials that can guide and orient program staff to the topics they will discuss. These training materials should provide sufficient technical detail with local contextual examples that enhance the technical understanding of program staff and, at the same time, provide them with the background necessary to communicate well with their audiences and to address problems encountered by the families they interact with.

The IFPRI-Cornell team has been gathering BCC materials and training manuals currently in use by various programs in Haiti. These will be examined and ranked for their technical content and their design and communication qualities prior to the workshop to be held with World Vision in October. This will provide a starting point for the selection and adaptation of specific materials for our preventive BCC program.

### **8.3. Supporting program activities**

The research on the impact of behavior change programs and on the mechanisms by which maternal education affects child outcomes suggests that knowledge is often not sufficient to ensure adequate impacts on nutrition, health, and development. Specifically, it is the interaction of knowledge with resources that leads to the largest positive effects on child health (Ruel et al. 1992). Thus, in order to maximize potential impact on child health and nutrition outcomes, integrated programs should be implemented, which address behavior change in conjunction with

programs that increase household and caregiver access to resources like food, money, and time. All three of these resources are critical to ensure that caregivers and families are equipped to utilize the enhanced knowledge that can come about from a successful behavior change communications program.

The provision of resources to support translation of knowledge into behaviors and child outcomes can be achieved by a variety of supporting program activities. Some examples of supporting program activities include:

- Initiation and support of community childcare initiatives to assist working parents with their childcare responsibilities. This type of initiative may also become a source of income for those mothers who would run the day care centers. Other initiatives could include identifying a safe spot in markets where other adults could take care of young infants when mothers are attending to their markets. This would facilitate exclusive breastfeeding among market women with young infants.
- Provide microcredit programs to increase resource availability within households and communities.
- Promote food-based interventions to increase the production and intake of micronutrient-rich animal foods and fresh fruits and vegetables; explore the possibility of using some preservation techniques such as solar drying to extend the life of micronutrient-rich fruits and vegetables beyond their season of high availability.
- Promote overall poverty reduction programs and activities to increase access to water, sanitation and health services.

## REFERENCES

- Allen, L.H. and S.R. Gillespie. *What Works? A Review of the Efficacy and Effectiveness of Nutrition Interventions*. Geneva, Switzerland: ACC/SCN, 2001.
- Bentley, M.E., K.L. Dickin, S. Mebrahtu, B. Kayode, G.A. Oni, C.C. Verzosa, K.H. Brown, and J.R. Idowu. "Development of a nutritionally adequate and culturally appropriate weaning food in Kwara State, Nigeria: An interdisciplinary approach." *Social Science Medicine* 33(10): 1103-11.
- Brown, K., K. Dewey, and L. Allen. *Complementary feeding of young children in developing countries: A review of current scientific knowledge*. Geneva, Switzerland: World Health Organization, 1998.
- Caulfield, L.E., S.L. Huffman, and E.G. Piwoz. "Interventions to improve the intake of complementary foods by infants 6-12 months of age in developing countries: Impact on growth and prevalence of malnutrition and potential contribution to child survival." *Food and Nutrition Bulletin* 20(2):183-200.
- Dewey, K.G. *Guiding principles for breastfeeding and complementary feeding*. Geneva, Switzerland: World Health Organization, 2002
- Dewey, K.G. and K.H. Brown. *Update on technical issues concerning complementary feeding of young children in developing countries and implications for intervention programs*. Geneva, Switzerland: World Health Organization, 2002.
- Dickin, K., M. Griffiths, and E. Piwoz. *Designing by dialogue. A program planner's guide to consultative research for improving young child feeding*. Washington, D.C.: Manoff Group & The Academy for Educational Development, 1997.
- Engle, P., P. Menon, and L. Haddad. "Care and nutrition: Concepts and measurement." *World Development* 27(8): 1309-1337.
- ESHA. *Food Processor, 7.1*. Salem, OR: ESHA Research.
- Fomon, S.J. *Nutrition of normal infants*. St. Louis, MO: Mosby, 1993.
- Hamosh, M., L.A. Ellis, D.R. Pollock, T.R. Henderson, and P. Hamosh. "Breastfeeding and the working mother: Effect of time and temperature of short-term storage on proteolysis, lipolysis, and bacterial growth in milk." *Pediatrics* 97(4): 492-8.
- IFPRI. "Prevention or cure? A comparison of the effectiveness of targeting food supplements to malnourished children compared to universal targeting of children under two in Haiti." Proposal submitted to the FANTA Project, 2001.

Igumbor, E.O., R.D. Mukura, B. Makandiramba, and V. Chihota. "Storage of breast milk: Effect of temperature and storage duration on microbial growth." *Central Africa Journal of Medicine* 46(9):247-51.

Kanashiro, H.C., M. Fukomoto, M.E. Bentley, E. Jacoby, C. Verzosa, and K.H. Brown. "Use of recipe trials and anthropological techniques for the development of a home-prepared weaning food in the Central Highlands of Peru." *Journal of Nutrition Education* 23(1).

Menon, P., M. Ruel, G. Pelto, J.P. Habicht. "Review of health and nutrition education messages and delivery system currently used in Haiti, and recommendations for further research." Report submitted to the Food and Nutrition Technical Assistance Project, 2001.

Menon P., M. Ruel, G. Pelto, Y.F. Pierre, E. Metellus, and A. Ferrus. "A qualitative study of the patterns of infant feeding and care in the Hinche area of Plateau Central, Haiti." Report submitted to The Food and Nutrition Technical Assistance , 2002.

Pelto, G., E. Levitt, L. Thairu. "Improving feeding practices: Current patterns, common constraints and the design of interventions." *Food and Nutrition Bulletin* (2001).

Piwoz, E. *Improving feeding practices during childhood illness and convalescence: Lessons learned in Africa*. Washington, D.C.: Academy for Educational Development, SARA Project, 1994.

Ruel, M.T. and P. Menon. "Child feeding practices are associated with child nutritional status in Latin America: Innovative uses of the demographic and health surveys." *Journal of Nutrition* 132(6):1180-7.

Ruel, M.T., J.P. Habicht, P. Pinstруп-Andersen, Y.T. Gröhn. "The mediating effect of maternal nutrition knowledge on the association between maternal schooling and child nutritional status in Lesotho." *American Journal of Epidemiology* 135(8):904-14.

World Health Organization. *Division for the control of diarrhoeal and respiratory diseases. Focused Ethnographic Study of Diarrhoeal Disease Manual*. Geneva, Switzerland: WHO, 1994.

## Annex 1. Interview Guides<sup>8</sup>

### 1.1. Group interviews

#### 1.1.1. Lactating mothers of infants 0-6 months

##### *Général*

Dans la culture haïtienne, quelles sont les étapes que l'on considère comme importantes dans le développement de l'enfant (dans le but de trouver la corrélation entre les groupes d'âge et les critères que les mères utilisent Ex. Enfant commence à manger seule, enfant commence à marcher, à parler, enfant a des dents, enfant peut tenir sa cuillère seule, ect).

Quelle est l'étape la plus importante pour vous dans la croissance de l'enfant de 0-6 mois?

##### *Gaz*

- Explorer les perceptions au sujet des gaz et du traitement des gaz chez les bébés
  - Que font-ils dans ces cas ?
  - Comment savez- vous que l'enfant a des gaz?
  - (Si l'on mentionne que le bébé pleure), quelles sont les autres raisons qui peuvent le faire pleurer ? Y a t-il autre chose que vous faites (selon la raison qui le porte à pleurer)?
  - Qu'est-ce qui peut causer des gaz chez l'enfant?

