Cambodia HARVEST

Qualitative Evaluation of the Family Nutrition Education Program

Complementary and Transitional Feeding Practices

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Acronyms

BCC	Behavior change communication
BFCI	Baby-Friendly Community Initiative
CDHS	Cambodia Demographic Health Survey
HARVEST	Helping Address Rural Vulnerabilities and Ecosystem Stability Program
MSU	Michigan State University
MOH	Ministry of Health
NNP	National Nutrition Program
NGO	Non-governmental Organization
RGC	Royal Government of Cambodia
USAID	United States Agency for International Development
VHSG	Village Health Support Group
FSNG	Food Security and Nutrition Group
TFG	Three food groups nutrition education message

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1. Introduction

In recent years we have seen increased investment in nutrition-sensitive agricultural programming (Herfurth and Harris 2014; Ruel et al. 2013). Improved nutrition is particularly important for children aged 2 or less because the long-term consequences of nutritional deprivation are particularly great at this age. In particular, children undernourished at a young age grow to be stunted adults with lower physical work capacity (Hoddinott et al. 2008). They are also less likely to reach their potential in terms of mental development and as a result their human capital development is permanently diminished. Poor human capital formation is not just an individual problem but results in lower productivity in the aggregate, and thus has implications for the economy as a whole (World Bank 2006).

Increased agricultural production is expected to improve the nutritional status of women and children through several pathways. Agricultural programming can improve food availability, increase income that can be used to purchase more and better quality food, and improve women's control of productive assets (see Figure 1). Efforts to raise the nutritional status of children via increased agricultural production, however, will hinge on several assumptions, including the use of appropriate caring practices for young children. Caring practices are important elements of health and nutrition education that now accompanies agricultural programming. Among these is the promotion of good complementary feeding practices for young children, i.e. feeding practices for children 6-24 months of age that are transitioning from breastfeeding to family foods. Without attention to such practices, it is unlikely that agricultural programs that are expected to improve child health and nutrition via increased agricultural production will be successful.

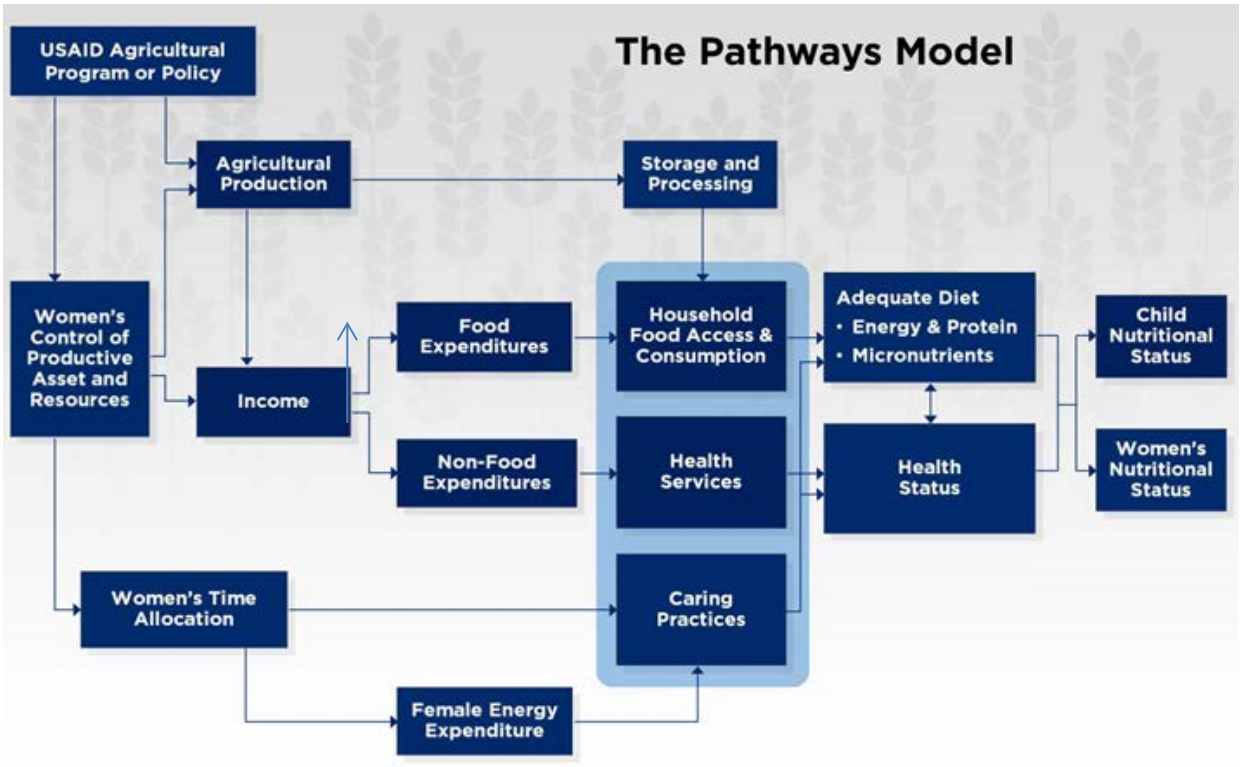

Figure 1: Conceptual model showing the relationship between agricultural production and improved nutritional status (adapted from Herfurth and Harris 2014).

Caring practices for improved child nutrition are an important concern for the USAID-funded Helping Address Rural Vulnerabilities and Ecosystem Stability (HARVEST) project in Cambodia. HARVEST, part of the USAID Feed the Future program, aims to increase the incomes and improve food security and nutrition for 70,000 households living in the provinces of Pursat, Battambang, Siem Reap and Kampong Thom. The key efforts to achieve these objectives include the development of agricultural value chains in rice, horticulture, and fish; efforts to strengthen the links between agricultural production and nutrition; and support for sustainable natural resource management and climate change adaptation (Fintrac 2015).

The objective of this study is to examine current practices and beneficiary perceptions surrounding key child feeding recommendations that were promoted under HARVEST's family nutrition training program. In particular, this study examines the application of two specific recommendations on the use of enriched porridge and the "three food groups" – foods that provide calories, micronutrients and protein – in foods offered to young children aged 6-24 months. The study takes a qualitative approach so that child feeding practices may be understood in the context of family food consumption, caretaker obligations, and household livelihood strategies. It draws on participant observation of family meal preparation and child feeding events, as well in-depth interviews with caretakers about current child feeding practices, knowledge of recommended messages, and attitudes toward their application. The overall goal is to understand beneficiary perceptions of recommended child feeding practices and to inform continuing efforts at USAID to improve child nutrition.

2. Project Background

In Cambodia, the most recent Demographic and Health Survey (NIS 2015) reveals that children under five years of age still suffer from high rates of stunting and wasting, at 32% and 10% respectively. Accordingly, the Royal Cambodian Government (RCG) decided to fast-track efforts to improve child and maternal nutrition over a period of five years (MOH 2014). In 2014 the government unveiled a plan to scale up the delivery of nutrition-specific interventions in several core areas. Among these interventions is an effort to improve behavior change communication (BCC) targeted toward practices carried out in the first 1000 days of a child's life (MOH 2014). One of the key recommendations that this effort promotes is to provide young children with an enriched porridge of an easily digestible consistency, containing specific nutrients that will enrich the quality of the young child's diet. The MOH recommendations are given in Figure 2.

Since HARVEST's beginning, the messages promoted by its nutrition education program have been aligned with the priorities of the RCG for improving the nutritional status of young children. In particular, HARVEST developed a family nutrition curriculum in collaboration with PATH (USAID 2012) that was implemented throughout Phase I of the project. This curriculum included lessons on complementary feeding as part of its effort to improve food utilization within households and therefore improve the nutritional status of young children.

Over time, pedagogical changes were made to the family nutrition program that were not entirely recorded in curricular records. A key change was to create village-level learning groups that were more amenable to learning about nutrition and thus more likely to lead to experimentation with new behaviors. Initially, during Phase I of HARVEST, nutrition education lessons were delivered through traditional stand-and-deliver sessions that were presented to home gardening participants who were

required to attend. In addition, cooking demonstrations were held once or twice in villages. These demonstrations included an important lesson on how to make nutrient-rich *bobor khab krub kroeung* (or enriched porridge) for children aged 6 to 24 months (USAID 2012).

RECOMMENDATIONS ON COMPLEMENTARY FEEDING			
Age	Texture	Frequency	Amount at each meal[1]
6 month	Start with thick enriched Borbor, well mashed foods, e.g. mashed cooked banana, sweet potato, pumpkin, etc.	Start foods 2 times per day plus frequent breastfeeds at least 8 times per day	Start with 2-3 tablespoonfuls per feed
7-8 months	Thick enriched Borbor , well mashed foods,	Increasing to 3 times per day plus frequent breastfeeds at least 8 times per day	Increasing gradually to 1/2 of Chan Chang Koeh at each meal
9-11 months	Thick enriched Borbor , finely chopped or mashed foods, and foods that baby can pick up	3 meals plus 1 snack between meals plus breastfeeds at least 6 times per day	Increasing gradually to 1 Chan Chang Koeh
12-24 months	Family foods, chopped or mashed if necessary, thick enriched Borbor	3 meals plus 2 snacks between meals plus breastfeeds as the child wants, at least 3 times per day	1 Chan Chang Koeh
If baby is not breastfed, give in addition 1-2 extra meals per day.			

Figure 2: Recommended Complementary Feeding Guidelines in Cambodia (MOH 2011)

Changes were implemented in early 2014 when HARVEST began work in a completely new cohort of villages as part of its Phase II work. The family nutrition education program shifted its focus to a community-based approach in which a smaller set of lessons were delivered to self-selected village groups that identified as being interested in food and nutrition. The average size was about 20 per village. These food security and nutrition groups (FSNG) were expected to consist of local champions of health and nutrition, and it was hoped that they would help spread key messages about nutrition and health. In addition to formal lessons, there was a budget for the groups to plan 'community-action' events in the village that would underscore key messages and skills among the entire community. Among these were lessons on how to produce nutritionally-rich foods for children aged 6-24 months. This curriculum included conceptual lessons and cooking demonstrations that emphasized two key messages: 1) the importance of and practice of making enriched porridge; and 2) how to increase the diversity, and hence quality of young child meals. The latter was focused on the application of the concept of the "three food groups" (TFG). The point was to encourage caretakers to include ingredients from each of three food groups – known colloquially as energy foods, protection foods, and body-building foods – into each child meal. Energy foods are those that provide calories; protection foods include those that are high in micro-nutrients; and body-building (or construction) foods are those that are a good source of protein. The TFGs message was particularly important as children aged 12-24 months were introduced to family foods.

Cambodia's Ministry of Health (MOH) maintains that a major barrier to adoption of good complementary feeding behaviors is confusion among consumers about appropriate practices, most likely due to complex messages promoted by the various actors in the system (MOH 2014). However,

other studies in Cambodia have suggested that knowledge alone is not sufficient to translate into a change of practices (FAO 2014, Omidakhash 2013). These studies argue that other barriers, such as lack of time for complementary food preparation or lack of taste for the recommended foods, prevent adoption. Recent studies have supported these findings (Manhoff Group 2015, FAO 2015). In either case, little is known about what actions households are willing to take towards improved feeding practices including enriched porridge and transitional foods that offer better nutrient diversity.
The objective of this work, therefore, is to focus on two of HARVEST's key recommended child feeding practices, the use of enriched porridge and the three food groups, and to assess the following two questions: 1) What are current household practices regarding these recommendations? 2) What are caregivers' attitudes and decision-making toward these messages? By understanding current practices as well as caregivers' attitudes and decision-making around these recommended practices, we also hope to gain a greater understanding of how messages can be tailored to the rural poor in Cambodia. Findings from this case study are therefore meant to provide formative research that can inform USAID and the RGC's desire to adapt current messages on complementary feeding (MOH 2014).

3. **Research Questions**

This study takes a qualitative approach toward understanding current practices and caregiver perceptions of specific recommended feeding practices for young children, aged 6-24 months. It addresses two broad research questions and additional sub-questions:

1. What are caregivers' current child feeding practices for young children?
    a. Do caregivers prepare enriched porridge for their children? What is the nature of their practice and does it follow the recommendation?
    b. Do caregivers apply the "three food groups" recommendation? What is the nature of their practice and does it follow the recommendation?

2. What are the constraints to adopting these recommended practices?
    a. What are the constraints to applying the enriched porridge messages and how do caregivers' perceptions about these messages affect their interest to adopt it ?
    b. What are the constraints to applying the "three food groups" message and what are caregivers' perceptions about these messages ?

