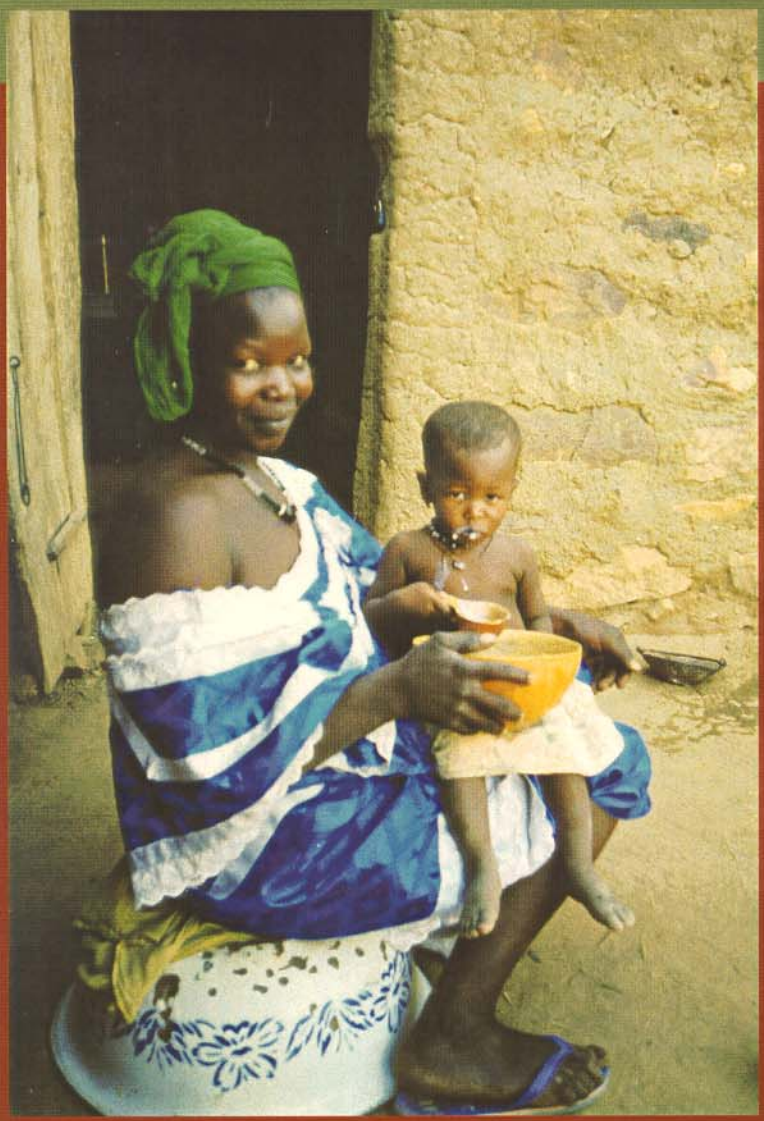
Introducing Complementary Foods to Infants in Central Mali



MEASURE *DHS+*

Introducing Complementary Foods to Infants in Central Mali

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3) to advance survey methodology, and
4) to develop in participating countries the skills and resources necessary to conduct high-quality demographic and health surveys.

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PREFACE

The authors would like to thank the authorities of the four fieldwork sites of the Mopti Region for their assistance and collaboration in the research. We are extremely grateful to the mothers and others who gave so generously of their time to be observed and answer questions about themselves and their children. Finally, we thank Altrena Mukuria, nutrition specialist at ORC Macro, for overseeing the funding process and for her careful reading of the text and her suggestions for clarification. This research was funded by the USAID Bureau for Africa Office of Sustainable Development's Health and Human Resources Analysis for Africa Project (HHRAA) under contract #HRN-C-00-97-00019-00. The opinions expressed are those of the authors, and do not necessarily reflect the views of USAID.