##### *Breastfeeding*

- Initiation à l'allaitement maternel:
  - Qu'est-ce que vous penser au sujet du colostrum?
  - Devrait-il être donné ou non aux nouveau-nés?
  - Pourquoi?
- Qu'est-ce que vous pensez au sujet de la recommandation: "Let manman sel manje pou tibebe jiska 6 mwa" ?
  - Investiguer sur comment ils se sentent à ce sujet?
  - Quels sont les problèmes de pratiquer cette recommandation?
  - Pourquoi?
  - Que font les mères si elles pensent que l'enfant a soif ? (concerne la partie : let manman sel manje)
- Selon vous, quelles sont les conditions nécessaires pour pouvoir allaiter bien ? (au niveau de la mère : sein, appui psychologique, personnes contactées au cas de besoin de conseil etc.)
- Chaque combien de temps donne-t-on au bébé le sein dans la période de 0 à 6 mois?
  - De quoi cela dépend-il?
- Quelles sont les raisons pour lesquelles les mères donnent de la nourriture et des liquides aux enfants de 0 à 6 mois (à différents stades)?

---

<sup>8</sup> Please contact the first author for further information on the development of the interview guides.

- (Ordonner selon l'ordre des réponses)
- Emmener enfant au marché/jardin
  - Dans certains pays, on voit beaucoup de bébés avec leurs mères au marché. Nous ne remarquons pas cela ici. Pourquoi pensez-vous que les mères ne le font pas?
  - Qu'est-ce que vous pensez qui pourrait arriver si vous emmeniez avec vous votre enfant au marché?
- Extraction du lait maternel
  - Dans certains endroits, les mères pressent le lait maternel dans un gobelet et le laissent pour l'enfant quand elles doivent sortir. Qu'est-ce que vous pensez de cela?

### *Food prescriptions for lactating women*

(Nous voulons investiguer ici sur les tabous alimentaires pour les femmes allaitantes, force / persistance des traditions, raisons)

Jeu. Présenter quelques cartes d'aliments et demander aux femmes de créer un repas pour une femme allaitante en choisissant parmi les aliments présentés. (Ne pas oublier d'introduire dans la liste des aliments tabous)

- Investiguer sur les aliments considérés comme tabous ou comme meilleurs pour la femme allaitante.
  - Y a-t-il certains aliments ou liquides que vous ne consommez pas parce que vous allaitez un bébé? Pourquoi? (Chercher la raison pour chaque aliment mentionné)
  - Y a-t-il des aliments ou des liquides que vous pensez que vous devriez consommer (ou consommer davantage) lorsque vous allaiter un bébé? Pourquoi? (Chercher la raison pour chaque aliment mentionné)
  - Buvez-vous davantage d'eau lorsque vous allaitez un enfant?

### **1.1.2. Mothers of infants 6-12 months**

#### *Jeu pour la classification des aliments*

Présenter quelques cartes d'aliments (15 aliments différents, incluant les oeufs et les abats des animaux) et demander aux femmes de les classer selon qu'elles les considèrent comme bon ou pas bon pour les enfants de 6-12 mois.

Demander aux mères de dire pourquoi les aliments considérés comme bon au # 1, le sont pour les enfants de 6-12 mois. (Ceci permettra de classer les aliments selon la perception et la terminologie des mères Ex. Aliments constructeurs).

Demander aux mères de dire pourquoi les aliments considérés comme pas bon au # 1, le sont pour les enfants de 6-12 mois

#### *Remarques*

- Attention spéciale aux oeufs et aux abats
- Possibilités de transformer les aliments difficiles à mastiquer (comme la viande)

### *General*

- Dans la culture haïtienne, quelles sont les étapes que l'on considère comme importantes dans le développement de l'enfant (dans le but de trouver la corrélation entre les groupes d'âge et les critères que les mères utilisent Ex. Enfant commence à manger seule, enfant commence à marcher, à parler, enfant a des dents, enfant peut tenir sa cuillère seule, ect) ?
- Quelle est l'étape la plus importante pour vous dans la croissance de l'enfant pendant sa première année (0-12 mois)?

### *Child health, illness and diet during illness*

- Qu'est-ce qui vous fait dire qu'un enfant est en santé?
  - Connaissez-vous des enfants qui ne sont pas comme cela?
  - Qu'est-ce qui vous fait dire qu'un enfant n'est pas en santé? Qu'est-ce que vous pensez qu'il est nécessaire de faire, pour permettre à un enfant de grandir en santé?
- Quelles sont les raisons pour lesquelles certains enfants ne sont pas en bonne santé?
- Y a-t-il des aliments qui sont particulièrement bon pour permettre à des enfants qui ne sont pas en santé de redevenir en santé?
- De quels types de problèmes de santé les enfants de 0 à 12 mois souffrent-t-ils le plus dans la communauté?

### *Childcare schedule and scheduling of meals*

#### *General*

- D'après vous, de quels types de soins un enfant a-t-il besoin au cours de sa première année (0-12 mois) ?
- Selon vous, combien de temps dans une journée, une mère devrait-elle passer avec l'enfant dans sa première année? Jusqu'à combien de temps dans une journée peut-elle le laisser avec quelqu'un d'autre (comme des soeurs/frères plus grands ou d'autres personnes) – ***ne demandez pas en fonction des heures ! A partir de quel stade/age avec quelle personne, combien de temps, pourquoi***

#### *Pour des enfants plus âgés*

- Comment décidez-vous qu'il est temps de donner à manger à votre enfant?
  - J'ai entendu parler qu'on donne généralement à manger aux enfants qui ont 6-12 mois seulement quand les repas pour la famille sont servis. Que pensez-vous de ça ? De quoi pensez-vous cela dépend ? (Contraintes matérielles, structurels ou psychologiques?)
- Est-ce que vous donnez quelque chose aux enfants entre les repas ? Si oui, qu'est-ce qu'on donne (différencier selon les différents stades de développement de l'enfant) ? Comment décidez-vous quand donner une collation ou un goûter à l'enfant ? De quoi cela dépend ?

### *Souper*

- “J’ai vu dans quelques endroits qu’on donne à manger aux enfants le soir (à la tombée du soleil). Je n’ai pas vu cela ici. Qu’est-ce que vous pensez de cela ?”. (creuser pour avoir les raisons de ne pas le faire)

### *Animal foods for young children*

- Présenter au groupe le cas suivant: Madame Paul habite avec son mari, son (à compléter) *essayer avec différents âges de l’enfant le plus jeune (<1 an, 1 an, 2 ans) et s’il n’y a pas de belle-mère dans le ménage*
- Quelles sont les possibilités de donner aux enfants des **oeufs**?
  - Disponibilité (à la maison, sur le marché ect. )
  - Accès (prix, possibilité d’achat / fréquence ect)
  - A quelle fréquence?
- Quelles sont les possibilités de donner aux enfants des **abats**?
  - Disponibilité (à la maison, sur le marché ect. )
  - Accès (prix, possibilité d’achat / fréquence ect)
  - A quelle fréquence?