Hereafter, we use the term "young child" or "target child" to refer to a child 6-24 months of age in each household on which we focused our attention.

4. **Study Design**

This study takes a qualitative approach. Qualitative interviews and observational data can provide insights into caretaker behaviors and decision-making and are an appropriate means by which we may explore participants' perspectives on various interventions. In particular, qualitative work can focus on identifying *emic* or insiders' perspectives, and thus allow us to surface the "why's" and "how's" underlying participants' behaviors (Chung 2000).

The study was conducted in two distinct stages. First, we used participant observation in a subsample of villages to observe the foods that are served to children aged 6-24 months and to understand how these

practices fit within the household's usual habits of food preparation and family meals. Second, we used in-depth interviews in a larger sample to follow up on observed behaviors and to explore decision-making around child feeding patterns in greater depth. The study sample, data collection, and analysis methods are described below.

4.1. Study Sample

The research covers the four provinces of Cambodia where HARVEST has operated: Pursat, Battambang, Siem Reap and Kampong Thom, all in the Tonle Sap region of the country.

Since the pedagogy of the family nutrition education program changed substantially between Phase I and Phase II of HARVEST, this study focuses only on villages that were involved in Phase II of the intervention. HARVEST Phase II began around February/March of 2014 with a new cohort of villages and households. The nutrition education program was scheduled to end in all villages by approximately January/February 2016. Data collection for this study occurred between June 28, 2015 and October 31, 2015, during the last eight months of HARVEST's Phase II activities.

Sixteen villages, four in each province, were randomly chosen from a census of Phase II HARVEST villages. Randomizer.com was used to generate a random number for each village in the province to ensure that each had an equal chance of being selected. A list of alternate villages was also generated in the case that sampled villages did not have households that fit the selection criteria.

In the first stage of data collection, participant observation was carried out in half of the sixteen villages. Within these eight villages, we aimed to conduct observations in three households per village. Each selected household had to have a child between the ages of 6 -24 months.

To identify eligible households for the participant observation, a bilingual field investigator met with the HARVEST Food Security and Nutrition Technician (FSNT) that was assigned to each of the selected villages. The investigator and FSNT reviewed the FSNG client roster to identify households with children in the appropriate age range that fell into three different categories: 1) households with Poor 1 or Poor 2 identity cards;[1] 2) households with an alternative caregiver, for example a grandparent, older sibling, aunt/uncle or other relation that cares for the children on a daily basis; and 3) any other households with a young child. By contrast, households that migrated seasonally out of the village or were related to village leaders, including the village chief or Village Health Volunteer (VHV), were eliminated from the list. In case the list of possible households was exhausted, we allowed investigators to include households that were not members of the FSNG group but had attended nutrition events or were familiar with FSNG activities. Since the family nutrition program had shifted to a community-based approach, we deemed this to be appropriate as we were interested in the overall influence of the program on child feeding practices. It is important to highlight that the FSNGs were not composed solely of households with children under the age of two. In addition, membership was voluntary. Hence, in some villages there were few children in the correct age range. We were therefore able to conduct 20 participant observations across the eight study villages.

During the second phase of data collection, we focused on in-depth interviews. For this work we added 8 villages to the sample, for a total of 16 villages (4 in each province). As with the participant

[1] Poor 1 is the poorest category of people in Cambodia and Poor 2 is the second poorest category, according to Cambodia's Ministry of Planning (KOC 2009).

observation, the field investigator met with the FSNT and identified appropriate households from the FSNG client roster. Again, in the case that we exhausted the list of possible households, we allowed investigators to include households that were not members of the FSNG group but had attended nutrition events or were familiar with FSNG activities. A total of 24 households were added to the sample in the new eight villages. In total, across the 16 villages 44 in-depth interviews were conducted.

Finally, we note that the HARVEST recommendations focus on complementary feeding practices, defined as feeding practices for children aged 6-24 months who are transitioning from breastmilk to family foods. This is a period of great vulnerability and the MOH encourages mothers to breastfeed through this transition. Caretakers, of course, make their own decision about when to cease breastfeeding and HARVEST does not have a separate nutrition education program for households with children who have been weaned, nor does it exclude their participation in the nutrition education programs. Accordingly, our sample contains children aged 6-24 months, some breastfed and some not breastfed. From a cost perspective, it was not feasible to sample only breastfed children as there were too few children in the 6-24 month age range in each village. The study therefore does not focus solely on complementary feeding, strictly defined as foods that complement breast milk, as not all children aged 6-24 months are still breastfed. To avoid confusion, we will use the term "complementary and transitional feeding" to describe feeding practices for children in our sample between the ages of 6-24 months.

4.2. Data collection

Data collection was conducted in 2 stages, as detailed below. The first stage focused on understanding households' current feeding practices for children 6-24 months age; the second phase focused on understanding caretaker perceptions of the feeding practices promoted under HARVEST.

A bi-cultural, bilingual team trained in the techniques of qualitative research was assembled for this study. The field team consisted of one male and two females, each bilingual in English and Khmer. The team was sensitized to alternative definitions of caretakers beyond the concept of "mother" as well as the potential gendered aspects of childcare, food preparation, and livelihood obligations.

4.2.1. Phase I: Understanding current practices

Participant observation is a methodology in which the researcher studies the life of a group by sharing in its activities. The advantage of collecting data by observation is that it allows the researcher to record what people actually do, instead of what they say they do. In this case, the observation included the preparation and consumption of two consecutive meals during one day, including any foods prepared for and fed to children between the age of 6-24 months and all other caring and livelihood behaviors completed by the primary caretaker.

The purpose of this work was to document current child feeding practices so that we could subsequently return to interview caregivers about their perceptions of the nutrition education messages presented through HARVEST'S nutrition training intervention.

Participant observation requires time to develop relationships with the village. As such, we restricted work to half of the study villages (2 villages per province, for a total of 8 intervention villages). Households with male caretakers were not excluded, but were rare.

The investigator visited each household unannounced. While the FSNT facilitated the introduction, s/he was only aware that the investigator wanted to observe cooking and meal times, but was otherwise unaware of the details of what the investigator needed to observe and record. At the introduction, households were told that they would be visited by the field investigator, but they were not told which day the visit would take place. Visits occurred one day to two months later. On the day of the visit, the investigator arrived early in the morning before breakfast and stayed until after the second meal of the day was completed. Holidays were avoided. During the visit, the investigator observed and recorded all food preparation, food consumption, and caretaking activity that occurred during the visit. She noted what foods were used to prepare a family meal, the techniques and processes used in the preparation, and how they were served to members, focusing particularly on the young "target child" of age 6-24 months. She estimated serving sizes to the target child (or 'young child') and estimated how much they actually consumed. The investigator made written notes during the visit and expanded them into full ethnographic notes shortly after the field visit.

4.2.2. Phase II: Understanding perceptions of key messages

We used semi-structured interviews to: 1) explore perceptions of the nutrition messages on complementary foods; 2) identify barriers to adoption and use; 3) add to information on current practices of complementary foods with the nutrition education participants; and 4) identify practices that caretakers might be willing to adopt. Khmer native speakers conducted the interviews using interview guides that asked open-ended questions that allowed respondents to answer in their own words, using their own logic. Investigators were guided by an interview protocol but were able to ask follow-up and clarifying questions. Interviews were recorded and later translated into English. The average interview time was 70 minutes.

The interview guide was pilot tested in non-study villages prior to data collection with the principle investigator in June 2015. The guide was further practiced in July and August and data collection took place in September and October 2016. Interviews were carried out in the eight participant observation villages (n=20) and in the eight newly sampled villages (n=24). Overall, data collection covered 16 randomly sampled villages and included a total of 44 in-depth interviews.

4.3. Data analysis

Participant observation notes were reviewed and summary memos were created for each household. Memos compiled the recipes of all dishes prepared during the observation, the composition of the meal served to the target child, and consumption by target child.

For the interviews, all were translated from Khmer to English by two bilingual speakers, one of whom had collected the interview data in eight villages. The transcripts were read by the principal investigator and second author and, where necessary, the transcripts were clarified by checking against the original audio. The principal investigator determined the concepts and themes that would be coded and extracted, and organized an analysis system that relied upon thematic coding and displays. A series of displays were created to help reduce the data by topic area. Displays are essentially data tables that collect raw and summarized data by household in rows for various variables or characteristics that are given by the columns (Miles, Huberman, and Saldaña 2015). Displays are a systematic means by which textual data are reduced to more manageable proportions by topic. There are many forms of displays and the ultimate configuration is determined by the goals of the analysis. Data are extracted

thematically into the conceptually-clustered displays (Miles and Huberman 1994) and then analyzed systematically across the sample.

For this analysis we initially created 12 displays, five for the participant observation data and seven for the in-depth interview data. As the data analysis progressed, we created more displays to analyze the data further according to emergent themes in the data. The displays are shown in Table 1.

Table 1: Data Displays Created to Reduce and Analyze the Qualitative Data

Display Content	Participant Observation	In-depth Interviews
Initial Displays		
Enriched Porridge Practice and Attitudes	x	x
Composition of Adult Meals, Three Food Groups	x	x
Composition of Target Child Meals, Three Food Groups	x	x
Alterations to Target Child Meals	x	x
Snacking, Household & Target Child	x	x
Caregiver Knowledge about Enriched Porridge		x
Caregiver Knowledge about Three Food Groups		x
Emergent Displays		
Substitutes for Enriched Porridge	x	x
Family Foods	x	x
Meal Preparation Times	x	
Choking Concerns		x
Soup Composition and consumption	x	

5. Results

This section reports on the current practices and constraints to recommended child feeding practices that are currently promoted by HARVEST. In particular we focus on behaviors and perceptions that are related to two specific recommendations: 1) the preparation and use of enriched porridge; and 2) the use of the three food groups in the composition of meals for children aged 6-24 months.

Section 5.1 presents descriptive information about the sample. Section 5.2 presents the analysis of current feeding practices, as related to messages regarding the use of enriched porridge and the application of the three food groups concept. Section 5.3 examines constraints to adopting these recommendations, including caregiver knowledge and perceptions about them.

5.1. Sample Description

Table 2 presents the composition of the study sample. The study includes two nested samples. Participant observation data were collected on Sample A during Stage 1 (n=20). Following the participant observation, in-depth interviews were conducted in Sample A and Sample B during Stage 2 (n=44). No participant observation was collected for Sample B.

Table 2: Age Distribution of Target Child by Sample

	Sample A	Sample B	Total Sample
	Participant Observation + In-Depth Interviews	In-Depth interviews only	
Age of Target Child			
6-8 months	0	2	2 (5%)
9-11 months	5	4	9 (20%)
12-24 months	15	18	33 (75%)
Subsample Total	20	24	44 (100%)
Breastfed	10	11	21 (48%)
Average Age (mos)	15.7	17.6	16.8
Totals	20	24	44 (100%)

Table 2 illustrates that the age distribution of the sample heavily favors children in the toddler age range (12-24 months). Older infants (6-11 months) represent 25% of the sample, with most falling within the 9-11 month range. Only 2 children fall within the 6-8 month age range in which enriched porridge is recommended as the sole form of complementary food.

By contrast, 80% of the sample represents children in age groups in which complementary feeding recommendations allow for the introduction of "family foods." Specifically, the MOH recommends enriched porridge as a preferred food for children 9 months of age or older, but adds that children may now consume enriched porridge that is prepared from ingredients obtained from the family meal (see Figure 2). Vegetables and protein sources should be mashed into the softened rice to make a thick pap similar to enriched porridge. At 12 months, enriched porridge is still recommended, but caretakers may now add family foods that are softened or mashed. HARVEST emphasizes that family foods should include diverse foods, such as a source of protein (or body building foods), a micronutrient source (protection foods), and a staple food (or energy food).

The age distribution of the sample sets the focus of the study. With few households representing the 6-8 month age group, it is not appropriate to examine the use of enriched porridge as a sole complementary food. Rather, with the majority of cases in the older infant (9-11 month) and toddler (12-24 month) age range, the focus of the study will be on a transitional feeding period that covers the introduction of family foods. This is a useful period to examine because it tells us about households' current practices and thus suggests what caregivers are willing to do.

