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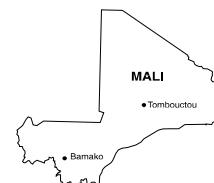
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KNOWLEDGE, ATTITUDES AND PRACTICES ON CHILD FEEDING AND CARE: Preliminary Insights from the Project on Linkages between Child Nutrition and Agricultural Growth



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By

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BACKGROUND: Child malnutrition is a serious problem in Mali. By 18 months, 25% of children are wasted and 40% are stunted.¹ The study on the Linkages between Child Nutrition and Agricultural Productivity Growth (LICNAG) aims to better understand the complex web of factors that affect nutritional outcomes of rural Malian children under five years in order to recommend actions that can improve their well-being. This policy bulletin, the second in a series reporting on the LICNAG study, focuses on households' knowledge, attitudes, and practices (KAP) regarding child care and nutrition.

OBJECTIVES AND METHODS: KAP data were collected using questionnaires administered to a sample of mothers (N=811) and fathers (N=735) of children from 6 to 30 months of age living in three rural zones: the rice growing area of the Office du Niger in the Segou region, the cotton-growing area of the Sikasso region, and the millet/sorghum zone in the Mopti region (see Tefft and Kelly 2002 for details on the sample areas).² Open discussions were held with groups of mothers and groups of fathers to discuss initial survey results and gather additional insights into the factors affecting care and feeding practices.

This document presents LICNAG survey findings on household use of practices recommended by UNICEF and WHO for improving children's survival, growth and development (UNICEF 2000).³ The findings are reported by type of practice: ones that 1) promote child growth and development; 2) contribute to disease prevention; and 3) ensure adequate management of illness and care seeking for sick children as well as care and support for pregnant/lactating women. The paper then discusses some of the factors that influence women's ability to follow recommended practices, with a particular focus on women's workload and time constraints.

KEY FINDINGS: Child Growth and Development: The Malian Ministry of Health, following WHO guidelines, recommends that 1) infants should not receive any food or liquid (including water) other than breast milk for the first four to six months of life, at which time, 2) children should begin to regularly receive freshly prepared, energy- and nutrient-rich complementary foods, while continuing to breastfeed up to two years or longer. Children should also receive adequate amounts of micronutrients (vitamin A, iodine, and iron) that are essential for growth promotion.³

¹Prevalence determined by wasting (weight-for-height) and stunting (height-for-age) Z-scores (standard deviation units) < -2.00.

² Sample districts: Macina and Niono in Segou region; Kolondieba and Koutiala in Sikasso region; Bandiagara and Koro in Mopti region.

³ The LICNAG survey did not include a micronutrient component because the project advisory committee wanted to avoid overlap with a planned study focusing specifically on micronutrients



Breastfeeding practices: KAP survey results show that breastfeeding practices are less than optimal. It is recommended that infants begin nursing within the first hour after birth to take advantage of the strong sucking reflex that is usually at its peak at this time, to ensure that infants receive colostrum, and to help stimulate milk production. Only 47% of mothers reported having nursed their newborn in the first hour after birth, while 98% nursed during the first 24 hours.

Survey results indicate that only 16% of children were exclusively breastfed for the first three months and by the fifth month, only 6% of children benefitted from exclusive breastfeeding. By the second month, 50% of mothers had already introduced water on a regular basis into their child's diet. There are significant differences in practices across districts; over 32% of children in the cotton zone (Koutiala) are exclusively breastfed during the first 3 months compared to only 7% in the millet zone (Koro) and 8% in the rice zone

Box 1: Mothers' Breastfeeding Experiences
Group discussions, May 2002

"There are others [mothers] who don't have enough milk [after delivery] and they would like to give tamarin juice to their child. But this is expensive and most women can't afford it. Other women make porridge from millet flour and give it to their child." (Bandiagara District)

"After delivery, I didn't have enough milk so...I prepared some tea made of local plants and added sugar. I gave this to my child for the first 3 months. Then I made some porridge of rice flour and sugar that I had purchased for her. I wanted to make some for myself as well, but I did not have enough rice for that." (Macina District)

"When mothers don't get enough to eat, they cannot produce enough milk. Already at 3 months my milk was gone." (Kolondieba District)

"Nursing is a problem. Because of our work, we don't have much breast milk. When I am hungry, my child does not get enough milk and he cries." (Koro District)

"When I work in the fields, my older daughter comes with me to watch the baby. I have them sit at a distance so when the baby cries I am not disturbed. She gives him water to stop the crying." (Niono District)

"During the agricultural season you can't really take good care of your child. Even if your child cries, you must wait until your husband authorizes you to nurse him." (Koutiala District)

(Niono). Exclusively breastfed children were less apt to have experienced one or more illness episodes (25%) relative to those who received other liquids (34%) during the first three months (the difference is not statistically significant).