### *Breastfeeding*

- Qu’est-ce que vous pensez au sujet de la recommandation: “Let manman sel manje pou tibebe jiska 6 mwa” ?
- Investiguer sur comment ils se sentent à ce sujet?
- Quels sont les problèmes de pratiquer cette recommandation?
- Pourquoi?
- Que font les mères si elles pensent que l’enfant a soif ? (concerne la partie : let manman sel manje)
- Selon vous, quelles sont les conditions nécessaires pour pouvoir allaiter bien ? (au niveau de la mère : sein, appui psychologique, personnes contactées au cas de besoin de conseil etc.)
- Explorer les perceptions au sujet des gaz et du traitement des gaz chez les bébés
- Que font-ils dans ces cas ? (relation avec introduction des liquides etc.)
- Comment savez- vous que l’enfant a des gaz?
- (Si l’on mentionne que le bébé pleure), quelles sont les autres raisons qui peuvent le faire pleurer ? Y a t-il autre chose que vous faites (selon la raison qui le porte à pleurer)?
- Qu’est-ce qui peut causer des gaz chez l’enfant?
- Chaque combien de temps donne-t-on au bébé le sein dans la période de 6 à 12 mois?
- De quoi cela depend-il?
- Quelle est leur perception du lait maternel? (Le considèrent-ils comme une nourriture, un repas pour le bébé, une source d’énergie, ou encore, le sein est seulement considéré comme un calmant )
- Extraction du lait maternel
- Dans certains endroits, les mères pressent le lait maternel pour l’ajouter à la bouillie pour l’enfant. Qu’est-ce que vous pensez de cela?

### 1.1.3. Mothers of children 12-24 months

- Jeu pour la classification des aliments. Présenter quelques cartes d'aliments (15 aliments différents, incluant les oeufs et les abats des animaux) et demander aux femmes de les classer selon qu'elles les considèrent comme bon ou pas bon pour les enfants de 12-24 mois.
- Demander aux mères de dire pourquoi les aliments considérés comme bon au # 1, le sont pour les enfants de 12-24 mois. (Ceci permettra de classer les aliments selon la perception et la terminologie des mères Ex. Aliments constructeurs).
- Demander aux mères de dire pourquoi les aliments considérés comme pas bon au # 1, le sont pour les enfants de 12-24 mois

#### *Remarques*

- Attention spéciale aux oeufs et aux abats
- Possibilités de transformer les aliments difficiles à mastiquer (comme la viande)

#### *Childcare schedule and scheduling of meals*

##### *Pour des enfants plus âgés*

- Comment décidez-vous qu'il est temps de donner à manger à votre enfant ?
- J'ai entendu parler qu'on donne généralement à manger aux enfants qui ont 12-24 mois seulement quand les repas pour la famille sont servis. Que pensez-vous de ça ? De quoi pensez-vous cela dépend ? (Contraintes matérielles, structurels ou psychologiques ?)
- Est-ce que vous donnez quelque chose aux enfants entre les repas ? Si oui, qu'est-ce qu'on donne (différencier selon les différents stades de développement de l'enfant) ? Comment décidez-vous quand donner une collation ou un goûter à l'enfant ? De quoi cela dépend ?

#### *Souper*

- "J'ai vu dans quelques endroits qu'on donne à manger aux enfants le soir (à la tombé du soleil). Je n'ai pas vu cela ici. Qu'est que vous pensez de cela ?". (creuser pour avoir les raisons de ne pas le faire)

#### *Animal foods for young children*

- Présenter au groupe le cas suivant: Madame Paul habite avec son mari, son (à compléter)
- *essayer avec différents ages de l'enfant le plus jeune (<1 an, 1 an, 2 ans) et s'il n'y a pas de belle-mère dans le ménage*
- Quelles sont les possibilités de donner aux enfants des **oeufs**?
- Disponibilité (à la maison, sur le marché ect. )
- Accès (prix, possibilité d'achat / fréquence ect)
- A quelle fréquence?
- Quelles sont les possibilités de donner aux enfants des **abats**?
- Disponibilité (à la maison, sur le marché ect. )
- Accès (prix, possibilité d'achat / fréquence ect)

- A quelle fréquence?

#### **1.1.4. Grandmothers**

- Présenter le cas où la belle-fille/fille vient avec son enfant de 3 mois pour demander de conseil parce que l'enfant crie tout le temps.
- Qu'allez-vous lui dire?
- Que pensez-vous de la façon dont certaines mères s'occupent de leurs enfants maintenant ? Qu'est-ce que vous estimez bon/pas bon ? Pourquoi ?
- Lorsque vos belles-filles/filles vous donnent à garder les bébés, vous en occupez-vous d'après ce que leurs mères vous disent de faire ou d'après vos principes ?
- Extraction du lait maternel
- Dans certains endroits, les mères pressent le lait maternel dans un gobelet et le laissent pour l'enfant quand elles doivent sortir. Qu'est-ce que vous pensez de cela?

#### ***Food prescriptions for lactating women***

(Nous voulons investiguer ici sur les tabous alimentaires pour les femmes allaitantes, force/persistance des traditions, raisons)

- Investiguer sur les aliments considérés comme tabous ou comme meilleurs pour la femme allaitante.- concentrer sur les aliments comme giraumont, avocat, poisson, gombo, aubergine (aliments blancs comme lait ???)
- Demander s'il y avait dans le temps des repas et des collations/goûter spécifiquement préparés pour les enfants?
- Si oui, demander les recettes
- Est-ce qu'il avait des repas spéciaux préparés pour les fêtes?

#### **1.1.5. Fathers**

#### ***Child health, illness and diet during illness***

- Qu'est-ce qui vous fait dire qu'un enfant est en santé?
- Connaissez-vous des enfants qui ne sont pas comme cela?
- Qu'est-ce qui vous fait dire qu'un enfant n'est pas en santé?
- Qu'est-ce que vous pensez qu'il est nécessaire de faire, pour permettre à un enfant de grandir en santé?
- Quelles sont les raisons pour lesquelles certains enfants ne sont pas en bonne santé?
- Y a-t-il des aliments qui sont particulièrement bon pour permettre à des enfants qui ne sont pas en santé de redevenir en santé?
- Selon vous, quel est le rôle des pères dans le développement des enfants ?
- Quelles sont vos responsabilités au niveau de ménage par rapport aux enfants ?
- Que pensez-vous de la façon dont les mères s'occupent des enfants? Qu'est-ce que vous estimez bon/pas bon?

#### ***Values related to child rearing and child feeding***

- Les objectifs des pères pour leurs enfants et philosophie (motivation) relative à l'alimentation des enfants et l'"elevasiyon timoun yo"
- Quels sont vos buts/vos souhaits/vos aspirations pour vos enfants? (kisa ou ta renmen pou petit ou?) Qu'aimeriez-vous qu'il devienne quand il sera grand?
  - Les aspirations sont-elles différentes selon le sexe de l'enfant et l'ordre de naissance?
  - Comment envisagez/planifiez-vous d'atteindre ces objectifs?

Intéresser à recevoir des informations sur la nutrition et la santé pour les enfants?  
Si oui, comment imaginent-ils leur participation?

## **1.2. Individual interviews**

### **1.2.1. Mother Of Infants 6-12 Months**

#### *Child health, illness and diet during illness*

- Qu'est-ce qui vous fait dire qu'un enfant est en santé?
- Connaissez-vous des enfants qui ne sont pas comme cela?
- Qu'est-ce qui vous fait dire qu'un enfant n'est pas en santé? Qu'est-ce que vous pensez qu'il est nécessaire de faire, pour permettre à un enfant de grandir en santé?
- Quelles sont les raisons pour lesquelles certains enfants ne sont pas en bonne santé?
- Y a-t-il des aliments qui sont particulièrement bon pour permettre à des enfants qui ne sont pas en santé de redevenir en santé?
- Alimentation pendant et après un épisode de diarrhée :
  - Est-ce que vous avez remarqué une différence dans l'appétit ou la soif de votre enfant quand il a eu la diarrhée ?
  - Quel types d'aliments ou des liquides ont été donnés à l'enfant qui souffrait de la diarrhée ?
  - Quelque chose de spécial ? Si oui, pourquoi ?
  - Est-ce qu'il y avait des aliments habituellement servis à l'enfant que vous ne donniez plus quand il avait la diarrhée ? Quel genre d'aliments ? Pourquoi ?
  - Quels autres changements aviez-vous apporté à l'alimentation de l'enfant quand il a été malade ? Notez pour chaque changement les raisons évoquées.
  - Si un enfant malade refuse de manger, que pensez-vous qu'il faudrait faire ?
  - Quel types d'aliments sont donnés à un enfant qui récupère d'un épisode de diarrhée pour le rendre en bonne santé ?