Finally, Table 1 also shows the prevalence of breastfeeding within the sample. Approximately half of the target children were breastfed during the study. Since half of the sample are not breastfed, feeding patterns for these children are not technically considered to be complementary feeding. To speak of complementary feeding patterns would imply that children aged 6-24 months are breastfed. However, HARVEST does not limit participation in its food security and nutrition groups (FSNG) to only caretakers who are breastfeeding, nor does it provide formal recommendations for children who are not breastfed. We therefore did not exclude these households from the study. The composition of the sample does not change the usefulness of the results in helping us to understand what caretakers are willing to do

regarding child feeding during this vulnerable period of transition. To avoid confusion we use the term transitional feeding practices, rather than complementary feeding practices

5.2. An Examination of Current Transitional Feeding Practices

The analysis relies upon two sources of data. First, participant observation is used to observe the foods that are actually served to young children and to understand how these practices fit within the household's usual habits of food preparation and family meals. Second, data from in-depth interviews were used to follow up on observed behaviors and to explore decision-making around child feeding patterns in greater depth. Interviews were carried out in 44 households, located in 16 HARVEST villages. Participant observation took place in a sub-set of these villages, and included 20 of the same households.

5.2.1 Enriched Porridge and the Concept of Separate Dishes for Young Children

Enriched porridge has been a major part of the Kingdom of Cambodia's nutrition education campaign (MOH 2011), as well as a prominent part of HARVEST's nutrition education program (USAID 2012). Results from this study indicate that there is little evidence that households were using enriched porridge in the study villages. In particular, among the 44 households in which we conducted in-depth interviews, none were currently preparing enriched porridge, as taught by the official HARVEST curriculum, for their children. This included two households with children between ages 6-8 months, which under HARVEST and MOH recommendations should have been feeding their children enriched porridge and breastmilk.

Direct observations of child feeding practices support these findings. Among the 20 households for which we conducted participant observation, none were observed to prepare enriched porridge for their young child. In addition, when asked about the practice of using enriched porridge in the village, caregivers were straightforward in stating that the practice is not widespread.

> "There is nobody eating it."
>
> "In each house I do not see anyone preparing enriched porridge."
>
> "For cooking our main meal, we know our role. We know we have to do it. But for making such *borbor*, every mother including myself, we are lazy. If you ask them whether you have made the *borbor* for your child, they would say they have never made it all. You can take notice of this."

Although there was little evidence of enriched porridge use, this should not be surprising as most children were above the age of 9 months. Nevertheless, many caregivers stated that they had tried it in the past. Among those interviewed, 77% of households claimed that they had fed it to their young child at some point in the past. However, of this group, the majority described very limited experiences with enriched porridge (60%); some said they tried it only at cooking demonstrations, while others said they made it a few times but did not continue. A minority (22%) said that they gave their child enriched porridge in the past, but had since moved on to other complementary and transitional foods. Finally, a small number of caregivers gave very inconsistent accounts about their experience with enriched porridge, and thus shed doubt on their claim that they had ever prepared it. One mother for example maintained that she fed her child enriched porridge regularly between the ages of 6 and 8 months. Yet during the interview she stated multiple times that the child refused to eat it. Another said that she fed

her child enriched porridge when the child was younger, but was inconsistent about the periods in which she fed her child the porridge. At first she said it was between 6 and 8 months of age; another time she said it was between 8 and 12 months and another time she said she had discontinued the practice at 19 months of age. For these cases we can only assume that respondents were keen to display good intentions, but did not use enriched porridge regularly. Had they done so, their accounts would have been more consistent. In sum, the interview data indicate that the vast majority of caregivers interviewed did not use enriched porridge for a sustained period of time, while a minority said they had but had since moved on to other complementary or transitional foods.

If enriched porridge has not been widely adopted in the study villages, what are the complementary and transitional foods that are being used in its place? What are families feeding their young children? The analysis supports the notion that preparation of special dishes for young children, such as enriched porridge, is rare and not the norm. Instead, the data show a consistent pattern of caregivers creating complementary and transitional foods from dishes that are prepared for the rest of the family. In the observation data, for example, this was true of both meals we observed in each household. At breakfast, for example, young children consumed some form of the meal served to the rest of the family. At lunch the pattern was the same in all households observed but two. In one house, a 7-month-old child was fed only watery porridge in a bottle and in another the caregiver prepared a simple soup for the child and made a thick, enriched pap out of family rice. These were the exceptions.

This same pattern was supported by the interview data with 44 households. Through interviews, caregivers described the preparation of each main meal and the nature of household mealtimes. At the end of the narrative for each meal, caregivers were asked if the target child had eaten anything and if so, how it was prepared and served. Invariably, caregivers described a process in which children were either fed the same preparation as adults or a slightly modified version. This was true for breakfast, lunch, and dinner for 88%, 96%, and 94% of households respectively. In addition, this was true in all age ranges. Taken together, these findings suggest that caregivers prefer to discontinue feeding their children enriched porridge, if they have been doing so at all, and shift to a modified form of family foods.

5.2.1.1. Strategies that Caregivers Use to Avoid Preparing Separate Dishes

The overall strategy for caregivers appears to be one of balancing the different needs of the young child against time constraints and available family resources. Under these constraints, caregivers clearly seek strategies that allow them to feed all members of the family from a single preparation. Our ethnographic data are detailed and illustrate many examples of this behavior.

Family Soups. By far, the most common strategy was for caregivers to prepare soups that could easily be altered and fed to young children. For breakfast, lunch and dinner, soups, such as *sgnao, somlaw prohail, somlaw mchuu,* or *somlaw ka kor* are prepared as a main dish and served with rice. Each soup is cooked with varying kinds of vegetables, meat or fish in a broth. Some are simpler, like *sgnao* or *somlaw mchuu*, while others contain chunks of vegetables and meat and can include nutrient-rich ingredients. Each soup has its unique set of seasonings and typical ingredients, but cooks can adapt their recipes to accommodate the foods that are available.

Preparing soup is such a central strategy for caregivers that some indicated it is a necessity when one has a small child. With soup, the broth can be removed and used to soften rice for the small child.

> "Since I have a young child I have to make soup every day so that I can use water from the soup to mix with rice. If there is soup he can eat more."
>
> "We try to make it every day so the kids can eat it. Without *somlaw* [soup] they cannot eat."

Soups therefore are a dish that can do double-duty for caregivers. Soup broth provides an easy way to turn the staple food, rice, into a complementary or transitional food that young children can easily eat. If the soup has strong spices, such as chilies, the child's portion can be removed before the spices are added to the pot. At the same time, family members can consume the soup, chunks and all, as a main dish with rice. For adults, soup is a satisfying dish that is perceived to stave off hunger and can be changed up to avoid monotony.

> "We rarely cook any dried food. We prefer soup and would not feel like we are full without having soup."
>
> "In the day time I have to work. Soup will keep my energy stable and I won't become easily hungry. The nutrients from vegetables will keep my body strong. If I don't eat soup for one or two times I will feel exhausted so soon. In the evening we can eat either dry or fried dishes or soup because we don't have to work anymore… I have a child who needs breastfeeding so I will get hungry very soon if I don't eat soup."

Typically, soup is served family style. Rice is served into separate bowls and family members spoon soup from the serving bowl into their individual bowls as they eat. They will consume a spoonful or two of the mixture from their own plate and then repeat the process of pouring more soup onto their rice from the serving bowl. For small children, however, soup is added to a small bowl of rice, usually in one serving. Most caregivers will spoon the mixture into the child's mouth in small amounts. For some, the broth with rice is eaten plain with no other ingredients. Some caregivers crush softened pieces of the solids from the family soup into the child's bowl.

Feeding a young child is a slow process and is hard to do while the caregiver is eating. As such, caregivers stated that they frequently feed the child before the family meal, just after the meal has been prepared. Alternatively, caregivers can serve everyone together, including the small child, and then eat themselves after the child is done. In our observations, it's common to see caregivers spoon-feed young children until the age of 1.5-2 years. Some children as young as 10 months were self-feeding. Most children appear to be completely feeding themselves by age 3.

In the study villages, caregivers said that broth with rice was most commonly fed to young children for lunch and dinner, but might also be served at breakfast. These findings were supported by the participant observation data. In 75% of households we observed young children were served broth with rice for lunch on the day of our visit; by contrast, only 20% served the same for breakfast

Stir Frying and Dry Foods. While broth and rice is a common meal for young children, caregivers also described techniques for making complementary and transitional foods out of family meals that did not involve soup. Most explained that their household needed variety in its meal preparations and they described alternating between soups, stir-fried dishes, and "dry" foods. Stir-fried dishes might include a little liquid that makes a thin sauce. A dry dish, by contrast, has no liquid and might include dried fish or meat that is grilled or fried. In their descriptions of meals, caregivers described common strategies to

turn dry dishes into complementary and transitional foods for young children. One mother of an 8-month-old described how she fed her son when she made fried pork for the family.

> "If there is fried pork, I will have the fried pork chopped up really well and then I'll mash it with the rice before feeding my son… I use a rice spoon to mash [the rice] on a plate. I have to first mash the rice well and then put the chopped up pork onto the plate and then I mash it again. This is the case when there is no soup water."

She then went on to describe what she does when she makes a stir-fried vegetable dish for the family. Some vegetables are "soft" and can be mashed after frying; others however, like yard long bean and water convolvulus, are too "hard." If she stir-fries a dish with a vegetable that cannot be mashed, she will mash the rice with "the liquid from the fried dish" and leave the vegetable out of her son's portion. Other caregivers described similar processes of adding water to a stir-fry to make a watery sauce that can be mixed into rice for their young child. Said one grandmother, "Because we have young children, for every fried dish we have to add water to it"

Porridges. Finally, traditional porridges are another example of a convenient complementary or transitional food that can meet the needs of many family members with a single preparation. Traditional porridges, such as white porridge (*borbor sar)* or purchased market porridge (*borbor kreung*), are eaten by all members of the family.

> "If I do not go to the field I prepare white porridge for eating during the day. But that's for all of us, not just my kids. We don't have separate porridge for them."

Traditional porridges are fast to prepare and do not require acquiring extra ingredients when there is no money. One woman described how the whole family ate porridge at times when she has no rice and it is hard to get fish.

> "Sometimes I make porridge mixed with different types of vegetables. This is our food when we have a shortage of rice….because we do not have money to buy things to make dishes. So making porridge is the best way to save the situation."

Interviews with caretakers indicated that small children will eat white porridge at any meal, but in this sample they identified porridge most often as a breakfast food for young children. Direct observation of mealtimes supports the notion that porridge is a common food for young children. In one-third of the observations, young children were either fed white porridge or market-purchased porridge at breakfast.

Traditional white porridge, *borbor sar*, was observed to be thin in consistency. White porridge is made of rice, water, and salt and does not commonly include vegetables or meats. In only one instance we observed micronutrient-rich vegetables, pumpkin and ivy gourd leaves, added to the *borbor sar*.

Market porridges also tend to be a watery, soup-like dish that contains rice boiled to disintegration, with various meat and vegetable garnishes that may be added to family portions. Portions for small children, however, were typically watery and served plain, with most of the nutrients in the form of energy from boiled rice.

During the intervention, HARVEST maintained that many caretakers were averse to making enriched porridge. In addition, they also reported resistance to making porridge thick, as instructed by the

National Nutrition Program (NNP) and in HARVEST cooking demonstrations and recipes. Committed to nutritional improvement in children under two years of age, HARVEST encouraged caretakers to add nutrient-rich vegetables to *any* porridges they made or purchased. During our observations, we saw only two cases in which mothers added vegetables to regular white porridge. Some, however, did not understand this practice. Said one grandmother, "We make porridge, why would we add vegetables?"

Purchased Foods: The Exception. Target children, regardless of age, typically ate some derivative of what was served to the rest of the family. However, participant observation revealed two exceptions to this rule. First, when households purchased breakfast from local vendors, different foods might be purchased for different family members. In some study villages, purchasing breakfast was a common practice, even among the poor. Hence, different members could be eating noodles, porridge, or locally made snacks or desserts, *noms*. In this case, small children often share a purchased dish with others in the family and may even choose the dish or snack. Second, we noted that when the adults do not eat breakfast there is often no early morning cooking. Under these circumstances young children might be fed leftovers for breakfast, such as plain fried rice, rice with fish sauce, or purchased foods, such as *borbor kreung*, or fried or sweet snacks.

5.2.1.2. Summary

In sum, there was little evidence in these villages of caregivers preparing enriched porridge, or other dishes that ar specifically for young children. Caregivers instead prefer to adapt dishes that are prepared for the family to feed young children. With few exceptions, this was true for target children in all age ranges. This suggests that caregivers did not distinguish much between the age-specific feeding recommendations promoted by HARVEST or by the MOH.