SUMMARY

INTRODUCTION

This study of the complementary feeding of infants age 3-12 months was undertaken to improve the understanding and interpretation of certain findings on the nutritional status of children in Mali from the Demographic and Health Survey (DHS) of 1995-1996. Most nutritionists agree that children need solid food in addition to breast milk when they are 4-6 months of age in order to reach their full growth potential. However, the 1995-1996 survey in Mali found that only half of mothers reported giving solid foods to their children 6-9 months old, that few children were exclusively breastfed, and that most were given water or other liquids from birth. The study presented here seeks to understand how and when the process of initiating food supplementation occurs, as mothers begin to give their infants either solid or mushy food in addition to breast milk.

Fieldwork for this study was conducted in central Mali in the Mopti Region, where the main ethnic groups comprise the Fulani (Peulh) and the Dogon. The former are cattle herders practicing agropastoralism, while the latter cultivate millet in their remote, mountainous villages. This region of Mali is an area of high prevalence of children with wasting and stunting. According to the 1995-1996 DHS survey, in the Mopti Region, 27 percent of children under three were wasted, 28 percent were stunted, and 41 percent were underweight.

The study was organized around the following research questions:

- At what age do mothers give complementary foods/liquids and why do they do it?
- What types of solids and liquids do they give to their children in addition to breast milk?
- What are the signs that a mother interprets as a child requiring complementary food?
- How do mothers manage feeding during episodes of illness?

Formulating the research questions in this manner assumes that the interaction between a mother (or other caretaker) and an infant has an impact on the child's nutritional status. That is, it assumes that although the more general problems of food security and social or economic status may have some effect, they by themselves do not determine nutritional status.

METHODS

The study questions point to the need for evidence about specific interactions, or individual behavior, and about how people go about feeding their children. The methods of data collection used were extended in-depth interviews with mothers, structured observations of the mother-child or caretaker-child interaction, several group discussions, and collection of anthropometric data on children. The data were collected at four sites, two urban and two rural. The urban sites were neighborhoods in the towns of Mopti and Sevaré, while the rural sites were Synda, a Dogon village near Douentza, and Boré, a village largely of Bambara people. For the rural sites, all the households were enumerated and all the children 3-12 months old were weighed and measured. For the urban sites, every other household was enumerated and the children were weighed and measured.

The most appropriate approach to examining whether the mother-child interaction influences a child's nutritional status involves working with mothers of children with contrasting nutritional outcomes. The use of "contrast" samples comprising extremes of this type provides useful

information about cases. Thus, using height-for-age (stunting) as a measure of nutritional status, the ten children with the highest Z-scores and the ten with the lowest Z-scores were identified at each site. Mothers of those children composed the original sample (N=80) for the individual interviews. The four highest-scoring and four lowest-scoring children were also identified for observation.

The individual interviews were conducted by interviewers trained to ask open-ended questions about the topics of interest. A total of 76 interviews were conducted. In addition, discussions were held at one urban and one rural site with a group of adolescent girls, fathers, and grandmothers to assess their knowledge of and experience with caring for young children. The observations took place during three two-hour periods in one day: from 8:00 AM to 10:00 AM, from 12:00 PM to 2:00 PM, and from 4:00 PM to 6:00 PM. Using an index with markers indicating what both the mother (or other caretaker) and the child was doing each minute, the observers followed the mother-child interactions. In all, 31 pairs were observed for six hours during one day.

FINDINGS

Breastfeeding

Women had positive views of breastfeeding and saw it as a cheap, nutritious way of nourishing their children while encouraging health and growth. However, some mothers cited other benefits of breastfeeding besides those associated with nutrition. In particular, they noted that it quieted their infants and thus enabled them to get on with their household tasks.

Most mothers offered breastfeeding on demand, usually in response to the child's crying. However, two mothers of malnourished children indicated that they sometimes did not breastfeed on demand because their work did not permit them to do so. Thus, the study hypothesis that mothers of well-nourished children respond more often to their infants' crying than mothers of malnourished infants do is supported by this evidence.