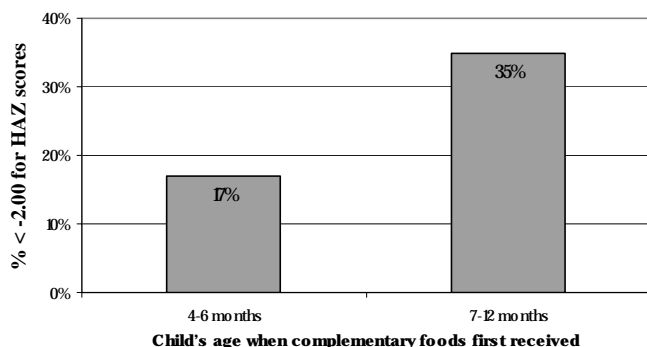
While breastfeeding is the most economical method of infant feeding and reduces both the incidence of child illness and the cost of health care for sick infants, it is not without cost (WHO 1999). Mothers and fathers widely acknowledged in group discussions the high opportunity cost of breastfeeding (and child care in general) in terms of the foregone labor of mothers in household tasks and in the fields. Mothers also pointed out their need for additional calories when breastfeeding to produce an adequate supply of milk.

Among the reasons women do not exclusively breastfeed their children (e.g., lack of knowledge of the benefits, poor breastfeeding skills, beliefs concerning breast milk production, and traditional infant feeding practices) women and men often cited the conflict of work demands and demanding feeding schedules for young children. Although mothers bring their young children to the fields, many mothers reported that they do not take the time necessary to nurse their child on demand when doing agricultural work (see Box 1).

Introduction of complementary foods: From 4 to 6 months, it is recommended that children start to receive energy and nutrient rich complementary foods. Survey results show that only 25 % of mothers introduced foods to their child at the recommended time while over 32% of children in the sample did not regularly receive solid foods until after 10 months. The delay in introducing complementary food is a second factor potentially explaining the rapid acceleration in the prevalence of wasting and stunting observed in the sample children between 6 and 18 months, a time at which children are vulnerable during the transition between breast milk and an adult diet. Seventy-three percent of sample mothers reported that they continued to breastfeed their child at the time they introduced regular solid foods into their child's diet, with 64% of these women continuing past 18 months. In fact, only 17% of the children who began receiving complementary foods between 4 and 6 months were stunted, half the 35% prevalence rate for those who did not receive foods at the recommended time (statistically significant at .01).

An examination of complementary-feeding practices broken down by mothers' income levels shows that 32% of the children of mothers in the highest income quartile (monthly income > 20,000 CFAF) began regularly receiving food during the recommended 4 to 6 month period, significantly higher (difference statistically significant at .01) than the 19% level for children of mothers in the lowest income quartile (monthly income < 3,000 CFAF /month)⁴. While the reasons underlying these differences will be explored in future multi-variate analysis, these results suggest a relationship between women's income and complementary feeding practices.

Figure 1: Prevalence of Stunting in 12-month Old Children by Age of Introduction of Complementary Foods



There is considerable variation across districts in the percentage of children who receive complementary foods between 4 and 6 months of age, ranging from 10 to 15% in the Koro and Bandiagara districts of the Mopti region, up to 36% in the Niono district in the irrigated rice zone of Ségou. Not only was Koro at the low end of this range, but over 18% of Koro children do not receive complementary foods until after their first year.

Quotes in Box 2 reveal that while some women have knowledge of the correct period to introduce complementary foods many others do not know and/or do not follow recommended complementary feeding practices.