In addition, the data revealed a number of common strategies that caregivers use to prepare foods they feel are appropriate for young children. Among these are serving the broth from the family soup with rice; adding water to stir-fried dishes to form a thin sauce to serve with rice; and mashing soft vegetables and/or finely chopped meats or fish into the child's serving of wetted rice. Caregivers also purchased market porridge or other snack foods for breakfast. Hence, rather than preparing separate dishes for young children, caregivers appear to be moving as soon as they can to providing complementary and transitional foods that are made directly from family foods.

In the next section we turn to examining the application of the "three food groups" recommendation to adult and young children's meals.

5.2.2. Application of the Three Food Groups Message

The previous section illustrates that enriched porridge was not widely adopted in these study villages. It also illustrates a strong desire to feed young children from preparations that are served to the whole family. In our sample this was observed for children in all age ranges. The question then is if households are not making enriched porridge as suggested by the program, have they been able to apply other educational messages about diet quality?

HARVEST promoted educational messages about diet quality that follow those put forward by the Baby-Friendly Community Initiative materials created for Cambodia (FAO 2014). In particular, HARVEST emphasizes the principle of including elements of the "three food groups" (TFG) in a young child's meal. Each meal should include a body-building food, a protection food, and an energy food (USAID 2012).

Energy foods are those that provide calories; protection foods include those that are high in micro-nutrients; and body-building (or construction) foods are those that are a good source of protein.

To examine the application of this message into young child meals, we draw upon 1) participant observation data to understand the ingredients that are used in a young child's meal and to examine what the child actually consumed; and 2) in-depth interviews that asked caregivers about decision-making around the composition of dishes provided to young children vis-à-vis adults and the rest of the family.

Since we found that adult meals are usually the source of foods for young children, we begin with an analysis of the TFG in adult preparations. The analysis examines the number of food groups included in dishes served to adults and to young children and considers implications for diet quality. Counting and comparing the number of food groups, of course, is only a crude proxy for the quality of the meal, but it does illustrate the extent to which participants adhere to this message. For these results, we underscore that the findings are qualitative and therefore speak to the composition of adult and young child meals. .

5.2.2.1. The Three Food Groups in Adult Meals

Two important patterns emerged from the analysis of adult meals. First, the data show that adult lunches and dinners were likely to contain better food diversity than adult breakfasts. An analysis of the participant observation data, for example, showed that adults in only 25% of households consumed a breakfast that included all three food groups. The average number of food groups consumed at breakfast was 1.7 and protection foods were typically limiting; only 33% of households included a protection food in adult breakfasts. These findings are consistent with observations of the context surrounding these meals. Mornings are often busy and caregivers have various livelihood activities they must attend to. As such, they may opt for simple meals that do not require much preparation and do not include vegetables or fruits. Accordingly, the observation data show that households that did not provide protection foods at breakfast were more likely to serve meals that required simple cooking processes, such as white porridge, market porridge, leftover rice, or eggs.

> "We are all busy with our own work, so I can't prepare food for him except at lunchtime. If I don't try to earn additional money, it will be tough for our family financially"

The interview data support these findings. During interviews, caregivers described the dishes they typically consumed at each meal in the day. From these narratives, we categorized the ingredients and tallied the number of food groups contained in the dishes that were typically served to adults at breakfast. The interview data indicate that approximately 27% of households said that the breakfast dishes consumed by adults included three food groups. Similar to the participant observation data, very few caregivers described breakfasts in which protection foods were served. In many cases this is due to the constraints imposed by a busy work schedule; in other cases it was because of availability and convenience of purchasing breakfast foods.

> "We eat only fried fish for breakfast…The fried fish can be cooked for my husband before he leaves for work. I am afraid if I cook soup, it will take me longer to cook. I often cook soup for dinner."

> "Sometimes we are busy. We buy them porridge or rice noodles. There is no regularity because we are busy."

Clearly, in this sample breakfast is not a very diverse meal. Breakfasts were simple meals that centered around a single food with rice.

The lunch data, however, showed that adult lunches were more likely to contain three food groups. Participant observation revealed that adult lunches contained an average of 2.8 food groups. In contrast to breakfast, over 70% of households provided a protection food to adults at lunch, usually in the form of a soup such as *somlaw ka kor, somlaw mchuu,* or *somlaw prohail*.

Cooking in these households was more elaborate at lunch than at breakfast. During the participant observation, preparations of *somlaw ka kor* or *somlaw prohail* for example could take anywhere from 35 minutes to almost two hours to wash, chop, grind and season such dishes. Households that did not have a protection food at lunch were observed to serve simpler meals such as leftovers from breakfast, stir-fried dishes, or simple soups that lacked nutrient-rich vegetables.

In interviews, caretakers often spoke of dinner in similar terms as lunch and suggested that a dish that is cooked at lunch could just as easily be prepared for dinner. They also spoke of varying the dishes served in a day, such as alternating between stir-fried dishes and soups or preparing soups with different tastes.

> "I think that if we made soup both in the morning and the evening like this very often, we would be bored. So we have to mix it up and eat dried or grilled food [for a meal]."

In addition, only 38% caretakers interviewed said that they habitually cook two complex meals, such as *somlaw ka kor* or *somlaw prohail,* per day. Twenty-nine percent reported cooking only one complex meal a day and 33% reported cooking one or two depending on the day and the circumstances. Taken together, this implies two things. First, it is likely that many adults have only one meal per day that offers good food diversity. Second, the diversity served in any given meal may depend on what is cooked earlier or later in the day. If a complex dish has already been cooked (eg. a soup), it may be followed by simpler meal. The interview data suggest that lunch and dinner meals have more similar qualities between them than to breakfast. However, given the flexibility and interdependence among meal preparations, it is important to look to the diversity of a given dish rather than make assumptions about the meal hour. Seasonality and other context-specific factors may also influence these patterns, but we were not able to examine them.

5.2.2.2. The Three Food Groups in Complementary and Transitional Meals

The findings on adult meals suggest that lunches and dinners are reasonably diverse, but that breakfast is not as balanced in terms of diet quality. What do these findings imply about the quality of complementary and transitional foods that are created from these preparations?

At first glance, the participant observation data suggest that the pattern is similar for young children. Observation of young child meals, for example, reveals that only 29% of young children were served dishes that contained three food groups at breakfast. By contrast, 63% of households served lunches to young children from family meals that contained all three food groups. Thus, as with the adults, lunch appears to provide higher quality meals to young children in about two-third of the households studied.

However, a closer look at the observation data illustrates that young children's meals are often served in ways that lower the nutritional density of the dishes they consume. Specifically, participant observation allowed us to record the manner in which adult dishes are served to the child. During the observation, the field researcher noted 1) if the caregiver omitted select ingredients from the family dish (eg. meat, fish, or vegetables); and 2) if the child's serving was further diluted by the addition of broth. The overall effect of these actions is important because they can lead to child servings that are much more dilute than the adult dish; in effect, these servings have a higher ratio of broth to vegetables, protein, and/or rice. For small children, both practices are of concern as meals that are high in liquid will fill a child's stomach, but will not provide the nutrients needed. For this reason, HARVEST and NNP encourage caregivers to mash the nutrient-rich ingredients into the child's bowl to increase the nutrient density of the meal.

There is some evidence from the interviews that caretakers were cognizant of the effect that the volume had on young child appetites. Soup was often identified as a preferred food because it satisfied hunger.

> "If we don't have soup they will not be happy and they will cry. With dry food, the meal cannot make their stomachs full. When their stomachs are not full, they will make trouble."

But there was less recognition about the effect it had on nutrient density. Observations of child feeding practices suggest that the practice of serving broth with rice may be creating meals with high volumes of liquid, but low nutrient densities. During the observation, for example, we observed that 71% of the young children were eating meals that included broth with rice. Of these, roughly half of the children were not served the same composition of ingredients that were present in the adult dish; rather the quantity and selection of solid ingredients (eg. vegetables and protein) was selected by the caretaker. As a result, small children's meals often contained high ratios of broth to desirable ingredients such as animal or fish proteins, vegetables, and rice. Hence, even if all three food groups are present in the child's dish, the density of nutrients may be low if the caretaker withholds pieces from the soup or adds a greater ratio of broth. Furthermore, when it comes to actual consumption, about one-third of these children were seen to leave aside nutritionally important elements of the dish that were served, such as pieces of fish, pumpkin and other nutrient-rich vegetables.

Similarly, of the children who were served a meal that included all three food groups, almost all (86%) ate soup with rice. Of these, 57% of caretakers altered the composition of the family dish before they served the child, in some cases removing pieces of fish and vegetables and in extreme cases omitting everything but the broth. Hence, in our observations, many of the small children that were served family soup and rice appeared to be consuming mostly broth and rice with very small additions, if any, of nutrient-rich ingredients. As a result, even if the family meal contained all three food groups, the child's serving may not have, or may have had only a small amount.

The previous paragraph discusses small children who received lunches that included all three food groups. About one-third did not. Among this group, about two-thirds also received a breakfast that did not include all three food groups. Furthermore, all of these children's parents had a similarly low-diversity lunch. Taken together, these findings suggest that households that do not prepare dishes of sufficient diversity for the adults are predisposed to overlooking food diversity for their young children as well.

5.2.2.3. Snacks in the World of the Young Child

Thus far, we have spoken only of main meals. Diet diversity can also be obtained through snacks. Indeed, HARVEST educational messages also encourage caretakers to give small children two snacks during the day, such as fruits like bananas, mangoes, and papaya.

The data, however, revealed important patterns about the nature of snacking within these rural households. First, during the participant observation, we observed fruit being consumed as a snack in only two households. At the same time, we observed that packaged snacks appear to have a presence in almost all households, whether poor or non-poor. In a family identified as Poor 2, for example, a mother described that she had to leave her small child in the care of her older siblings while she went to the fields to work.

> "Since the amount of food is limited, I leave all of the soup for them at home…In the morning I buy cakes for them to eat during the day so that they do not cry because they are hungry."

Many kinds of purchased snacks are available in most villages. Industrially-packaged snacks are sold in small, individual servings that are perfect for consumption by small children. These packets contain dry, shelf-stable products such as cookies and shrimp chips. In addition, snacks are also produced by local entrepreneurs. Some are just re-packaged, pre-made treats put into small servings. For example, in one village small children purchased small bags that held a few sheets of rice paper candy that came with a squirt of sweet chili sauce upon purchase. In some villages, perishable hand-made snacks are brought to the village by motorbike or bicycle. Mobile vendors will typically come with a large assortment of sweet and savory snacks, each packaged into small plastic bags for individual sale.

Surprisingly, a non-nutritious snacking culture was prevalent in all of the villages we studied, even among the poor. Observation and interviews revealed that 88% of the households regularly purchased non-nutritious snacks for their young children. During our visits, we saw young children consuming purchased snacks directly in 71% of the households. Furthermore, in 63% of households there was evidence of a very blatant snacking culture, in which children whined to their parents for money to purchase snacks or in which caretakers placated their children by giving them money to buy their own snacks. In one household, the siblings of a young child, ages 3 and 5, begged incessantly for snack money and were rewarded throughout the day by their mother. When asked about their snack habits in the morning, she said,

> "At 8 AM they will start buying snacks until 11 AM when they have to take a nap. After having a nap, they will ask for money to buy more snacks. To add it all up, they could spend up to 5,000 riels each per day. They stop buying snacks in the evening when they have to go to sleep."

In most cases, older children in the family are responsible for buying snacks for the young children, but it was common for children as young as three to buy snacks for themselves. In one of the participant observation households, a mother explained that her 16-month old toddler had already started to ask for money to buy snacks. So acculturated are children to the possibility of getting snacks that children as young as two years associate the sound of a moto with the possibility of getting a snack. During an observation one mother remarked, "When the moto comes, [the baby] screams because he wants a treat!"

Another mother explained,

> "In the morning, the mobile vendors stop in front of my house and my children run to them. I cannot prohibit them."

The interview data supported these findings. In the 44 households we interviewed, 90% of caretakers said that they purchased low-nutrient snacks for their children. Of these, roughly half of these indicated that the young child is allowed to choose the snack themselves or have an older sibling choose something on their behalf. One mother explained that her 11-month old child already knew all the mobile food sellers and knew how to signal for them to stop. The mother does not dissuade the child from approaching a mobile vendor and allows the child to choose her own snacks.

In some cases, caretakers suggested that snacking was interfering with their children's interest in eating at regular meals,

> "It's hard to have a normal breakfast before having a cake since he asks for money to buy it. He won't stop crying until he gets the money."

> "Since [the child] eats snacks she stopped eating the enriched porridge."