All the children were observed breastfeeding during the observation periods. Among both well-nourished and malnourished children, there were differences in the time spent breastfeeding per day for each of the age groups: 3-4 months, 5-6 months, and 7 months or more. In the 3-4 month group, well-nourished children breastfed on average for 19 minutes more than their malnourished counterparts. However, among those age seven months or more, those who were well nourished breastfed on average for 10 minutes less than their malnourished counterparts.

In short, younger children of better nutritional status spend more of the early months breastfeeding but then appear to reduce breast milk consumption to take in additional liquids and solids by at least six months of age. Those who are malnourished seem to breastfeed less in the early months but more during the later months, compared with their well-nourished peers.

Complementary feeding

The study assumed that community and household food security was such that food availability would not be a problem. It became clear that in many cases, poverty and food shortages were everyday realities for some families and influenced infant feeding practices. Many women talked about how difficult it was for them to feed their children anything but millet gruel. Thus, the assumption about food security was not supported by the study. It may well be that the malnourished children came from families facing the most severe food shortages.

All children received water, and most received traditional medicines, from an early age. Indeed, not one infant was truly exclusively breastfed, although many of the younger infants did not receive "food" until they were six months old. In general, children were receiving *cobal* (millet gruel) at about six months. The rationale given for offering *cobal* is that breast milk by itself will no longer satisfy the child. At about 9-10 months, infants were given rice or *to,* a thick millet paste eaten with a sauce of dried baobab leaves. However, a few children in the rural areas reached 11-12 months of age existing on *cobal,* breast milk, and traditional medicines.

Among Fulani communities in central Mali, *cobal* is a watery millet-based gruel often drunk with soured milk. Adults frequently drink *cobal* after eating their staple, *to*. For children, *cobal* is a bridging liquid appropriate for infants about six months old and a liquid that fills the gap in cases of perceived milk insufficiency. Mothers speak of *cobal* as light and sweet rather than heavy. Mothers do not consider *cobal* a "food."

The data show very little difference in infant feeding between urban and rural children. However, in urban areas, the malnourished children received a greater variety of foods and liquids than those who exhibited better nutritional outcomes did.

Among children who became ill and who were already receiving complementary foods before their illness, eight mothers of well-nourished children made their children a special dish to aid their recovery. Only one mother of a malnourished child did so. Generally, and not only when their children were sick, mothers of malnourished infants did not encourage them to eat if the children did not want to.

The direct observations involved following infants and their caretakers for a six-hour period. The observations are presented in the form of the number of minutes or the percentage of time the child or mother was observed in a specific activity. Regression analyzes were carried out to test for statistical differences. Virtually no differences were found by observations in the type of feeding experienced by well-nourished and malnourished children. However, differences were found in terms of the care they received, in the type of surrogate caretakers employed, and in the social support available to their mother.

Caring for infants

The study results show that mothers sometimes called on their own older daughters, their sisters, their cowives, or their mother-in-law to assist them with child care or other household chores. Infant feeding and other aspects of child care are fundamentally linked to the social context in which they occur. Mothers with weak social ties or low social support may have difficulties in fulfilling their multiple roles as mothers, daughters-in-law, and spouses. The lack of practical and emotional support available to the mothers of malnourished children in particular emerged from the in-depth interviews in this study.

The study found that the mother-in-law plays a critical role in child care when present in her son's household. In particular, young and first-time mothers rarely made decisions on their own about any aspect of their children's well-being. Mothers-in-law took responsibility for much of the day-to-day care of the child, for giving traditional medicines, treating illnesses, and advising on feeding in general.

General

The study found very few systematic differences in the mother-child interactions between mothers of well-nourished and malnourished children. Several contrasts between the two groups did emerge, however. Judging from how often and how strongly the subject was raised, it seems clear that the mothers of well-nourished children placed a much stronger emphasis on hygiene and cleanliness than those of malnourished children. In the same vein, the mothers of malnourished children placed a greater emphasis on the role of traditional medicines and benedictions in ensuring a child's good health.