**Box 2: Complementary Feeding Practices.
Group discussions, May 2002**

"It is best to start introducing food to children at 6 months. Porridge to which peanut butter or fish powder has been added is the best. If you give food to children too early your child could become sick. But it is not until around 17 months that children actually start to gain weight." (Mother, Kolondieba District)

"The health agents have told us that we should not give any food to our children before they are 6 months old. I started giving food to my child at 7 months." (Mother, Koutiala District)

"At 12 months we give our children porridge and when they are used to that we give *toh* or rice. At 5 months food will cause diarrhea and that in turn will cause all types of illnesses." (Mother, Bandiagara District)

"As long as my breasts are full of milk I will not give my child any other foods." (Mother, Koutiala District)

"Because of certain constraints, some children eat before 12 months, if not a child should start eating at 12 months. If you give solid food to children before 12 months they will not walk at an early age and you will get pregnant again and that too will cause your child to lose weight." (Mother, Koro District)

"Already at 4 to 5 months, mothers leave the child with an older sibling, because they have too much work to do. Now, when the mother distances herself from the child, the child will not have the quantity of breast milk he needs and is used to getting, and the type of food that the child should eat is not available to him. In the end, the person caring for the child is obliged to give the child food from the family meal (*toh*), which is not appropriate for the child. This is why children do not grow and develop at the rate they should." (Father, Niono District)

Food and feeding practices: The types of foods initially given to children depended on the age of the child when complementary foods were introduced. Younger children were typically fed porridge (cereal, water, salt and sometimes lemon juice and/or sugar) while children older than 12 months were generally introduced directly to the family meal. Only 10% of the sample children received specially prepared weaning foods such as porridge enriched with products high in protein, micronutrients and fat. While 100% of both men and women stated that lack of money was a primary constraint to assuring good nutrition for their children, group discussions indicate that many reasons affect children's food intake.

⁴There is not any statistically significant relationship between breastfeeding practices and mothers' income level.



Feeding children requires the active participation of the caregiver to make sure that the child is consuming sufficient amounts of what is being offered. When asked what mothers do when children refuse to eat, only 32% reported that they actively encourage the child to eat. Others reported that they let the child eat as he or she wished; or if the child refused to eat, they would nurse the child in place of the feeding.

During the agricultural season, food preparation and child feeding is particularly challenging. During group discussions, women explained that they prepare one meal in the early morning before leaving the house to work in the fields. A portion of this meal is set-aside for the child (children) to consume throughout the day. When a young child is left with an older sibling, who is responsible for feeding the child, the mother is not present to control the child's consumption.

Disease Prevention: Positive nutritional outcomes also depend on specific caregiving practices in the household to prevent disease.

Hygiene: Hygiene of the child and the cleanliness of the child's physical environment can affect the incidence of diarrhea. Diarrhea is the second most common illness - 21% of all episodes of illness - affecting children as reported by caregivers (Tefft and Kelly 2002). Fewer than 13% of all respondents dispose properly of a child's waste in a latrine or wash their hands with soap after defecation, before preparing meals or before feeding their child. Although it is common to rinse children's hands in a shared water dish before a meal (96% of mothers stated that they washed their children's hands before eating), the use of soap or rinsing with fresh water is rare.

Access to and use of potable water can also affect the incidence of diarrhea. Depending on the season, 22% to 27% of families get their drinking water from a potable water source (i.e., bore wells). Although 66% of survey villages have one or more bore wells, over one-third of the wells are broken down. Even if a functioning bore well exists in the village, many families state that it is more convenient to get drinking water from a seasonal source (e.g., pond, river) or open wells. The large percentage of families drinking potentially non-potable water from those sources represents a major means of disease transmission, especially given the large number of infants who are not exclusively breastfed.

Malaria: Fever/malaria is the childhood illness most frequently mentioned by caregivers (48% of all episodes of illness) (Tefft and Kelly 2002). While sleeping under a bed net, especially one that has been treated with insecticide, can reduce the incidence of malaria, only 36% of women reported that their child had slept under one (insecticide treated or not) the night prior to the interview. When fathers were asked about the cause of malaria, only 19% mentioned "mosquitoes" as the primary causal factor; this suggests a strong need for educational outreach on causes of malaria. Although only 9% of fathers in the KAP sub-sample reported that their family used mosquito nets to reduce the risk of malaria, close to 24% reported using antimalarial prophylactics at some time to prevent malaria in their family. Morbidity data for the complete sample of children reveal that 13% of reported episodes of fever/malaria went untreated while half of the treated episodes relied on modern and the other half on traditional medication (Tefft and Kelly 2002).⁵

Vaccinations: Sixty-one percent of mothers interviewed during the KAP survey reported that they have vaccination cards for their child. Among the children whose parents possessed a vaccination card, only 61% had completed the three doses of diphtheria, tetanus and pertussis (DTP3).⁶ The discrepancy in the numbers of children being vaccinated and those who have vaccination cards underscores a problem with monitoring child growth and development in general and vaccination coverage in particular.