And others suggested that snacks are acceptable substitutes for regular food in the lean season. One mother from a Poor 2 household explained that her son "eats snacks continuously from morning until evening when he falls asleep." Yet, in the lean season she is not worried that he doesn't get enough food because when "he is served snacks, he will eat less rice."

5.2.2.4. Summary

In sum, the analysis of the food groups data indicates five things: 1) Lunch was more likely than breakfast to provide a diverse meal, primarily due to what was cooked for lunch in these households. When households cooked soup like *somlaw prohail*, they were more likely to have all three food groups represented. 2) While soup and rice is generally a nutritious meal for adults, serving practices tended to provide meals to young children that were watered-down and less likely to include nutrient-dense elements. The widespread use of soup with rice as a complementary or transitional meal suggests that this practice might be targeted for further practical messaging. 3) Breakfast was less likely to provide three food groups. For breakfast, caretakers tend to focus on meals that can be purchased or prepared quickly, including leftovers, and often the caretakers do not eat. 4) In households where adults had poor lunches, children also had poor lunches, and where they had poor lunches they were also more likely to have poor breakfasts. This suggests that caretakers that are unable to address diversity in their own meals or are unconcerned about it, are likely to lack diversity in their young child's meals. This may be an effect of low resources and poverty, but would need to be examined further. 4) Finally, the proliferation of prepared snacks in rural areas has made it possible for children to consistently eat snacks with low nutrient density. In addition, it provides a way to spend money that could be otherwise be spent on more nutritious foods. Creating a taste for these products may also make small children less interested in foods from meals.

5.3. Constraints to Adopting HARVEST-Recommended Feeding Practices

5.3.1. Why Don't More Caretakers Make Enriched Porridge?

In Section 5.2, our results indicated that no households were *currently* making enriched porridge, as instructed by the official HARVEST curriculum. This was true across all age groups in the sample (6-8 months, 9-11 months, and 12-24 months). In addition, the data suggested that most households preferred to shift to family foods early. Even the minority of households that said they had ever made enriched porridge for their young children only did so for a short period of time. This too, was true across the all sampled age groups. In this section we explore household perceptions about enriched porridge. In particular, we focus on caretaker explanations of why enriched porridge is not feasible for their households.

To start, the in-depth interviews revealed that awareness about enriched porridge was generally high. This is not surprising as HARVEST has not been the only source of information about enriched porridge; some had learned of enriched porridge from the TV, their health centers, or other NGOs. Of the 44 respondents interviewed, all but one were familiar with enriched porridge. Most, however, had only partial knowledge of how to properly make enriched porridge; many described superfluous ingredients or processes. One of the most common omissions was a description of the proper texture or thickness of the porridge. Most, however, were aware that it was good for children and had a clear opinion on whether it would work in their household.

The discussions with caregivers were detailed and provide an explanation as to why there is not widespread enthusiasm to adopt enriched porridge or to continue feeding it beyond 9 months of age. The reasons were varied across the households, but overall, caretakers identified aspects that contribute to the explicit as well as implicit costs of preparing enriched porridge. At the same time, although caretakers were cognizant of messages regarding the benefits of enriched porridge, the costs appeared to dominate their decision-making, especially as more discussion of the perceived benefits emerged.

5.3.1.1. Costs of Preparing Enriched Porridge

Caretakers were quick to identify the various costs associated with preparing enriched porridge. Chief among these were the extra time and expense of preparing a dish that only the small child will eat. In particular, time allocation of caretakers was a recurring theme among the interviewees, many of whom suggested they must balance caretaking activities with other livelihood activities. Furthermore the extra costs would have to be incurred each day as it is not possible to store the enriched porridge for more than two hours.

Purchasing ingredients is expensive

Caregivers made it clear that there was nothing technically difficult about making enriched porridge. Nevertheless, it was perceived to be a "complicated" dish since it requires many ingredients, most which need to be purchased or gathered locally. There were many complaints about the cost of acquiring so many ingredients, particularly among those who have limited resources and feel that they cannot buy multiple ingredients.

> "I don't have money to buy all types of food items like that. I can only buy a single food item as I don't have money."

"Why is it difficult? Because we have to spend a lot of money on it. We are not rich like urban people."

"It costs us more money. We have to buy this and that-- all kinds of things. Meat, everything we have to buy. We cannot get these things by ourselves. It's really hard."

"Generally speaking, some days I don't even have 100 riel in my pocket. I want to copy what they were doing but it is impossible. If someday I have money I may be able to do it. I am so poor."

Gathering ingredients requires time and effort

To make enriched porridge more accessible for poor families, HARVEST maintains that they went to great lengths to emphasize the use of vegetables that may be collected from open fields and riverbanks for free. But even the prospect of free ingredients did not make it more appealing to those who are very poor. Many said that they found it burdensome to spend time gathering these vegetables. One woman, for example, explained that she could only collect fish and vegetables for the same meal when her husband had no wage work. With two adults at home, it is possible for one to go fishing while the other collects vegetables. Other caretakers explained that it wasn't always easy to find the right wild vegetables in their villages.

"It takes quite a long time since we need to collect different types of vegetables."

"It is hard for people like my family to cook such a complicated food… Sometimes we can't find the vegetables around here and have to go somewhere else further out. It is doubly difficult in the wet season when it is flooded."

"Ivy gourd is not even available along the fence. Edible amaranth is the same; it's difficult to get. Edible amaranth is used by villagers for their pigs' food."

The problem of needing time to collect wild vegetables underscored a frequently cited theme regarding the competing demands on caregivers' time. The literature on gender and development has long underscored the dual responsibilities that women have as caretakers and contributors to the household economy (Smith et al. 2003, van den Bold et. al. 2013). Very often, women as caretakers must make difficult decisions about how they will allocate their time across the various livelihood and caretaking activities for which they are responsible. In households with fewer resources, there is a delicate balance between achieving these two desired goals.

"In rural areas people don't have time to cook enriched porridge. We are always busy going out for work after cooking and eating."

"If I spend time cooking [enriched] porridge for my child I don't have time to work outside."

"[People] have to spend time collecting vegetables and boiling rice. For a half a can of rice it takes 30 minutes to cook properly. If we include the time to collect the vegetables, 30 minutes seems like the shortest time to have it ready."

Preparing enriched porridge requires extra time and effort

With respect to enriched porridge, many compared the process of acquiring and preparing the ingredients for enriched porridge to the prospect of cooking regular porridge and stressed the increased difficulties involved in preparing enriched porridge.

> "It requires many vegetables that I have to collect. And, I also need to look after my grandson so it is a little difficult for me as an old person. Cooking white porridge is easier for me."

> "[It takes] quite long as we need to cut pumpkin and yard-long bean. We need to collect leafy vegetables and cut them up. So this causes us to be lazy. For white porridge, it is easier since we just put rice in a pot and then we can do something else. We remove the pot from the stove, and then we just grill the *prahok*. We don't need to expend energy. That's why it is easy."

Even for households that did not have a hard time acquiring the ingredients, caregivers suggested that enriched porridge took extra time to cook. One grandmother who did not have a Poor Identity card said, "Finding the ingredients is not difficult, but I hate spending the time for it to boil."

Preparation time is clearly an issue, but more importantly, enriched porridge is perceived to be a food that is for small children only. Children eat only tiny portions, but it still takes time and effort to prepare a meal that is separate from the rest of the household. In addition, because it does not fulfill the food needs of other members of the household, preparing enriched porridge implies preparing two meals for the household instead of one. Most households we studied only served one dish per meal, hence this was a significant effort.

> "The porridge is only for our child. What about our food? It seems we have to pay doubly for our meals.""Cooking a separate dish adds more work. It is easier to cook once."

> "Enriched porridge is only for my child. What about the food for all of us? So we have to cook another meal for us as well."

Thus caregivers see enriched porridge as an extra preparation that requires extra work and cost for the household, in addition to the time and cost of acquiring the needed ingredients.

5.3.1.2. Benefits of Preparing Enriched Porridge

While caretakers were quick to identify the costs to preparing enriched porridge, they were also quick to provide additional reasons why enriched porridge did not work for their household. Many maintained that there was no benefit as their child would not eat enriched porridge. At the same time, many caretakers were vocal about their own dislike for enriched porridge and suggested that porridge is not something that other members of the household would like to eat. Overall, it appears as if the benefits to preparing enriched porridge were not palpable to the households. Costs appeared to outweigh the benefits, particularly if the small child could instead be fed from the family meal.

Many children do not eat the porridge

More than half of the caretakers interviewed maintained that their child would not eat enriched porridge and as a result there was no point in cooking it.

> "Some people have time, but they don't cook the porridge since they are afraid that their children will not eat it."

> "Unfortunately, my daughter didn't eat the enriched porridge at all. She ate a spoonful of the porridge and then spat it out suddenly. Then she never opened her mouth again… so I had no motivation to cook the porridge.""If he doesn't eat it, why would I need to cook it?"

Waste was understandably a big concern to caretakers who said their child would not eat the porridge.

> "The porridge was leftover so I felt too disappointed to continue to cook it… I had to give it to my dogs and pigs."

> "I feel wasteful if the porridge isn't eaten. In addition, it can't be kept until the evening if it is cooked in the morning."

Many caretakers suggested that their children rejected the porridge during the first times it was presented to them; but there were very few who said that they persisted in trying to feed the children enriched porridge. HARVEST educators said that they asked caretakers to persist and to keep trying to introduce the porridge to the child. Yet, mothers had little patience with this. One mother spoke of trying to cook the enriched porridge "countlessly."

> "I've tried hard to cook enriched porridge for my child but she won't eat it. I got furious and fought her, but she is a toddler. I felt exhausted from cooking the porridge."

The same struggle is reported in the US when mothers are asked to feed healthy foods such as vegetables to their infants and toddlers. The child-feeding literature on the US suggests that caretakers should provide a food to a child more than ten times to gain acceptance of the food (Kleinman and Coletta 2016). Yet there is some evidence that such behaviors lead to wasted food and a perception among low-income households that the financial cost of repeated introductions is too high. Daniel (2016) for example has argued that poor households perceive they cannot bear the cost of persistent introductions that are required for taste acquisition of "healthy foods." The evidence from this study suggests that Cambodian parents are similarly unwilling to accept the time and money costs that are required for their child to acquire the taste for enriched porridge.

Young children in this study did not universally dislike enriched porridge, however. There were a minority of respondents who said that their children liked enriched porridge.

> "My grandson will definitely eat enriched porridge if he is served it."

> "I want to say that some kids really do not like the enriched porridge at all. But this is not the overall situation. Some kids do like to eat the porridge."

"Kids are so happy if we cook this porridge for them. Why would kids not want to eat delicious porridge? If we make it for them every day, they are happy as they can get delicious food every day. They will be grateful to mothers and grandparents who make such good stuff for them to eat."Throughout the study, there was never one clear answer as to why some children do not eat enriched porridge. At times, we felt as if this claim were a polite way for caretakers to explain why they

had chosen not to follow a recommended practice. In an early pilot interview, one caretaker spoke of her discomfort with not following the recommendations of her HARVEST instructor.

> "Because they teach me, I have to follow their advice to some extent. I don't want them to say I don't use or practice the knowledge I learn. They come to teach us to make sure we are aware of it. If we don't follow their advice, when our grandchild gets sick and we send her to health center, the staff there will ask if we ever cook the enriched porridge for the child. And if I say 'no', it sounds bad, don't you think?"

And, indeed, some of the explanations seemed overly dramatic and unlikely.

> "I took [my granddaughter] to the [cooking demonstration] but she did not eat the porridge at all. She said, "It's not delicious." She only ate one or two mouthfuls. She said, "Grandma, let's go back and eat our white porridge at home."
>
> "I tried to make it for [my daughter] but she got diarrhea. I used to make it for her but it caused her diarrhea."
>
> "My son vomited after being served with the porridge. "
>
> "I used to cook enriched porridge, but my grandson got thrush over his tongue after eating it…so I assumed that the enriched porridge caused the tongue thrush. He even used to have diarrhea from eating it. I also learned that enriched porridge spoils easily."

The desire to be polite is strong. In the last quote above, the caretaker gave three different reasons for not cooking enriched porridge, but soon after politely told the interviewer that she will try cooking it again.