### ***Childcare schedule and scheduling of meals***

#### *Horaires pour le soins de l'enfant*

- Utiliser une charte avec les heures pour une journée et demander à la mère:
- Qui reste avec l'enfant au cours de la journée ?
- Qui prépare pour l'enfant et qui lui donne à manger au cours de la journée ?

	Qui prépare ou achète ?	Qui donne ?
Déjeuner		
Collation 1		
Collation 2		
Dîner		
Goûter 1		
Goûter 2		
Souper		
Autre collation		

- Comment vous décider qui s'occupe de votre enfant (6-12 mois)/avec qui vous laissez votre enfant ? Quelles sont vos préférences pour la garde de votre enfant ?

#### *Les horaires pour les repas – comment interprète-elle des signales de faim?*

- Comment vous savez que votre enfant a faim/un enfant a faim ? Quelles sont les différentes signales pour voir si l'enfant a faim?
- Si pleurer est considéré comme un signal pour la faim : quelles autres raisons peut-il avoir pour lesquelles l'enfant pleure? Y a t-il autre chose que vous faites (selon la raison qui le porte à pleurer)?

#### *Pour des enfants plus âgés*

- Comment vous décidez qu'il est temps de donner à manger à votre enfant ?
- J'ai entendu parlé qu'on donne généralement à manger aux enfants qui ont 6-12 mois seulement quand les repas pour la famille sont servis. Que pensez-vous de ça ? De quoi pensez-vous cela dépend ? (Contraintes matérielles, structurels ou psychologiques ?)
- Est-ce que vous donnez quelque chose aux enfants entre les repas ? Si oui, qu'est-ce qu'on donne ? Comment décidez-vous quand donner une collation ou un goûter à l'enfant ? De quoi cela dépend ?

#### *Souper*

“J’ai vu dans quelques endroits qu’on donne à manger aux enfants le soir (à la tombe du soleil). Je n’ai pas vu ici. Que faites-vous même?”. (creuser pour avoir les raisons de ne pas le faire)

*Animal foods for young children:*

- Présenter le cas suivant: Madame Paul habite avec son mari, son (à compléter)
- essayer avec différents ages de l'enfant le plus jeune (<1 an, 1 an, 2 ans) et s'il n'y a pas de belle-mère dans le ménage
- Quelles sont les possibilités de donner aux enfants des **oeufs**?
- Disponibilité (à la maison, sur le marché ect. )
- Accès (prix, possibilité d'achat / fréquence ect)
- A quelle fréquence?
- Quelles sont les possibilités de donner aux enfants des **abats**?
- Disponibilité (à la maison, sur le marché ect. )
- Accès (prix, possibilité d'achat / fréquence ect)
- A quelle fréquence?

*Values related to child rearing and child feeding*

- Les objectifs des mères pour leurs enfants et philosophie (motivation) relative à l'alimentation des enfants et l'"elevasiyon timoun yo"
- Quels sont vos buts/vos souhaits/vos aspirations pour vos enfants? (kisa ou ta renmen pou petit ou?) Qu'aimeriez-vous qu'il devienne quand il sera grand?
- Les aspirations sont-elles différentes selon le sexe de l'enfant et l'ordre de naissance?
- Comment envisagez/planifiez-vous d'atteindre ces objectifs?

**1.2.2. Mother of child 12-24 months**

*Child health, illness and diet during illness*

- Qu'est-ce qui vous fait dire qu'un enfant est en santé?
- Connaissez-vous des enfants qui ne sont pas comme cela?
- Qu'est-ce qui vous fait dire qu'un enfant n'est pas en santé? \
- Qu'est-ce que vous pensez qu'il est nécessaire de faire, pour permettre à un enfant de grandir en santé?
- Quelles sont les raisons pour lesquelles certains enfants ne sont pas en bonne santé?
- Y a-t-il des aliments qui sont particulièrement bon pour permettre à des enfants qui ne sont pas en santé de redevenir en santé?
- Alimentation pendant et après un épisode de diarrhée :
- Est-ce que vous avez remarqué une différence dans l'appétit ou la soif de votre enfant quand il a eu la diarrhée ?
- Quel types d'aliments ou des liquides ont été donnés à l'enfant qui souffrait de la diarrhée ?
- Quelque chose de spécial ? Si oui, pourquoi ?
- Est-ce qu'il y avait des aliments habituellement servis à l'enfant que vous ne donniez plus quand il avait la diarrhée ? Quel genre d'aliments ? Pourquoi ?
- Quels autres changements aviez-vous apporté à l'alimentation de l'enfant quand il a été malade ? Notez pour chaque changement les raisons évoquées.
- Si un enfant malade refuse de manger, que pensez-vous qu'il faudrait faire ?

- Quel types d'aliments sont donnés à un enfant qui récupère d'un épisode de diarrhée pour le rendre en bonne santé ?

***Childcare schedule and scheduling of meals***

- *Horaires pour les soins de l'enfant:*
- Utiliser une charte avec les heures pour une journée et demander à la mère:
- Qui reste avec l'enfant au cours de la journée ?
- Qui prépare pour l'enfant et qui lui donne à manger au cours de la journée ?

	Qui prépare ou achète ?	Qui donne ?
Déjeuner		
Collation 1		
Collation 2		
Dîner		
Goûter 1		
Goûter 2		
Souper		
Autre collation		

- Comment vous décider qui s'occupe de votre enfant (12-24 mois)/avec qui vous laissez votre enfant ? Quelles sont vos préférences pour la garde de votre enfant ?

*Les horaires pour les repas – comment interprète-elle des signales de faim ?*

- Comment vous savez que votre enfant a faim/un enfant a faim ? Quelles sont les différentes signales pour voir si l'enfant a faim?
- Si pleurer est considéré comme un signal pour la faim : quelles autres raisons peut-il avoir pour lesquelles l'enfant pleure? Y a t-il autre chose que vous faites (selon la raison qui le porte à pleurer)?

*Pour des enfants plus âgés*

- Comment vous décidez qu'il est temps de donner à manger à votre enfant ?
- J'ai entendu parlé qu'on donne généralement à manger aux enfants qui ont 12-24 mois seulement quand les repas pour la famille sont servis. Que pensez-vous de ça ? De quoi pensez-vous cela dépend ? (Contraintes matérielles, structurels ou psychologiques ?)
- Est-ce que vous donnez quelque chose aux enfants entre les repas ? Si oui, qu'est-ce qu'on donne ? Comment décidez-vous quand donner une collation ou un goûter à l'enfant ? De quoi cela dépend ?

*Souper*

“J’ai vu dans quelques endroits qu’on donne à manger aux enfants le soir (à la tombe du soleil). Je n’ai pas vu ici. Que faites-vous même?”. (creuser pour avoir les raisons de ne pas le faire)

### ***Animal foods for young children***

- Présenter le cas suivant: Madame Paul habite avec son mari, son (à compléter)
- essayer avec différents âges de l'enfant le plus jeune (<1 an, 1 an, 2 ans) et s'il n'y a pas de belle-mère dans le ménage
  
- Quelles sont les possibilités de donner aux enfants des **œufs**?
- Disponibilité (à la maison, sur le marché ect. )
- Accès (prix, possibilité d'achat / fréquence ect)
- A quelle fréquence?
- Quelles sont les possibilités de donner aux enfants des **abats**?
- Disponibilité (à la maison, sur le marché ect. )
- Accès (prix, possibilité d'achat / fréquence ect)
- A quelle fréquence?