Care Seeking and Management of Child Illness: In addition to practices to promote growth and development and to prevent disease, the care and support provided to an ill child and pregnant and lactating mothers have a significant impact on children's survival, growth and development.

Illness and Care: The Ministry of Health, in accordance with WHO guidelines, recommends that parents use oral

⁵ Although the KAP survey did not collect information on the method, frequency and number of children in the family receiving antimalarial medication, the response indicates that some families are aware of its benefits and use.

⁶ Following the national immunization schedule, children should receive: BCG (Bacille Calmette Guérin - vaccine against tuberculosis) at birth; diphtheria, tetanus, pertussis (DTP) vaccines at 6, 10, 14, weeks; oral polio (OPV) at birth, 6, 10, 14 weeks; and measles at 9 months.



rehydration therapy (ORT), which consists of continued feeding and increasing fluids (including water, breast milk, juice, and/or oral rehydration salts) for early home treatment of diarrhea, thus preventing the occurrence of dehydration, reducing the nutritional impact of diarrhea and also shortening its duration. Parents must also recognize when children need medical treatment and provide it (Victora et al. 2000).

Eighty-five percent of women in the KAP survey reported that their child had at least one episode of diarrhea in their first two years of life. In this group, 44% were treated at a health center for their last episode of diarrhea. When asked about caregiving practices during the child's last episode of diarrhea, 73% of women reported having increased the amount of water given to children during their illness. However, close to half of the women reported that they reduced the amount of breast milk given during the last episode of diarrhea. For children who had already begun to eat complementary foods, 66% of mothers reported decreasing the amount of food given. These results corroborate analysis of morbidity data showing average daily weight gain during the month when a child was diagnosed with fever/malaria to be 0.1 grams and diarrhea to be 1.2 grams, levels that are far below pediatrician-recommended levels of at least 6 grams for 0-36 month olds (Tefft and Kelly 2002).

Maternal care: Providing women with prenatal, postpartum, and delivery care by qualified health care providers is associated with positive nutritional and health outcomes for children (WHO 1994). Prenatal care will help reduce many of the factors that lead to low birth weight babies and safe delivery procedures reduce complications of child birth which can cause disability and death of women and their children.

Fifty-nine percent of women interviewed in the KAP survey reported having had at least one prenatal visit at a health center during their most recent pregnancy; of this group, 44% had four or more visits. For the 41% of respondents who did not attend prenatal visits, 31% stated that they lacked the financial resources to pay them, while 27% stated that the health center was too far away and they had neither the time nor the means of transportation to go there. Another 13% of women reported that their husbands did not want them to go to the center. Responses among the men suggested relatively widespread support for some type of prenatal care or related expenditures, as 84% of the fathers sampled reported having

paid for either prenatal visits or other pregnancy-related medical costs for the most recent pregnancy of their spouse.

Despite the number of women benefiting from prenatal care, only 27% reported giving birth at a health facility with the assistance of a qualified provider. In addition to the physical constraints of transporting a woman in labor to a health center (which may be some distance from the village, and may not be staffed at the time of need) and cost considerations, socio-cultural and psychological barriers (e.g., delivering away from home or with the assistance of a male health provider, spending time away from home for child birth, giving birth on a delivery table) also keep women from delivering at the health center.

The findings on the use/non-use of prenatal, delivery and post-natal services suggest that future actions need to focus on advocacy and information for parents on the importance of maternal care for both the baby and the mother. It also points to the need to include some prenatal care interventions in outreach services offered by mobile health teams. Not only will these actions increase the number of women benefiting from prenatal care, but it will also reduce the amount of time women spend seeking care.

Care to mothers and infants and support systems: Support provided to mothers after child birth is also an important factor affecting both the mother's and child's health and nutrition. Within four weeks after child birth, 58% of mothers resumed their normal work; only 25% waited at least 40 days. Work resumes soon after child birth because women have few avenues of assistance with household tasks, child care, or to replace their labor inputs on communal fields. Most women also cannot risk losing income and resources by reducing the time spent on income generating activities or their own crop production. In recognizing the need to reduce women's workloads and provide support during pregnancy and lactation, 64% of fathers stated that they offered some help to women (details not specified) during these periods.