The claims of children's refusal to eat enriched porridge is at odds with our observations of consumption at HARVEST cooking demonstrations. At the four cooking demonstrations that the first author attended (one in each province), infants, toddlers, and older school-age children were all observed to be eating the enriched porridge. In addition, they described the porridge as 'delicious.' When we asked some of the respondents why this might have been the case, one woman suggested that there is excitement and activity at cooking demonstrations and children will eat the porridge at the event but not at home. In our observations, we agree that there is a great deal of excitement at cooking demonstrations. We also note that there is a special effort to make the porridge tasty. In one village, we noted educators pouring low-sodium soy sauce on children's bowls and in another we saw them add a package of Knorr Chicken Powder to the porridge. This may explain why the porridge is perceived to be 'delicious' at some demonstrations and tasteless at others. It may also explain why the porridge might be considered tasteless when made at home. One mother commented that when she made the porridge at home her child did not eat it because she didn't include "all the ingredients." She remarked, "I just added salt but not MSG." Several caretakers commented on the lack of MSG or sugar in the enriched porridge and suggested that their family dishes were tastier and that is the reason why their children rejected the porridge.

Other household members do not eat enriched porridge

For caretakers who must cook for all members of the household, the possible benefits of introducing a new food such as enriched porridge could also include fulfilling the foods needs of other members of the family. However, enriched porridge does not fit this profile. In interviews, caregivers suggested that enriched porridge was not something that was highly desirable for adults to eat. Taste appears to be an important part of the explanation, at least from the perspective of some caretakers. Many, for example, commented on the smell or taste of the enriched porridge, showing their own distaste for the dish.

> "The porridge tastes very strange. It's less salty. The taste is very light in comparison to our dishes."
>
> "When we cook it we are not allowed to use MSG or even salt. Generally speaking if I ate it myself it would not be delicious at all."
>
> "I was trained not to add salt or sugar to the enriched porridge so the flavor is tasteless."
>
> "Enriched porridge? Some mothers call it porridge for pigs. Porridge for pigs! You put amaranth in it. It's a little bit red and a little bit green and it stinks like ivy gourd leaves and other stuff. Porridge for pigs! Only the kids can eat it. Mothers cannot!"

The comments from adults on the taste of enriched porridge might be the most telling as they suggest that caretakers themselves do not like the taste of enriched porridge. This suggests there is little benefit to other members of the family when there is leftover enriched porridge. Thus any prepared porridge that is not eaten by the young child would be wasted. This is an important consideration given caretakers' comments that they are unwilling or unable to prepare separate meals for children.

Perceived nutritional benefits of enriched porridge

Although most caregivers can recite simple messages about the benefits of enriched porridge, for example, how it "makes your child grow" or "makes your child smart," there is some question of whether caretakers truly think it is worth the hassle to make.

In particular, some caretakers suggested that they did not believe that enriched porridge is essential to a young child's health, and that they did not perceive that it offered benefits over other foods that can be derived from the family meal. Some were very honest with us about the marginal difference enriched porridge might make in the future of their children.

> "[People] may think that their children will be still alive even though they don't eat enriched porridge. They may not think of the porridge's benefits on their children's health."
>
> "[Enriched porridge is] very easy if we really want to make it. The problem is that we are lazy. You just put a certain amount of rice into a pot and keep boiling it. Cut vegetables and other ingredients and put them in the same pot. Wait until it is soft and then we crush it. It's not difficult to make. But we are lazy… I feel that by feeding [the kids] plain porridge with *prohok* they will survive. So why bother spending energy making it?"

> "In my generation, I never cooked enriched porridge. I have helped raise almost ten grandchildren but I have never cooked enriched porridge… Back in my time I just fed my children cold rice and they survived until now. People say that children in the past were raised this way, and that is why they are not intelligent. I don't believe this. Children are intelligent because they study hard."

As we examined the transcripts from discussions of usual family meals, we were surprised to find that 16% of the interview sample said something to the effect that they thought *somlaw prohail or samlaw ka kor* with rice was equivalent to enriched porridge. The majority of them concentrated in the Kampong Thom and Siem Reap villages. This is not a coincidence as the caregiver statements from the transcripts match statements given by NGO workers to the MSU team during early scoping visits to HARVEST villages. In particular, it appears that some lessons included messages about how enriched porridge may be created from soup. This message appears to be derived from the NNP video that shows how to make enriched porridge from family foods (UNICEF 2012). The video states,

> "*Bobor khap krop kroeung* is still the best food for children aged 6-24 months old.
>
> But we have seen mothers and caretakers stop feeding it when kids are 9-10 months old because they are busy and instead give family foods when they are 9-10 months.
>
> We will show you how a method for making *bobor khap krop kroeung* using food from the family pot but ensuring that it is as nutritious as *bobor khap krop kroeung*.'
>
> First take rice form the pot and put it on a plate. In order to have soft rice which baby can eat easily you should move the rice pot position down while warming. This will make water flow to the lower part of the pot, which makes the rice there softer.
>
> Then take pieces of fish or meat and veg from the soup or dishes (*samlow, chaa, sgnao*) to mash with the rice until they become soft and thick, similar to *bobor khap krop kroeung*.
>
> It means it should be thick and should not run off the spoon when you hold it sideways."

A similar recipe appears in the BFCI flip chart. Some HARVEST contractors in Siem Reap and Kampong Thom appear to have taught this message to their clients. While the message appears to have been approved by NNP, it's not clear that the clients understood specific aspects of the process. First, clients used this lesson to justify their use of soup with rice as a complementary or transitional food. However, the lesson states that high-density foods can be taken from family dishes and mashed into softened rice. It does not tell learners that they should take soup broth and add it to the rice. Second, the clients did not absorb the message that the resulting food should be thick like enriched porridge.

We did not observe any such lesson so we cannot say what happened in each situation. However, our discussions with one NGO verified that they did teach participants "to make enriched porridge from soup." While this approach definitely appeals to participants in terms of saving time and effort, there are potential problems if there are no steps taken to correct the tendency to water down the child's portion (as described in section 5.2.2.2). In addition, there is a danger that participants might confuse this version of enriched porridge which is suitable (if made properly) for children 9 months and older. According to HARVEST and NNP guidance, this form of enriched porridge should not be served to older infants aged 6-8 months. Hence, confusion over what is recommended and not recommended by age

group might ensue, and will further discourage caretakers from making enriched porridge the proper way.

5.3.1.3. Summary

For enriched porridge, the overall message is consistent across respondents. Specifically, enriched porridge is viewed as a dish that is only for small children and caregivers felt that it was more hassle than it was worth. Most view enriched porridge as a dish that is time-consuming, expensive to prepare, and only has limited uses and low benefits. The costs of money and time are difficult for poor households to bear, particularly given the risk that food will be wasted if the child does not eat it. For caretakers who are better off, they are less concerned about time and cost to acquire the ingredients, and are mostly concerned about the time and effort to prepare it.

Thus, if caregivers have limited time and resources, it seems logical that they would rather spend their energies preparing dishes that the entire family will eat. As one respondent said, "People don't want to be busy for only one little thing. They would rather make a big pot for serving everyone."

Finally, even for families that do not question the benefits of enriched porridge, the high costs in terms of time and money to prepare it means that it is not something they feel they can do for every meal. In addition, by creating a taste for enriched porridge in their young child, some feel that they may be setting themselves up for demands that they cannot meet in the future.

> "I mix regular porridge with soy sauce for her…I don't want her to get used to the enriched porridge. If she gets used to it, then she will not eat our normal porridge."
>
> "I don't want them to get used to it. Otherwise, when they get used to something more delicious they will not eat the regular porridge."

5.3.2. Constraints to Adopting the Three Food Groups Message For Young Children

In Section 5.2.2. we reported that some meals were less likely to offer all three food groups than others. Breakfast, for example, was less likely to offer good food diversity, while meals that included soup, often lunch or dinner, were more likely to include three food groups. In addition, for meals involving soup, young children's servings often suffered from a dilution of nutrients provided in the family dish due to serving practices on the part of the caregiver.

Why do caretakers not provide more diverse meals to their young children? Is it because they do not understand the three food groups (TFG) recommendation, or is there another reason? Overall, our data indicate that there are at least four layers of explanation. These include: 1) a household's inability to gain sufficient access to diverse foods; 2) a caretaker's reluctance to serve young children with specific foods; 3) a caretaker's unwillingness take extra steps to modify family foods for small children; and 4) a lack of understanding of nutrition education guidance about the three food groups.

5.3.2.1. Availability and access at the household level

Caregivers maintain they want to provide their families with more diverse meals but they are constrained by what is available or accessible to them. Hence the first level of constraints involves the availability and access to good, nutrient-dense foods at the household level. In terms of availability, in

some locales the market for nutrient-rich foods is offered irregularly or at limited hours. Hence, the availability of vegetables or protein-rich foods is limited even if one can afford them. One caretaker, for example, explained how the lack of outlets for food in the morning constrained what she could cook for breakfast:

> "Soup is never cooked for breakfast, only for lunch and dinner. It's too early to find any ingredients, especially vegetables, to cook soup at breakfast."

Poverty is an important contributor to lack of access to nutrient-dense foods. Clearly, households that are well-off and have land can grow vegetables or buy them from neighbors.

But for poor households, the limited ability to access nutrient-dense foods was a constant theme in our interviews. As suggested earlier in the section on porridge, a limited ability to access these foods is related to a limited control of many resources. Many mentioned constraints on time; others mentioned a lack of financial or other forms of resources. Some did not have the resources (not just money, but land, equipment, or social relationships) to obtain diverse foods on their own. One woman, for example, talked about how she was constrained in fishing because she could only borrow fishing nets when the neighbors were not using them. Some spoke of having a lack of land to grow vegetables. And others alluded to the limits to their own social capital when it came to acquiring food from others. For example, when our investigators asked if it were possible to obtain vegetables from neighbors, caretakers made it clear that one could not make a habit of this practice.

> "Oh, it is not that easy! I can't do that. Buying is possible, but I can't ask someone for something [for free]. It isn't bad if they give us some, but I'd feel ashamed if they refuse to give it to me. Those vegetables are planted for sale and I am afraid those vegetable owners will blame me and say I'm lazy."

> "Some vegetables need to be bought. We can ask our neighbors for those vegetables once or twice, but it's not possible to ask them a third time. They can sell those vegetables for money."

> "We have no land for growing vegetables. We live on a plot that belongs to someone else so I cannot grow them because it isn't my land."

And clearly, for households that had significant debt, were elderly, and/or had too many demands on their time to forage for their vegetables, they frequently had to make do with whatever food they had. With few resources to draw on, these households had poorer access to higher quality foods; therefore, they frequently had to serve simpler meals that required no purchases.

> "How can we have a variety of vegetables without money? Those who cook the three food groups are those who have money. For a poor family like me it's impossible!"

> "My food does not cover all of the three food groups. I don't have money to buy those foods. If I need to buy them, 10,000 riels is not enough to pay for such foods. One *kham* of pork, do you know how much it costs? It's almost 2,000 riels."

> "I could not add pumpkin to soup every day. When I cook *somlawr prohail* and I have money to buy pumpkin, I will add it."

> "There will be no meat unless I have money to buy. My child eats the porridge though it has no meat."

For the very poor this was a constant theme. And under these circumstances household offerings to all members were poor in food diversity. Households spoke of serving white porridge to the whole family when there are severe cash shortages and other restrictions on food access. They also talked of just eating rice with salt, and mashing it for their small children.

> "We eat what we can earn. If we don't have money, we prefer eating rice with salt. Sometimes we eat rice with salt 2 or 3 times a day. My [young] child eats the same way as me."

> "When my husband has work we at least have some money to purchase food like pork. However, if he doesn't have any work we will eat fish paste every day. "

For some, getting the ingredients to make one good meal a day is about all they can manage. One mother said that if she cooks soup once during the day, she does not have money to make another soup that day. Another spoke of stretching resources by alternating between a meal with diverse ingredients and a meal of only rice with salt or fish sauce.

> We eat rice with soup for breakfast, but at lunchtime we have no more foods to eat but salt. So we have no choice but to eat rice mixed with salt. However, in the evening we will eat as usual as my husband can afford to find some fish or we may have some money to buy food. But sometimes my grandchildren can eat rice with fish sauce.

The data clearly show an inability of poor households to provide three meals a day that include the TFGs. This on its own is not a surprising finding. Worldwide, poor households tend to have less diverse meals and poor households have a hard time providing food and nutrition security to their families (Hoddinott 2011).

5.3.2.2. Altering the composition of foods served to young children

Even in households with the means to obtain the TFG on a regular basis, small children's meals do not necessarily contain the TFGs. This relates to specific patterns of intrahousehold food allocation from the family meal. In particular, a majority of households were able to provide a meal that included the TFGs to adults in the family for one meal we observed. Yet, caregivers often altered the composition of the same dish when they served it to young children. In particular, caretakers often watered down the child's portion with broth or withheld nutrient-dense elements of the family dish. Why was this the case?