Mothers of malnourished children tended to give complementary food earlier than mothers of well-nourished children. If mothers noticed that their breast milk was insufficient or that the quality of the milk was inferior, they would give other foods. This reaction set up a cycle of breast milk insufficiency as the frequency and intensity of infant suckling was diminished by the child's consumption of complementary foods.

Cobal was used to introduce children to solid food. However, the nutritive quality of *cobal* is minimal unless it contains soured milk. Health education messages should emphasize the positive aspects of complementing at six months of age with *cobal* and reinforcing its energy content by adding groundnut oil or pounded groundnuts.

Regarding illness management, mothers tended to increase breastfeeding and giving water during illness episodes. Mothers of better-nourished children paid more attention to food consumption if the child was sick, and they were more likely to prepare special dishes or to insist that a child eat even when he or she did not apparently wish to do so. Mothers of malnourished children expressed the view that if a child did not want to eat, there was no point in forcing him or her.

It is the social context of the feeding practices and the decisions preceding them rather than the practices themselves that differ among the two groups of mothers and their children. The community context is one of absolute and extreme poverty in which time and labor demands on women are excessive and result in very little income. Men recognize that their responsibilities are to feed and cloth their immediate and often extended families, but they have great difficulty in doing so. Women admitted that despite advice from health workers to diversify complementary foods, they were unable to do so for economic reasons.

One of the major determinants of mothers' ability to care for and monitor their children is the social support available to them in their household, particularly older daughters who can act as child minders. Those women who could not draw on daughters to provide child care for their infants or to help with other household tasks were obliged to combine child care and domestic duties and carry out both simultaneously. It is likely that this practice leads to increased fatigue and serves to limit their ability to interact with their children.

CONCLUSIONS

Mothers' infant feeding practices were different from the standards recommended by international agencies in two main ways: virtually all mothers gave infants water daily soon after birth, and a certain portion of mothers did not begin complementary feeding until the child was 9 or 10 months old. The interaction of these factors in this economically marginal environment

characterized by food insecurity means that vulnerable infants easily run the risk of becoming malnourished, which often spirals into a constant cycle of illness, anorexia, and compromised growth.

This study did not discover evidence of sharp contrasts in the mother-child interactions between mothers of well-nourished versus malnourished infants as originally expected. On the other hand, differences in the social and economic context of households appear to affect nutritional status of infants. Mothers who had older daughters to assist in child care were more likely to have well-nourished infants than those who did not.

The contrast between mothers who have caretakers available and those who do not underscores the importance of supportive social networks in caring for infants. This finding suggests that interventions to increase nutritional status of children that seek to change the behavior of individual mothers without changing the social context of the household are not likely to succeed. The interaction between mother and child can change if the social and economic contexts permit such changes.

POLICY RECOMMENDATIONS

- Health workers should be taught about the recommendations on exclusive breastfeeding and on the correct age for giving complementary foods, including water and traditional medicines. They also need to be trained to advise women to continue and even increase breastfeeding if their milk appears to be insufficient because milk production is related to the frequency and intensity of infant suckling.

- Because of their key role in child care with young mothers, older women (mothers-in-law) should be integrated into child health education programs, which often focus only on women of reproductive age. They could be sensitively educated by using "griots" (praise-singers) or other traditional methods of communication that emphasize their positive role and provide information about complementary foods.

- Opportunities for the development of women's social support and social networks should be increased to provide them with opportunities for social interaction, economic collaboration, and child care. Recent migrants in urban areas could be linked to others from their place of origin through the "Associations des Ressortissants." Neighborhood associations could be involved in setting up child care services for those who live in the same neighborhood.

- Since the main weaning food *(cobal)* is so widely given as a complementary food, it could be usefully fortified, perhaps with peanut oil or ground peanuts, to increase its energy content.

- The association between good hygiene in the household and well-nourished status suggests that ways should be found to improve environmental sanitation around the household.