Although very few women mentioned any specific tasks performed by their husbands in their place, the majority of women recognized the importance of their spouses' financial contributions during and after pregnancy. Outside family members appear to be a more significant source of support for household and other tasks than their spouses (45% of sample fathers reported having called a relative).



Beyond the immediate six-week period following child birth, the availability of competent, alternate child care is one important type of social support that is limited for many mothers. Fifty-one percent of mothers reported that they regularly leave their infant in the care of another child for periods exceeding four hours. Close to 50% of the sibling caregivers are under 10 years of age. Of the women who did not leave their child in the care of others, 63% stated they did not have any source of reliable child care available to them.

**Box 3: The Challenge of Infancy: A Father's View
May 2002**

"From the first day of life until the fortieth day a child is treated like a fragile egg. The mother doesn't go anywhere with the child and he is well taken care of by the women of the family. He is well covered so as not to be cold, the sun does not beat down on him, he is often bathed and nursed whenever he demands. During this period you find that the mother is calm and without worries and that she can care for her child.

"But after the fortieth day, the child is treated like an adult. The mother brings the child to the field and lays him on the millet stalks while she works. The sun beats down on the baby whose skin is not resistant against the sun like an adult's skin. At this moment, illness sets in and even if he has been a healthy, plump and well-fed baby he will start to lose weight. Water is given to him and it is not very good quality, because the water should first be boiled to eliminate parasites and kept in a closed bottle to keep it clean until the child needs to drink.

"But the reality of it is that the child is exposed to unhygienic conditions, and must even nurse in this environment, only to be left with a child who is barely older than the baby and probably weighs the same, so that the mother can work. How is a child to grow normally under these conditions?" (Father, Niono District)

Father's role in child care: Both men's and women's focus group discussions confirmed that fathers' role in child care is for the most part limited to providing food for family meals and financial support to women and children for health care. Fathers have minimal involvement in day-to-day care and management of children. Analysis of child morbidity and treatment data show that fathers paid 48% of children's medical treatments, averaging 1,053 CFA francs per treatment, while heads of extended families (who are exclusively male) paid for 16% of the cases, averaging 1,427 CFA francs per treatment (Tefft and Kelly 2002).

Food provision responsibilities are traditionally shared between male and female members of the family unit who produce and eat together. Mothers frequently cited a lack of access to food as a major constraint in feeding children. The KAP survey reveals that over 20% of fathers never or rarely furnish condiments for family meals. It is also interesting to note that over 40% of fathers reported that they regularly ate outside the home (one or more times per week) over the last 12 months (17% more than three times per week). Men's practice of eating meals outside the home is a growing trend observed throughout West Africa often including meat or fish that are seldom available within the household (Diagana et al. 1999).

Heavy Workloads and Limited Time Affect Adoption of Recommended Practices: The ability of families to adopt recommended practices and behaviors will depend on having knowledge of the benefits of a particular practice and the know-how to adapt that practice to their daily lives. But knowledge alone will not assure their sustainable adoption. Care provided to children, in all its manifestations, is directly affected by the workload and time constraints of the attending caregiver.

Since children under 4 years of age are cared for primarily by their mother, a women's workload plays a major role in shaping the care given to a child. In addition to the time spent caring or managing the care of their children, sample men and women reported that women are responsible (to varying degrees depending on the region) for key household tasks (gathering wood, fetching/carrying water, preparing food), agricultural labor on both family and individual fields, as well as for many other productive and remunerative activities. Information from the KAP survey and focus groups yields several interesting insights about the relationship between women's workload and child care:

- Twenty-nine percent of mothers stated that heavy demands on their time for household tasks limit time available to properly care for their children.
- Referring solely to feeding practices, 10% of mothers say that they do not have enough time to adequately feed their children. This finding corroborates the aforementioned results showing that only 32% actively encourage their child to eat, an important and time consuming task when children are introduced to solid foods.