In-depth interviews revealed that there were two main reasons for this behavior.

Withholding foods that children dislike

First, in-depth interviews revealed that children's preferences affect caregiver decisions to withhold certain foods from servings given to young children. At times, caregivers said that they withheld foods that a child disliked, even though the food was regarded to be healthy for the child.

> "He does not like eating cabbage, water lily or other hard vegetables. If I cook soup with this kind of vegetables, I just mix rice and soup water for him with no vegetables."

> "I mix rice with soup water. I also take fish from the soup to add to his rice. He doesn't eat vegetables. Sometimes he doesn't eat even fish, so I just mix rice and soup water."

At the same time, some caregivers withhold nutrient-dense foods that children like. Caregivers often said that the child will eat an expensive ingredient to the exclusion of others. Many caretakers indicated that they prefer the child to eat more of a low-cost food such as rice.

> "Sometimes I give her pork. But if she sees meat in the porridge she will not eat the porridge at all. She will eat only the meat. That's why I don't want her to see any meat in the porridge. If she sees no meat in the porridge, she will just eat the porridge by itself….[so instead I] just add some salt to porridge to make it a little salty."

> "She eats only vegetables and meat. She does not want to eat rice at all…if there is only rice and soup water in her bowl she will eat rice…If we want her to eat rice, we give her only a bowl of rice mixed with soup water only."

> "My son is served rice…I first give him rice and fish after… We have to stay there and serve him, otherwise we would eat only fried fish or fried meat, but not rice."

> "For me, if I cook soup with pork and if I mix rice with soup water and meat, she will eat only the meat, but not the rice. So sometimes I mix rice with only soup water."

During the participant observation, we saw evidence of withholding fish and meat from young children's servings. While meat or fish was included in the family pot, the protein servings were very, very scant in the young child's portion if present at all. The same was true with vegetables. In general, the amounts that young children ate during our observations were also lower than recommendations given by NNP.

Concern about what small children are able to eat

Perhaps more importantly, about half of the caregivers stated that they had to alter what they served to young children because their children could not eat all foods served to the family. Chief among these concerns was that they would choke on elements of the family meal. This is why liquid forms of meals are the preferred food for young children, such as soups and thin porridges as a first complementary food.

> "With *samlow*, they can sip and it will not gag or choke them. With *samlow*, it's easy to swallow rice."

> "At the beginning we made our white porridge with rice and salt. We made it thin and put into a bottle with cap for him to suck. I crushed the *borbor* to feed him. I started doing this since he was 6 months old."

Choking continues to be a concern for caregivers even as their children become older infants and toddlers. In fact, the vast majority of cases where caretakers mentioned choking as a concern were for children who were 12-24 months of age. According to the HARVEST recommendations, by this age

children should be able to eat softened vegetables and sliced or diced pieces of meat or protein (HARVEST 2012). Yet, among these caretakers, about 76% said they withheld specific ingredients from a family dish because they feared that the young child would gag or choke on specific food items. Invariably, these items were foods that would provide diversity to the child's meal. Most common among these practices was to withhold fish, "hard vegetables" from soups or stir fries, vegetables that are not cut small enough or mashed for the child, and various proteins for health reasons.

> "Sometimes if the soup has vegetables I let him eat vegetables such as ivy gourd. The vegetables that are in big pieces are not given to him. I am afraid he could choke."

> "If I eat grilled fish or fried fish I will give my child only porridge, but not fish because I am afraid he will choke."

Although most of these cases were for children of toddler age (12-24 months), the patterns cited were not any different from caregivers of older infants (6-11 months). Surprisingly, caretakers of younger children had reservations about the same types of foods mentioned for toddlers. This finding suggests that caregivers do not differentiate among the age-specific messages provided by HARVEST about the introduction of family foods. In practice this means that they do not adjust their approach much as their child moves from older infancy to the toddler stage.

5.3.2.3. Caregivers show limited willingness to make special preparations of young children's foods

As discussed in the previous section, withholding ingredients from the family dish is a common practice that appears to contribute to decreasing food diversity in young child servings. Yet, simple actions stressed in nutrition education, such as mashing and further chopping vegetables would allow parents to serve children more vegetables from the family pot. Why are caretakers not taking steps to boil "hard vegetables" longer or to chop them? Or pick out fish flesh for their children? The HARVEST recommendations are clear about how to deal with issues of bones and "hard vegetables." Vegetables should boiled until soft and then mashed into the child's softened rice. Bones should be removed from fish and other forms of protein (pork, frogs) before mashing or mixing into the child's softened rice.

In-depth interviews with caretakers indicate there is good awareness among caregivers about the desirability of these practices. However, when speaking with caregivers about specific meals in which they decline to chop vegetables or boil the 'hard parts' further for the young child's portion, the caregivers admitted that there were limits to what they were willing to do to create meals for their young children.

> "I was taught to chop the vegetables into small pieces, but I rarely do it because the food is not just for my children, but also for me and older people. So the vegetables are normally kept in big pieces when we cook, except for some certain dishes that we had to chop vegetables for like omelet with acacia leaves."

> "It's difficult for us to just cook for our kids because we also have to think about ourselves. The small kids can only eat soft vegetables or the soft parts of vegetables like the leaves. Yet we can't eat just soft vegetables. It can't make us feel full. Also, the seller won't just sell the soft parts to us. We have to buy the whole part and can't afford to buy much. After I cook it I can just feed my daughter the soft part and I eat the solid part."

> "Sometimes, I am lazy to mash it. When I'm in a hurry, I don't have enough time to mash it. Furthermore, my daughter is so hungry that she needs to be served immediately."

Caregivers gave ample examples of how young children were forced to have meals with poor diversity because the meal prepared for the family was not appropriate for the young child. One caretaker talked of when they made salads with raw vegetables that the youngest child could not chew. "If we make a salad or a stir-fry dish he will get sauce with no vegetables," she said. Rather than boiling the vegetables from the salad for the child, the child was served rice with sauce from the dish only. Another mother, when asked to identify the importance of the three food groups, stated:

> "Children can't eat as much as the adults so high vitamin vegetables should be chosen and cooked for children." But when asked to assess the number of food groups her son is served, she answered, "He is always served the food I eat. Sometimes I am too busy to give him all three food groups. I think it may include all three food groups when he is served soup, but not when he gets rice and fried meat."

When pressed about why they insisted that young children should eat from the same preparations as the adults, respondents gave one of two reasons. First, they often countered that they could not afford to make a second dish for their child. Second, when pressed, they revealed their lack of interest in engaging in extra processes for their small child,

> "Mother: The seller won't just sell the soft parts [of the vegetable] to us. We have to buy the whole vegetable and can't afford to buy much. After I cook it I can feed my daughter just the soft part and I eat the harder part.
>
> Interviewer: But your daughter doesn't eat so much; it wouldn't cost you much to buy the ingredients to cook for her separately?
>
> Mother: I feel lazy to cook several times."

Others validated the lack of interest in engaging in extra processes for a complementary or transitional food. Time was a frequently mentioned concern, while others also mentioned cooking fuel.

> "[My daughter] can share our adult food now, so I don't need to cook a separate dish for her."
>
> "I find it hard to cook again and again as it takes me some time and it also needs firewood. Here firewood is scarce."
>
> "It is not about difficulties, but laziness. I feel lazy to cook food in a pot for my child and then in another pot for me and other people."
>
> "It was difficult as I had to separate out food ingredients such as fish, meat and vegetable into two parts—one part for [my daughter's] porridge and one for us. It was difficult to separate because we have very a small amount of food."

Furthermore, several respondents justified their decisions to withhold nutrient-rich ingredients by making incorrect claims about the nutritive value of soup broth,

> "For example, if I buy fish to cook soup, how can I pick the fish meat out to feed him? It's quite small and my eyesight isn't good. That is why I just mix rice with the soup water. I believe the fish protein also exists in the soup water."

> "I think that the vitamins from vegetables are already in the soup water after being cooked. For instance, if I cook a mixed vegetable soup (*samlow kor ko*), I will take only the broth and fish meat and mix them with rice before feeding my daughter. I think the vitamin from those vegetables is in the soup water."

The misinformation about the nutritive value of broth is likely to be related to the nuanced misunderstanding about making soup from enriched porridge. In any case, it suggests that more attention needs to be put on simple, practical messages about the appropriate ways to use family foods, including soup, into complementary and transitional foods. In particular, it would be important to focus on practical concepts related to making family foods into nutrient-rich foods for young children and the dilution effect of excessive broth.

5.3.2.5. Some households do not clearly understand the three food groups

When respondents make inaccurate nutritional claims, it raises the question of how well they actually understand the three food group recommendations. In-depth interviews with caretakers allowed us to explore this understanding. To start, conversations with caretakers revealed that most had only a vague understanding of the three food groups. Many could make a general statement that related the three food groups to the topic of health; for example, they are "good for keeping us and our bodies healthy." And many could list random foods that belonged somewhere in the food groups, for example "water spinach, star gooseberry, meat and fish." But there were very few – 5 out of 44, or 11% – who could identify the three groups themselves and foods that belonged to each.

> "The first group consists of vegetable such as carrot… The second group includes meat, while the third group includes dessert and fruits."

We recognize that naming a food group precisely is not important on its own; what is important is that the caretakers know what to do with this information. Yet, the interview data indicate that very few (7%) mentioned any practical, actionable knowledge about the food groups, such as "If a child eats these three food groups per day, he is healthy." Instead, many of the answers included disjointed information that seemed more bent on memorization than on practical application of knowledge.

> "[The three food groups] makes people healthy, [with] a strong body and not being sick. Especially vitamins A and B. If you lack vitamins A and B, a person can be handicapped – like blind – and their limbs will have no energy. People will be crippled."

> "Yes, of course. [The three food groups] means nutrients for children and the elders. I forgot it… It seems to be the food for elders and the food for children is called enriched rice porridge whose ingredients are meat and green vegetables. It has calcium nutrient, zinc nutrient."

From people's responses, it appears that a lot of basic nutrition information was included in the curriculum to motivate caregivers to care about nutrition. However, it appears to have created overload on the part of some learners, as several stated that they had forgotten everything. With so much

detailed information some of the main messages, such as that meals should include foods from each of the three food groups, might have been obscured.

5.3.2.5. Summary

Many households do not effectively provide the three food groups to their young children on a daily basis. Apart from the households that simply were not able to gain consistent access to the three food groups to feed their children, there are two main factors that limit effective delivery of the three food groups to young children. These include a lack of clear understanding about the three food groups on the part of some families, and limited willingness to take extra food preparation steps to make the three food groups palatable to children. Many caregivers remove pieces of vegetables and protein from their young children's meals, but it is not clear whether this is driven more by a lack of understanding of their importance to young children's diets or due to unwillingness to do the additional work to facilitate children's consumption of them. It is certainly possible that these two explanations interact – that caregivers do not undertake the extra steps to prepare the three food groups because they do not fully understand their importance. It appears that these households would benefit from a combination of the delivery of simple information about the importance of the three food groups along with actionable information about how to do so.

6. Conclusion

The objective of this study has been to examine the current practices and constraints to adopting two child feeding recommendations promoted by HARVEST. The study took place during the final third of the Phase II interventions under the family nutrition program. The goals of the study were 1) to understand to what extent respondents have adopted these practices; and 2) to determine if there are any lessons regarding perceptions and constraints that might inform future USAID programs on child feeding in Cambodia.

6.1 Summary of Current Practices

6.1.1. Enriched porridge

If USAID aims to increase the numbers of young children consuming enriched porridge it appears that new approaches are needed to promote the current policy. Cooking demonstrations may serve to get participants excited, but this excitement does not appear to be sustained when caregivers weigh the relative costs and benefits of adopting the practice.

Overall, most caretakers have good awareness about enriched porridge but appear to have already formed opinions about it. Almost all revealed a strong desire to rely on family food preparations as a way to create complementary and transitional foods. In this study we had very few households in the 6-8 month age-range, but their narratives regarding enriched porridge were not different from caregivers of older target children (9-24 months of age). Caregivers chose complementary and transitional foods that did not have to be prepared separately; they looked for ways to save time in feeding their young child.

Most of this sample fell in the 9-24 month age range, and all sampled children were found to consume a modified version of foods that were served to the rest of the family. The majority of these households

said they had tried enriched porridge for a short trial (if at all) but did not adopt it. A minority of households said that they had given it regularly to their young child for a period; all had moved on to other complementary and transitional foods that are based on meals prepared for the rest of the family. In many cases this involved soup ladled onto rice. But when the family ate a simpler meal such as rice with dried fish or a stir fried dish that involved a vegetable that the child could not or would not eat, the child often ate a meal of rice and fish that had been wetted with a small amount of watery sauce. If the dish included a vegetable that the child could or would eat, the vegetable might be smashed into the rice that had been wetted with sauce.