### ***Values related to child rearing and child feeding***

- Les objectifs des mères pour leurs enfants et philosophie (motivation) relative à l'alimentation des enfants et l'"élevasyon timoun yo"
- Quels sont vos buts/vos souhaits/vos aspirations pour vos enfants? (kisa ou ta renmen pou petit ou?) Qu'aimeriez-vous qu'il devienne quand il sera grand?
- Les aspirations sont-elles différentes selon le sexe de l'enfant et l'ordre de naissance?
- Comment envisagez/planifiez-vous d'atteindre ces objectifs?

### **1.2.3. Verbal positive deviant mothers**

- Bassin Zim et Casse
- Allaitement exclusif jusqu'à six mois
- Extraction du lait maternel

### ***Questions***

- Où avez-vous entendu parler de ça?
- Quel effet a-t-il eu ce message? (effet de l'entendre)
- Que pensez-vous de ce message?
- Pourquoi pensez-vous ce message a été donné?
- Est-ce que vous avez strictement suivi ce conseil ?

*Si oui,*

- Comment avez-vous fait ? Acceptation autours de vous – mari, belle-mère ?
- Qu'avez-vous faites avec l'enfant quand vous devez sortir ?
- Qu'avez-vous faites quand l'enfant a de gaz/colic ?
- Avez-vous eu de problèmes que l'enfant n'a pas aimé la nourriture familiale plus tard ?

*Si non,*

- Pourquoi pas ?
- Lait gâté ?

#### **1.2.4. Program beneficiaries**

- Use of the food within the households (both the rations for the pregnant and lactation women as well as the rations for the children)
  - How do they cook the food (detailed descriptions)?
  - Who is usually served this food?
  - Are the youngest children fed this?
  - Is it cooked in a special way for them (or is the food cooked for the family modified in any way for the youngest child?)
  - What is the acceptability?
  - Who else outside the household is the food (raw or cooked) shared with?
  - Is any sold? (Confidentiality is especially important here.)
- Use of program services
  - What motivates them to come to the Rally Post? (because they *have* to come to the Rally Posts to be eligible for the rest of the program services like the food).
  - What are some of the constraints to going to the Rally Posts at all (or attending regularly)?
  - How long does it take them to get there?
  - What would they be doing if they were not coming to the Rally Posts?
  - Would you be interested in having more frequent discussions related to children's health and your health?
  - What would they be interested in knowing about
  - Where would they like to have these?
  - How often would they be able to attend?
  - Do they approach the colvols or agents de santé in their communities outside of program contact times?
  - How do they feel about this?

#### **1.2.5. Colvols and health agents**

- What are their current responsibilities with the program?
- How do they feel about their roles as colvols? What motivates them to work with WV?
- How do they feel about more frequent contacts with the communities?
  - What incentives would they be looking for?

## **Annex 2. Recipe Trials**

### **2.1. STEP 1 – Preparation visit**

#### ***Préparation Essai de Recettes, partie II***

##### *Bassin Zim*

- Commencer avec le jeu d'aliments : présenter les cartes d'aliments et demander la disponibilité et accessibilité en fonction de la saison (objectif : rappeler aux femmes les différents aliments existants)
- Introduction du sujet : développement des nouvelles recettes des repas spéciaux ou amélioration de recettes existantes (Bouillie Farine France par exemple) pour les enfants dans le groupe d'âge de 10-18 mois (« enfants qui commencent à marcher jusqu'à l'apparition des canines »)
  - Demander d'abord de façon ouverte et laisser les mères développer des idées
  - Investiguer sur acceptabilité, disponibilité et accessibilité :
  - Farine de petit mil
  - Cœur de maïs
  - Farine de pois (grillé)
  - Pistaches grillées, Mamba
  - Cuillère d'huile
  - Fois séchées
  - Extraction du lait maternel
  - Ajout de jus de citron, fruits écrasés etc. à une bouillie
  - Riz avec pois écrasés de la sauce pois
  - Patates jaunes écrasées
- Investiguer sur des possibilités d'un goûter/collation spéciale pour les enfants de ce groupe d'âge :
  - Légumes/fruits écrasés (avocats, mangues etc.)
- Organisation de la coté pratique de l'essai pour la semaine prochaine
  - Qui amène quoi ?
  - Dégustation après
  - Visite et essai avec deux mères à Cachimon

#### ***Préparation Essai de Recettes, partie II***

##### *Tierra Muscadi, Marmont*

- Introduction du sujet : développement des nouvelles recettes des repas spéciaux ou amélioration de recettes existantes (Bouillie Farine France et Banane écrasée) pour les enfants dans le groupe d'âge de 6-8 mois (« enfant qui rale, fait des dents, se met debout »)
  - Demander d'abord de façon ouverte et laisser les mères développer des idées
  - Investiguer sur acceptabilité, disponibilité et accessibilité (à partir de quel âge, pourquoi ajout possible, pourquoi pas, quantités à ajouter):

*Bouillie Farine France :*

- ajout de farine de pois grillé et huile à une version sucrée (quantités à ajouter)
- ajout de farine de pois grillé et hareng sel/sol (version salée) (quantités à ajouter)
- ajout d'un œuf (une fois par semaine...)
- ajout de lait maternel extrait (pour enfants plus petites)
- possibilité de préparer une bouillie plus consistant

*Banane écrasée :*

- explorer l'ajout des aliments suivants (ajouter les aliments écrasés, pas sous forme de sauce) :
  - œuf
  - hareng pilé
  - pois écrasé de la sauce pois
  - giraumont (problème d'âge ?)
  - abats (foie) – purée de foie ?
  - lait maternel extrait
  - pomme de terre à la place de banane
  - patate douce à la place de banane (problème d'âge ?)
- Demander ce qu'elles veulent essayer, pourquoi / pourquoi pas
- Organisation de la coté pratique de l'essai pour demain
  - Qui amène quoi ?
  - Lieu ?
  - Dégustation après

## **2.2. STEP 2 – Recipe trial itself**

### *Essaie de Recettes, partie II*

Recettes pour les enfants qui commencent à marcher jusqu'à l'apparition de dents de chiens (canines)

*Bassin Zim*

- Essayer les différentes recettes et noter mode de préparation/quantités utilisées/temps nécessaire pour la préparation
- Poser les questions approfondies pourquoi/pourquoi pas pour les quantités utilisées, les méthodes
  - Bouillie Farine France en ajoutant de pois et des pistaches
  - Bouillie Petit Mil en ajoutant de pois et des pistaches
  - Cham Cham (goûter) : petit mil, pistaches, sucre
  - voir possibilité d'ajouter une cuillère d'huile aux bouillies
  - voir possibilité d'ajouter le jus de citron à la fin aux bouillies
  - investiguer sur possibilité d'utiliser le mais pour la bouillie (coût etc.)
  - investiguer sur la perception du cœur de mais
- Dégustation : Jugement des mères et enfants sur goût, consistance, couleur, odeur etc.
  - Est-il facile de donner à manger la bouillie/cham cham à l'enfant ? (réponse de l'enfant)

- Quelle quantité de cette bouillie votre enfant pourrait-il manger pour un repas ?
- Combien de repas prend-il par jour ?
- Evaluation du prix par portion, la disponibilité des ingrédients
- Temps nécessaire pour la préparation/Facilité de la préparation
- Evaluation de la faisabilité de préparer régulièrement ces repas pour les enfants, fréquence de préparation (l'acceptation de préparer les recettes à la maison et de donner à manger et pourquoi/pourquoi pas ?)
  - Changeriez-vous la recette ? Comment ? Pourquoi ?