- Fifty-six percent of fathers stated that their spouse does not have enough time to care for their child. While 54% of fathers indicated that the daily, time consuming tasks of gathering wood and water and preparing meals limit the time mothers need to adequately care for their children, only 26% stated that women's agricultural tasks in communal fields (primarily weeding and harvesting, depending on the cropping system) affect mothers' ability to care for children.
- In focus group discussions, the majority of women claimed that daily household tasks are the most difficult and time consuming. While just as demanding, they view their agricultural responsibilities as more seasonal in nature.
- When asked about ways to help mothers so that they have more time to nurture their children, both men and women noted the need for cereal mills and community water taps.
- Forty-three percent of the fathers stated that mothers' illness is a major constraint preventing proper child care. The WHO's Healthy Life Expectancy Indicator shows that Malian women lose 23.5% of their total life expectancy to ill health (10.5 years) versus 18.5% (7.9 years) for men (WHO 2001). These insights illustrate how every household member's

contribution is needed to surmount low productivity of household enterprises - including agriculture. Women often have no choice but to work in the fields and perform daily household tasks, even if the demands on their time threaten the health and nutrition of their children. If productivity were higher for agriculture and women's daily tasks, households would be in a better position to invest in child care (e.g., freeing up mothers' time or hiring household help).

IMPLICATIONS OF KEY FINDINGS : There is strong evidence that parents', caregivers' and communities' knowledge remains a major constraint to the adoption of practices that would have a positive impact on children's health and well-being. Only 19% of fathers know that mosquitos cause malaria, only 16% of mothers exclusively breastfed thier child during the first 3 months and only 32% of children received complementary foods between 4 to 6 months of age.

Effective communication strategies need to be developed at the district and community levels with clear objectives and involvement of partners from all sectors. Interventions will have a greater chance of success if they are based on an evaluation of past programs to identify what strategies have been successful, what were the specific conditions for their success, and at what cost. The impact of these strategies will depend largely on their close monitoring and evaluation, and systematic documentation and dissemination of experiences. Communication strategies can not overlook the importance of establishing effective community mechanisms to support positive nutrition and health behaviors.

Behavior change is not, however, simply an issue of providing caregivers with correct information. Certain conditions and enabling factors that cut across sectors must exist for change to be effective and sustainable. They include social support systems, reduced workloads and time savings from higher labor productivity and access to financial and productive resources.

There is strong evidence that work and child care demands compete for women's time. Innovative strategies to increase adequate child care options for women need to be tested. Actions may include community day care centers, increasing men's role in child care, and work sharing groups. It will be important to learn from experiences of communities in other countries.

Box 4: Women's Workload
Group discussions. May 2002

"Men cannot do the same work as women. Women work from early in the morning until late at night. As soon as they are done with one task, they start another. Men do not do that. How do you expect women to ever rest? Women suffer in a way that men never will."
(Father, Macina District)

"I don't think that there is any special preparation for children besides what is prepared in the morning. Children eat this food during the day, and that is because of the enormous amount of work. Here the labor women provide in our fields is very, very important."
(Father, Koutiala District)

"If it is the agricultural season, women don't have a moment of rest. From the transplanting to harvesting, women are separated from their children and don't have time to care for them. In the rice fields, they don't have time to approach their children even to nurse them. Often there are children who cry excessively."
(Father, Macina District)

"I have noticed that during the months from September to November the ambulance is coming and going. From our fields we hear the siren three or four times a day. And it is never a man in the ambulance, it is always a woman. Everyday we hear of such and such woman who had a difficult delivery, or who died during childbirth and that happens often. But we can't do anything. How can someone who is poor tell his wife to stop working."
(Father, Macina District)



Cereal mills and potable water sources in good working order are a priority for women to reduce their workloads, yet we found a high percentage of villages where they did not function, due to ineffective management structures and lack of maintenance. The lessons and methods used by successful projects to develop effective, transparent management structures in community organizations must be documented and disseminated so that they can be replicated in village and commune development programs.

Throughout the course of this study, men and women have repeatedly alluded to the pervasive effect of poverty on their lives. Poverty and the lack of resources condition the actions of parents in all they do. Focus group discussions reveal how poverty manifests itself at many levels, from the mother working in the field who does not stop to nurse her child, to the pregnant woman who does not have money for prenatal care, or the young mother who is unable to produce enough breast milk because she, herself, is hungry. It also affects the family that does not have the means to buy mosquito nets, pay for health care, and often eats one meal per day with neither the time nor the resources to prepare the multiple, nutrient-rich meals that children need.

This policy synthesis has examined household and community practices for improving child health and nutrition. It has highlighted the importance of improving parents' knowledge of key practices and creating the conditions that foster their adoption. Improved health and nutrition outcomes will also depend on the existence of a coordinated set of policies and programs across sectors and at all levels. Subsequent reports will present results of discussions with village and district health center personnel, village chiefs, and newly elected commune officials on the constraints and challenges to developing sustainable multi-sector interventions.

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