6.1.2. The Three Food Groups

The results from this section indicate that households do not seem to be intentionally applying the three food groups rule. The in-depth interviews with poor caretakers underscored that they did not think it was possible to follow the recommendations due to their lack of resources and access to good foods. Rather, it appears that they cook the food that is available and accessible to them. For households that are not poor, caretakers cook what is accessible and what they prefer. In either case, however, it does not appear as if the young child's needs really come into these decisions. With the exception of soup, decisions about what to feed the young child appear to be affected by what is cooked for the rest of the family.

Analysis of family meals indicates that there are differences in terms of the number of food groups that are served to the family by meal. Meals that include more complex soups such as *samlow prohail* or *saml ka kor* are more likely to provide diverse foods, such as proteins and micronutrient-rich vegetables. These soups are served not because they contain the three food groups but because they are traditional and are considered to be a satisfying meal. For poor families, acquiring the ingredients for a nutrient-rich soup like *samlow prohail* or *saml ka kor* is challenging and is not something that can be done multiple times per day. However, caregiver time allocation is an issue for poor and non-poor alike; in particular time allocation across multiple duties affects the ability of caretakers to collect nutrient-dense ingredients from open spaces and to cook separate dishes for small children. Finally, gathering or searching for food while also caring for small children is a physical challenge for elderly caregivers.

The observation data indicated that even when households are able to acquire the ingredients for a good diverse meal, caretakers can still make decisions that affect the nutrient diversity of the child's dish. In particular, caretakers often feed young children a modified portion that is diluted with broth or that omits nutrient-dense aspects of the original preparation. Interviews with caretakers indicated that they justify these actions based on their beliefs that 1) the young child cannot chew various foods that are in the family pot; and 2) it is too much trouble to modify these foods before feeding to the young child.

First, for poor and non-poor households, there seems to be a shared reluctance to serve young children specific foods from the family dish that might cause choking. These foods tend to be vegetables that are not chopped small enough, vegetables that are "hard" or "solid", and pieces of protein that contain bones. In interviews, there did not seem to be any controversy over ingredients that are commonly demonstrated in the HARVEST curriculum, e.g. boiled pumpkin, ivy gourd leaves, or amaranth. These ingredients come up often in interviews and are typically described as being smashed, squeezed, or pressed into the young child's food.

The difficulty arises when respondents mention foods that are not featured in HARVEST lessons or demonstrations. These include the harder portions of a vegetable and caretakers tend to omit these from the child's portion. These vegetables could be further boiled or chopped finely, but caretakers are not apt to do it. Similarly, fish is often avoided, particularly small species from which the bones are hard remove.

Since soup with rice is the most common meal served to young children we have serious concerns regarding the nutrient density of meals provided to young children. Participant observation of these meals indicated that young children are often served a disproportionately high ratio of broth to vegetables or broth to protein. In our observation, almost half of the children served this type of meal had nutrient-dense ingredients omitted from their serving due to reservations that could have been addressed with further action by the caretaker.

Second, when pushed further about why children cannot be served ingredients left only for adults, during interviews caretakers said that it is too much trouble to separately cook or soften some of the high nutrient pieces found in the adult servings for the young children. In addition, some maintained that the nutrients in the broth are as good as the vegetables or protein pieces that have been withheld. Others similarly gave this as reason for not preparing enriched porridge for their children, saying that it "looks like" enriched porridge or that it was just "as good" as enriched porridge.

An additional problem is that both the serving of rice and the overall quantity of the child serving tended to be much smaller than that given in the HARVEST and NNP guidelines. Although this was a qualitative study, during the participant observation we estimated quantities served and consumed by the small child. These observations are not based on weighed estimates, but on visual estimates of volumes served and consumed using soup spoons and standard *chan chang koeh* bowls. While a careful study that employs weighed and measured servings and consumption needs to be done to confirm these results, we are confident in stating that the quantities that are served child of these ages is much lower than the recommendations given in the HARVEST and NNP guidelines.

Finally, child meals that are based on porridge, fried or dry dishes, purchased snacks and leftovers are worse in terms of food diversity than those that involve more complex meals that include soup. Breakfasts tend to be poor in terms of food diversity, as was any meal that was prepared due to time constraints. For other meals this usually comes about because household resources constraints (lack of money to obtain better ingredients) or because of time constraints. Child caretaking is a significant obstacle for many women as they cannot leave the house for work or to collect nutrient-dense foods from the wild when they have small children.

6.2 Recommendations Given Constraints and Beneficiary Perceptions of Current Practices

6.2.1. Enriched Porridge

Our results on the use, constraints, and attitudes toward enriched porridge indicate that there continues to be resistance to adopting enriched porridge. New projects need to partner with the NNP to find novel ways to get caretakers interested in enriched porridge. A significant constraint is that caregivers seem to have already formed an opinion about enriched porridge and are quick to defend their position or misrepresent their efforts for fear of being "blamed" by authority figures (including this research team). Whatever behavior changes are suggested in nutrition education programs will have to take into account caregivers' reservations about enriched porridge and work to find ways that will fit in with

caregiver constraints, both real and perceived, about time allocation, household resource constraints, and drudgery regarding cooking and food preparation.

Children 6-8 months. Our sample did not focus on the behaviors and attitudes of caretakers of children aged 6-8 months, so we cannot make any strong recommendations for working with this group. We note that a common strategy among the two caretakers of children 6-8 months in our sample was to save time, and that neither of them had reservations about introducing family foods to children (in modified form) before 6 months. We also found this to be true of some households with older infants and toddlers. Caregivers of these older children said that they introduced modified family foods to children as early as 4-8 months of age, although this information was emergent and was not asked systematically of all caregivers.

Our sense is that it will be difficult to find success with the message recommending the use of enriched porridge as the only complementary food at 6 months since the vast majority of parents of older children in the sample (9-24 months) stated that they could not abide by these recommendations. This finding is consistent with what was reported by the MOH when it initiated the Campaign to Promote Complementary Feeding in Cambodia: 2011-2013 (MOH 2011). However, a more in-depth study of children 6-8 months of age, including observations, would be better placed to make recommendations about the kind of behavior change communication messages that need to be targeted at caregivers of this age group. Our suggestion would be stratify the sample according to type and age of caregiver, as we believe that older caregivers are more pre-disposed to using the 'old ways' of child feeding, including filling bottles of very thin *borbor* to feed a young child, while younger mothers may be more amenable to purchasing pre-made enriched *borbor* for their children.

Children 9-24 months. All of the target children in this age group were making the transition to eating unmodified adult foods; none of the caretakers were feeding them enriched porridge as suggested by the NNP and taught by HARVEST. It is clear from the interview data that caretakers want to create complementary and transitional foods from family meals as early as possible (and often before the recommended age) and they do not want to make a separate dish for their young child.

Continuing with enriched porridge in this age group may be an uphill battle for educators as caregivers demonstrated that they expect to start modifying family foods for their young children. As such, it seems more promising to focus on messages that give caregivers easy methods to create nutrient-dense complementary and transitional foods from family foods, rather than hoping that they will continue with enriched porridge. The majority of our recommendations for this are covered in the next section.

6.2.2. The Three Food Groups: Nutrient-dense Complementary and Transitional Foods

Developing Fewer, Practical and Actionable Messages. When we asked respondents open-ended questions about the three food groups, we were surprised by the amount of unnecessary and often incorrect information they shared. We are aware that the nutrition education curriculum changed between Phase I and Phase II and that the lessons were streamlined and made more practical. However, given what respondents shared about the three food groups we are convinced that the curriculum still focuses unnecessarily on "nutrition facts" and not enough on creating simple, actionable messages. The most important thing that participants need to know about the three food groups is that there should be one food from each of the three groups in every meal, and there should be local

examples of each food group. Beyond this information about specific vitamins and minerals and obscure deficiency diseases seems to be unnecessary.

Addressing Incorrect Messages Regarding Use of Soup. One message that some caregivers were keen to follow was one that emphasized using soup to make enriched porridge. This was not an official HARVEST message but appears to have been delivered in some areas. The recipe for this message appears in the BCFI flip chart (2012) as well as in a video produced by UNICEF (2012) that features Dr. Sophonneary instructing caregivers how to make enriched porridge from family foods. In the former a recipe and instructions for a demonstration show how to make *somlaw prohail* and how to extract cooked vegetables and fish that can be mashed into a child's bowl to make a thick pap that resembles enriched porridge. HARVEST says that some cooking demonstrations availed of this recipe during Phase II operations. On the other hand, the video says that caregivers may take the vegetables or proteins from *samlow, sgnao* or a stir fry *(chaa)* and mash them into softened rice to make enriched porridge. The video was not part of the training given to the FSNGs, but it illustrates that the NNP is supportive of this approach.

Unfortunately, in interviews multiple caretakers cited incorrect facts related to these messages. These statements reinforced some of their current behaviors and did not necessarily improve the nutrient density of their complementary or transitional foods. For example, several caretakers told us that they chose not to make enriched porridge because certain soups (usually *somlaw prohail or somlaw ka kor*) could be served with rice and were just as nutritious as enriched porridge. Others justified withholding nutritious ingredients from children because they thought that the nutrients existed in the soup water itself.

Yet, as described in this report, many of the soup with rice meals that we observed were problematic—they were often diluted and did not include many vegetables or proteins. In our observations, only one household serving soup and rice made a thick, enriched pap as illustrated in the UNICEF (2012) video. In addition, not a single household added the quantity of protein or vegetables illustrated in the video. Rather, households ladled soup over rice, with some watering down the portion further with more broth and/or with holding the nutritious elements from the family preparation.

We are uncertain how this message became incorporated in the informal HARVEST curriculum, but we know that it was delivered by at least one of the contracted NGOs. In a project as large as HARVEST with so many staff, interventions and messages we understand that it is difficult to keep consistency across all the geographic areas. However, given our findings regarding the composition of complementary and transitional foods, this appears to be one area that deserves attention in the future. In particular, it is important to address the issue of how (and how NOT) to use soup to make complementary and transitional foods. More generally, it is important to develop practical and actionable messages that get across the point that the nutrition density of complementary and transitional foods matters. Rice with soup needs to be used in very specific ways to ensure that young children are adequately nourished. Perhaps this should be addressed head on. Perhaps messages should also be developed to deal with how to make complementary foods when the family dish is a stir-fry or involves 'hard vegetables' and fish with small bones. And, perhaps, the appropriate quantities for specific age groups need to be addressed in a practical way.

Addressing the emerging role of purchased non-nutritious snacks. The snacking culture that is emerging in these rural areas is pervasive and alarming. What is most disturbing is how the practice of purchasing and consuming non-nutritious snacks (i.e. junk food) is becoming embedded in the social

world of these small children, their families, and their social networks. Caregivers who must be away from their children find it easy to leave snacks for their children instead of food. And tired, stay-at-home parents give in to children's requests multiple times a day. Young children (6-24 months) learn from siblings and friends how to buy treats.

It seems that any behavior change communication campaign to address high quality complementary foods needs to also address its competition. Cheap junk food is present in many villages and presents a 'path of least resistance' alternative to persisting with young children to eat more healthy complementary and transitional foods.

6.3. Other Recommendations

6.3.1. Older vs. younger caregivers

Our sample only included 9 alternative caregivers. In most cases, these caregivers were left with their grandchildren when the child's parents migrated from the village to Thailand, Phnom Penh, or other locations to find work. In many cases migration occurred because the parent was in debt and had to find a livelihood that was higher paying and would allow them to pay off the debt. Alternative caregivers were often grandparents and were often poor. They were also burdened with multiple responsibilities, including staying home to take care of their grandchildren. They had few livelihood options.

In terms of nutrition messaging, we found this group of caregivers to be exceptionally honest in their interviews about the constraints they faced as well as their perceptions of the two key messages explored in this paper.

By contrast, younger parents seemed more motivated to present themselves as 'modern' and often wanted to project an image that they wanted do things differently from their parents' generation. At the same time, we believe that some may be more likely to misrepresent their caretaking actions in favor of "good behavior stories."

What this suggests is that there might be separate messages that are appropriate for caretakers with different histories and experiences. Grandmothers may be more likely to adhere to messages if they can tailor them in ways that incorporate their own experience and knowledge. Young mothers, by contrast, may respond to different messages.

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