Démonstration extraction du lait maternel.

### ***Essaie de Recettes, partie II***

#### ***Recettes pour les enfants de 6-8 mois***

*Tierra Muscadi, Marmont*

- Essayer les différentes recettes et noter mode de préparation/quantités utilisées/temps nécessaire pour la préparation :
  - Poser les questions approfondies pourquoi/pourquoi pas pour les quantités utilisées, les méthodes
- Dégustation : Jugement des mères et enfants sur goût, consistance, couleur, odeur etc.
  - Est-il facile de donner à manger ça à l'enfant ? (réponse de l'enfant)
  - Quelle quantité votre enfant pourrait-il manger pour un repas ?
  - Combien de repas prend-il par jour ?
- Evaluation du prix par portion :
  - Combien de Gourdes plus cher qu'une préparation « simple » ?
  - En se basant sur le prix plus élevé, combien de fois par semaine peuvent-elles préparer ces recettes améliorées ?
  - Possibilité/acceptabilité d'ajouter les ingrédients plus cher uniquement à la portion pour l'enfant de moins de 2 ans ?
- La disponibilité des ingrédients
- Temps nécessaire pour la préparation/Facilité de la préparation
- Evaluation de la faisabilité de préparer régulièrement ces repas pour les enfants, fréquence de préparation (l'acceptation de préparer les recettes à la maison et de donner à manger et pourquoi/pourquoi pas ?)
  - Changeriez-vous la recette ? Comment ? Pourquoi ?

Leur dire que nous retournons dans deux à trois semaines – leur demander de essayer ces recettes et aussi d'essayer des variations entre-temps.

### **2.3. STEP 3 – Follow-up visit**

***Follow-up interview à Bassim Zim concernant les essais de recettes***

- Est-ce qu'elles sont essayées de préparer la bouillie petit mil etc. à la maison depuis notre dernier rencontre ? :
  - Qui ?
  - Quelle recette ? Variation ? Préparé pour l'enfant seulement ou pour toute la famille ?
  - Réaction des enfants ?
  - Si non, pourquoi pas ?
  - Extraction du lait maternel ?
- Quelques questions supplémentaires concernant la Bouillie Farine France pour les *enfants de 6-8 mois* («enfant qui rale, fait des dents, se met debout») – Investiguer sur acceptabilité, disponibilité et accessibilité d'ajouter les aliments suivants (à partir de quel age, pourquoi ajout possible, pourquoi pas, quantités à ajouter) :
  - Bouillie Farine France :
    - préparer une version salée – ajout de farine de pois grillé et hareng sel/sol (quantités à ajouter)
    - ajout d'un œuf (une fois par semaine...)
    - ajout de lait maternel extrait (pour enfants plus petites)
    - possibilité de préparer une bouillie plus consistant
    - demander d'essayer les variations et nous raconter les expériences la prochaine fois
  - Quelques questions supplémentaires concernant le *Cham-cham* à base de petit mil:
    - A partir de quel age peut-on donner le cham-cham à base de petit mil ?
    - Pour combien de jours peut-on conserver le cham-cham ?
    - Est-ce qu'elles peuvent imaginer de préparer une bouillie à base de cham-cham en ajoutant de l'eau bouillie pour les enfants qui ne peuvent pas encore manger le cham-cham tel qu'il ?
    - Comment pourraient-on nommer une telle bouillie (Bouillie cham cham) ?
    - Demander d'essayer ça et nous raconter les expériences la prochaine fois
  - Quelques questions supplémentaires sur le *prix de bouillies* :
    - Prix de la bouillie petit mil et farine France améliorée par rapport à la bouillie farine France simple (premier essai de recettes) – combien de Gourdes plus cher que la recette originale ?
    - En se basant sur le prix plus cher, combien de fois par semaine une telle bouillie améliorée peut être préparée ?
    - En général – Possibilité/Acceptabilité d'ajouter ingrédients plus cher uniquement à la portion pour l'enfant de moins de 2 ans (huile, hareng, œuf, etc.)?
  - Perceptions sur les préparations proposées par les femmes à Tierra Muscadi (réactions spontanées ?)

### *Follow-up interview à Tierra Muscadi et Marmont concernant les essais de recettes*

- Est-ce qu'elles sont essayées de préparer les recettes à la maison depuis notre dernier rencontre ? :
  - Qui ?
  - Quelle recette ? Variation ? Préparé pour l'enfant seulement ou pour toute la famille ?
  - Réaction des enfants ?
  - Si non, pourquoi pas ?
  - Extraction du lait maternel (Tierra) ? Si oui, ajout à la bouillie ou donné tel qu'il ?

- Demander si elles se rappellent pourquoi l'ajout de pois et de giraumont est bon?
- Quelques points spécifiques: Variation de l'épaisseur de la bouillie ?, relation farine France : farine de pois ?, ajout d'une cuillère d'huile a la bouillie sucrée ?
- Demander si elles sont essayées l'ajout d'un oeuf à la portion de la bouillie pour l'enfant ? Si oui, œuf entier ?

## Annex 3. Recipes of Currently Fed Complementary Foods

### *Bouillie Bonbon sel*

Ingrédients	Quantité utilisée (mesure locale)	Quantité utilisée (g)
Bonbon (1/2 paquet, 2 bonbons) trempé dans l'eau	1/8 cup	34 g
Sucre	1 tablespoon	13 g
Sel	1/8 teaspoon	0,625 g
Eau	1/3 cup	75 g
Quantité totale	1/3 cup	
Quantité d'une portion pour un enfant de 10 jours	1/3 cup	

### *Mode de préparation*

Laisser tremper les bonbons (12 grammes) dans l'eau (1/2 cup) pendant 20 minutes, mettre dans un tamis pour enlever l'eau (reliquat : 1/8 cup de bonbon), ajouter de sucre, sel et de l'eau, faire bouillir pour 5 minutes.

### *Bouillie Farine France*

Ingrédients	Quantité utilisée (mesure locale)	Quantité utilisée (g)
Farine France	1,5 cups	207 g
Eau	8 cups	1800 g
Peau de citron vert	1	7 g
Sel	1 tablespoon	16 g
Sucre marron	¾ cup	166,5 g
Quantité totale		
Quantité d'une portion pour un enfant d'un mois	¼ cup	
un enfant de trois mois	½ cup	

### *Mode de préparation*

- Faire griller la farine France pendant d'environ 10 minutes. Porter à ébullition 6 cups de l'eau et la peau d'un citron vert et du sel, ajouter du sucre marron et faire bouillir;
- Mélanger la farine grillée avec 2 cups de l'eau, passer au tamis et ajouter à l'eau bouillante, mélanger et faire mignoter pendant 10 minutes.

### *Soupe de pain*

Ingrédients	Quantité utilisée (mesure locale)	Quantité utilisée (g)
Pain biscuits	6	91 g
Feuille « Lianpanier »	1/3 cup	10 g
Huile	2 tablespoons	22 g
Epices (mélange d'ail, poireau)	1 tablespoon	12 g
Hareng sol	1 tablespoon	10 g
Eau	2,8 cups	630 g
Sel	½ teaspoon	2,5 g
Quantité totale	3 cups	
Quantité d'une portion pour un enfant de six mois	1 cup	
un enfant de trois mois	½ cup	

*Mode de préparation*

Enlever la croûte du pain (jeter), tremper dans l'eau (2 cups), couper feuilles, chauffer l'huile ensemble avec les épices (épices pilée), frire légèrement les épices, ajouter le hareng sol, les feuilles, l'eau (1,8 cups), sel et le pain trempé (1 cup=206g), faire mijoter et brasser avec une cuillère pendant 10 minutes.

*Banane écrasée*

Ingrédients	Quantité utilisée (mesure locale)	Quantité utilisée (g)
Sel	½ teaspoon	2,5 g
Banane « gros bot » bouillie et écrasée	2 petites bananes(d'environ 3 inches chacune)	150 g
Huile	3 tablespoons	33 g
Hareng sel	1 tablespoon 1 teaspoon	12 g
Epices (mélange d'ail, poireau)	½ teaspoon	2 g
Maggi	¼ teaspoon	2 g
Eau	1/3 cup	75 g
Quantité totale	½ cup banane écrasée + un peu de sauce hareng ½ cup de sauce	
Quantité d'une portion pour un enfant de trois mois	½ cup banane écrasée + un peu de sauce hareng ¼ cup de sauce	

*Mode de préparation*

- Laver les bananes et enlever la peau, faire bouillir l'eau, ajouter du sel et les bananes, bouillir pendant 10 minutes ;
- Pour la sauce : chauffer l'huile, ajouter hareng sel (enlever peau et piler), épices, maggi et 1/3 cup de l'eau et laisser mijoter pendant quelques minutes ;
- Entre-temps enlever l'extérieur des bananes, couper en morceau, enlever l'intérieur des bananes et écraser avec une cuillère ;
- Mélanger un peu de sauce avec les bananes écrasées et servir avec un peu de la sauce.

## **Annex 4. Recipes of New and Modified Complementary Foods**

### *Préparatifs pour les recettes*

#### *Pois noir*

- Trier les pois et le laver
- Griller les pois dans une marmite pendant 10-15 minutes
- Laisser les refroidir
- Piler les pois jusqu'à obtention d'une farine (vanner une fois pour enlever les pellicules noires = depelliculage)

#### *Arachides*

- Trier les arachides décortiquées (pas laver)
- Griller les arachides pendant 10 minutes dans une marmite
- Laisser refroidir
- Depelliculage à la main
- Piler les arachides

#### *Petit mil*

- Pour le Cham Cham
  - Laver le petit mil
  - Sécher au soleil
  - Griller pendant 10 minutes dans une marmite (quelques grains éclatent)
  - Laisser refroidir
  - Piler et passer au tamis à plusieurs reprises pour obtenir la farine (pulversiser)
- Pour la bouillie de petit mil
  - Laver
  - Sécher
  - Piler une première fois pour enlever la grosse paille
  - Piler et vanner à plusieurs reprises pour enlever la farine (d'environ 35 minutes)

#### *Eau de cannelle pour la bouillie*

Faire bouillir de l'eau avec quelques morceaux de cannelle et la peau d'un citron

**Bassin Zim***1. Bouillie de petit mil avec pois et arachides*

Ingrédients	Quantité utilisée (mesure locale)	Quantité utilisée (g)
Farine de petit mil	2,625 cup	338 g
Farine de pois grillé	1 cup	157 g
Farine d'arachides grillées	½ cup	78 g
Eau	10 cups	2250 g
Sucre brun	1 cup	222 g
Sel lavé	1 teaspoon	5 g
Essence de vanille	1 tablespoon	14 g
Cannelle	quelques morceaux (pour 1,5 Gourdes)	4 g
Quantité totale	10 cups	

*Mode de préparation*

Mélanger les trois différentes farines et ajouter 8 cups de l'eau et 2 cups d'eau de cannelle, bien mélanger avec la farine, verser-le tout dans une marmite et porter à ébullition en remuant, ajouter 1 teaspoon de sel lavé, laisser bouillir pendant 15 minutes, ajouter le sucre, remuer et laisser cuire à petit feu pendant 30 minutes après avoir couvert la marmite, ensuite ajouter l'essence de vanille et remuer.

*2. Bouillie farine France*

Ingrédients	Quantité utilisée (mesure locale)	Quantité utilisée (g)
Farine de France	2 cups (1 gobelet)	276 g
Farine de pois grillé	½ cup	78,5 g
Farine d'arachides grillées	½ cup	78 g
Eau	11 cups	2475 g
Sucre brun	1 cup	222 g
Sel lavé	½ teaspoon	2,5 g
Huile	2 teaspoon	6 g
Essence de vanille	1 tablespoon	14 g
Cannelle	quelques morceaux (pour 1,5 Gourdes)	4 g
Quantité totale	10 cups	

*Mode de préparation*

Griller la farine France pendant 5 minutes et laisser refroidir. Mélanger avec la farine de pois et d'arachides, y ajouter 5 cups d'eau et remuer. Chauffer 6 cups d'eau (dont 2 cup d'eau cannelle) dans une marmite, ajouter le sel lavé et verser la farine dans l'eau bouillante. Porter à ébullition en remuant. Laisser bouillir pendant 10 minutes et ajouter l'huile et le sucre, remuer et laisser bouillir encore pendant 5 minutes, ajouter l'essence de vanille.

### 3. Cham Cham

Ingrédients	Quantité utilisée (mesure locale)	Quantité utilisée (g)
Farine de petit mil grillé	3 1/3 cups	430 g
Farine d'arachides grillées	2 cup	312 g
Sucre brun	1 cup	222 g
Sel lavé	1 teaspoon	5 g

#### *Mode de préparation*

Mélanger le tout et piler d'avantage pour obtenir une poudre.

### **Marmont**

#### 4. Préparation de la bouillie farine France avec pois grillé et hareng saur

Ingrédients	Quantité utilisée (mesure locale)	Quantité utilisée (g)
Farine France grillée	1 cup (1/2 gobelet)	138 g
Farine de pois grillé	½ cup	78,5 g
Hareng saur pilé	2 tablespoons	20 g
Eau	3 ½ cups	787,5 g
Huile	2 tablespoons	22 g
Sel lavé	2/4 teaspoon	2,5 g
Quantité totale	3 cups	

#### *Mode de préparation*

- Passer la farine France dans une passoire. Griller la farine pendant 5 minutes et laisser refroidir. Passer encore dans une passoire. Mélanger avec la farine de pois grillé.
- Nettoyer un morceau de hareng (coupé d'un hareng que nous avons apporté) avec du citron, enlever la peau et les arrêtes et piler-le.
- Mettre une chaudière sur le feu et chauffer. Ajouter de l'huile, le hareng pilé et 1 ½ cups d'eau. Porter à ébullition et ajouter du sel lavé. Laisser bouillir pendant 2-3 minutes. Retirer la chaudière du feu.
- Diluer la mélange de farine de pois et de farine France dans 2 cups d'eau froide.
- Ajouter la pate de farine à la sauce de hareng en remuant. Remettre la chaudière sur le feu, porter à nouveau à ébullition et laisser bouillir en remuant pendant 20 minutes.

#### 5. Bouillie de farine France avec pois grillé (version sucrée)

Ingrédients	Quantité utilisée (mesure locale)	Quantité utilisée (g)
Farine France grillée	presque 1 cup	120 g
Farine de pois grillé	½ cup	78,5 g
Eau	4 cups	900 g
Sucre brun	½ cup	111 g
Sel lavé	1/8 teaspoon	0,625 g
Quantité totale	3 cups	

*Mode de préparation*

- Passer la farine France dans une passoire. Griller la farine pendant 5 minutes et laisser refroidir. Passer encore plusieurs fois dans une passoire. Mélanger avec la farine de pois grillé, y ajouter de l'eau froide (2 cups) et diluer.
- Porter 1 ½ cups d'eau à ébullition avec la peau d'un citron. Ajouter le sel lavé et le sucre. Retirer la chaudière du feu, laisser refroidir un instant et verser la pâte de farine dans l'eau en remuant. Porter à nouveau à ébullition en remuant. Laisser bouillir en remuant pendant 20 minutes. Ajout de ½ cup d'eau vers la fin parce que la bouillie était trop épaisse pour les femmes.

6. *Banane écrasée avec giraumont et hareng saur*

Ingrédients	Quantité utilisée (mesure locale)	Quantité utilisée (g)
Banane « matenten » bouillie et écrasée	2 cups	480 g
Giraumont bouilli et écrasé	1 ½ cups	360 g
Sel lavé	¼ teaspoon	1,25 g
Hareng saur pilé	2,875 tablespoon 1,25 teaspoon	31,25 g
Huile	3 tablespoon	33 g
Ail	1 dent écrasée	2 g
Eau	1 cup	225 g
Quantité totale	4 cups	

*Mode de préparation*

- Couper le giraumont, enlever la peau et les graines. Laver les morceaux et le mettre dans un peu d'eau dans une chaudière. Enlever la peau des bananes, les laver et les mettre dans un peu d'eau dans une autre chaudière. Ajouter un peu de citron pour empêcher l'oxydation.
- Faire bouillir 3 cups de l'eau avec du sel lavé. Ajouter les bananes et les morceaux de giraumont au moment de l'ébullition.
- Faire bouillir pendant 15 minutes (chaudière est couverte avec une assiette).
- Ecraser avec une cuillère d'abord les bananes en ajoutant un peu d'eau de banane/ giraumont pour légèrement assouplir la purée. Ecraser les morceaux de giraumont.
- Pour la sauce : Prendre deux morceaux (deux « màk ») de hareng saur (pour 4 Gourdes) et les nettoyer avec du citron. Enlever ensuite la peau et les arrêts et piler-les.
- Chauffer une chaudière, ajouter de l'huile, le hareng pilé et 1 cup d'eau (l'eau de banane/ giraumont). Laisser bouillir et ajouter l'ail. Laisser encore bouillir pour quelques minutes.
- Mélanger bien la purée de banane et de giraumont et ensuite ajouter toute la sauce à cette purée et mélanger à nouveau.

*Tierra Muscadi*7. *Bouillie farine France avec pois grillé et huile*

Ingrédients	Quantité utilisée (mesure locale)	Quantité utilisée (g)
Farine France grillé	1 cup + 1 tablespoon (1/2 gobelet)	146 g
Farine de pois grillé	1 cup	157 g

Eau	7 cups	1575 g
Sucre brun	$\frac{3}{4}$ cups	166,5 g
Sel lavé	1 teaspoon	5 g
Huile	1 tablespoon	11 g
Quantité totale	6 cups	1500g

### *Mode de préparation*

- Passer la farine France dans une passoire. Griller la farine pendant 5 minutes et laisser refroidir (quantité : 1 cup + 1 tablespoon). Passer encore plusieurs fois dans une passoire (quantité : 1  $\frac{1}{8}$  cups). Mélanger avec la farine de pois grillé, y ajouter de l'eau froide (4 cups) et diluer.
- Porter 2 cups d'eau à ébullition avec la peau d'un citron. Ajouter le sucre (1/2 cup) et le sel lavé. Retirer la chaudière du feu, laisser refroidir un instant et verser la pâte de farine dans l'eau en remuant. Porter à nouveau à ébullition en remuant. Ajouter encore 1 cup de l'eau et laisser bouillir pendant 5 minutes en remuant. Ajouter de l'huile et encore un peu de sucre (1/4 cup). Laisser bouillir en remuant pour 15 minutes.

### 8. *Banane écrasée avec giraumont et hareng saur*

Ingrédients	Quantité utilisée (mesure locale)	Quantité utilisée (g)
Banane « matenten » bouillie et écrasée	1,5 cups	360 g
Giraumont bouilli et écrasé	1 $\frac{1}{3}$ cups	320 g
Sel lavé	1 teaspoon	5 g
Jus de citron	demi-citron	2 g
Hareng saur pilé	$\frac{3}{4}$ cup	72 g
Pâte de tomate mélangée avec un petit morceau de beurre	1 teaspoon	7 g
Epices (mélange pilé d'1 cube maggi, ail, oignon vert)	1 teaspoon	7 g
Huile	4 tablespoon	44 g
Eau	1 $\frac{1}{3}$	300 g
Quantité totale banane+giraumont	2,83 cups	
Quantité totale sauce	1 $\frac{1}{4}$ cups	

### *Mode de préparation*

- Laver les bananes et enlever la peau. Enlever la peau du giraumont et couper en morceaux. Faire bouillir 2 cups de l'eau et ajouter du sel lavé au moment de l'ébullition. Ajouter les bananes, les morceaux de giraumont et le jus de citron à l'eau bouillante.
- Faire bouillir pendant 25 minutes (chaudière est couverte avec une assiette).
- Couper les bananes pour enlever la partie à l'intérieur et les écraser avec une cuillère.
- Ecraser les morceaux de giraumont.
- Pour la sauce : Prendre un hareng saur (pour 7 Gourdes) et le mettre pour quelques instants sur le feu pour pouvoir enlever la peau plus facilement. Enlever ensuite la peau et les arrêts. Piler les morceaux de hareng. Mélanger l'huile et la pâte de tomate/beurre. Mettre ce mélange et les épices dans une chaudière, chauffer, ajouter le hareng puis  $\frac{1}{3}$  cup d'eau (l'eau de banane/ giraumont). Laisser bouillir pour quelques minutes, ajouter 1 cup d'eau et laisser encore bouillir pendant deux minutes.
- Mélanger la banane et le giraumont écrasés avec toute la sauce.

### 9. Bouillie de farine France avec œuf

Nous avons enlevé un peu de la bouillie farine France avec pois grillé pour cette préparation parce qu'il n'y avait plus assez de farine France pour faire une autre bouillie sans ajout de farine de pois. L'accent a été mis sur le fait qu'un jour la bouillie avec ajout de pois peut être préparée et un autre jour on ajoute un œuf mais pas le pois, si les moyens sont limités.

Ingrédients	Quantité utilisée (mesure locale)	Quantité utilisée (g)
Bouillie farine France avec pois grillé	½ cup	125 g
Œuf	1	45 g
Quantité totale	½ cup	

#### *Mode de préparation*

Ajout de l'œuf à une bouillie déjà préparée. Bien battre un œuf entier, en s'assurant que la partie blanche de l'œuf et le jaune ne forme qu'un. Ajouter ensuite en battant la bouillie préparée à cette masse et mélanger bien. Mettre dans une chaudière et laisser chauffer pendant 2-3 minutes en brassant continuellement.

### 10. Ajout du lait maternel à la bouillie

Deux femmes (Céliana et Edmari) avaient dit pendant la dégustation qu'elles ne donnaient pas encore de la bouillie de farine France ni la banane écrasée à leurs enfants car ils sont trop petits (2-3 mois). Comme elles ont l'habitude de leur donner la Bouillie Bonbon Sel, nous avons proposé de tester l'ajout du lait maternel extrait avec la bouillie bonbon sel.

### Annex 5. Map of Haiti Showing Study Area



Hinche

Lascahobas

Thomonde