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Breastfeeding and Weaning Practices in Honduras



**Nutrition Communication Project
Baseline Study
1991**

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TABLE OF CONTENTS

I. PROJECT AND EVALUATION DESIGN 1

II. HEALTH PROVIDER SURVEY 7

III. SURVEY OF MOTHERS 27

IV. CONCLUSIONS 46

APPENDICES

APPENDIX I Health Providers Questionnaire

APPENDIX II Mothers Questionnaire

APPENDIX III Health Centers Included in the Sample

FIGURES

Figure I-1	Simplified Program Model	3
Figure II-1	Distribution of Health Providers' Knowledge Score	23
Figure III-1	Foods Given to the Newborn	32
Figure III-2	Infant Feeding, by Age	34
Figure III-3	Exclusive Breastfeeding, by Age	35
Figure III-4	Distribution of Mothers' Knowledge Score	42

TABLES

Table I-1	Number of Interviews, by Type of Facility	6
Table II-1	Type of Health Provider, by Group	8
Table II-2	Type of Health Provider, by Facility	9
Table II-3	Recommended Feeding of the Newborn, by Health Provider	11
Table II-4	Recommended Feeding for a 3-Month Old, by Health Provider	13
Table II-5	Recommended Feeding for a 5-Month Old, by Health Provider	14
Table II-6	Mean Age (in months) to Introduced Water, Other Liquids, & Food, by Health Provider	15
Table II-7	Recommended Weaning Age, by Health Provider	16
Table II-8	Percent of Corrected Responses to Knowledge Questions, by Health Provider	20
Table II-9	Benefits of Breastfeeding Cited, by Health Provider	21
Table II-10	Types of Materials Available, by Health Provider	24
Table II-11	Types of Didactic Materials Available, by Type of Facility	25
Table III-1	Demographic Characteristics of Sample Mothers, by Group	28
Table III-2	Socioeconomic Characteristics of Sample Mothers, by Group	29
Table III-3	Place of Delivery, by Group	30
Table III-4	Foods Given to the Newborn, by Group	31
Table III-5	Infant Feeding, by Age	33
Table III-6	Infant Feeding, by Group	37
Table III-7	Percent of Corrected Responses to Knowledge Items, by Group	38
Table III-8	Potential Contact with Communication Channels, by Group	43

LIST OF ABBREVIATIONS

AED	ACADEMY FOR EDUCATIONAL DEVELOPMENT
CESAMO	CENTRO DE SALUD CON MEDICO
CESAR	CENTRO DE SALUD RURAL
KAP	KNOWLEGE, ATTITUDES AND PRACTICES
MOH	MINISTRY OF HEALTH
NCP	NUTRITION COMMUNICATION PROJECT
PROALMA	PROYECTO DE APOYO A LA LACTANCIA MATERNA
TBA	TRADITIONAL BIRTH ATTENDANT
USAID	UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT

I. PROJECT AND EVALUATION DESIGN

INTRODUCTION

Since 1981, the United States Agency for International Development (USAID) has provided funding for the Academy for Educational Development (AED) to furnish technical assistance to the Government of Honduras Ministry of Health (MOH) to promote a series of child survival interventions. Beginning with the Mass Media and Health Practices Project from 1981 to 1983, and continuing through the Communication for Child Survival (HEALTHCOM) project from 1984 to the present, technical assistance has concentrated on training the MOH Division of Health Education to utilize social marketing principles and employ a mix of mass media and interpersonal communication strategies to encourage changes in health-related behaviors. Accomplishments include the introduction of oral rehydration therapy to treat infant diarrhea, increased participation in immunization activities, and the implementation of a communication program to address the problem of acute respiratory infections in young children.

In late 1989, USAID expanded its support of communication activities to include nutrition communication, specifically the promotion of breastfeeding and improved infant feeding, and growth monitoring activities. The Nutrition Communication Project (NCP) provides technical assistance from AED through a long-term resident advisor who works with the MOH Divisions of Health Education, Maternal and Child Health, and Nutrition. The project was developed according to social marketing principles and included qualitative planning research, and the development and execution of a communication strategy based on training of interpersonal communication agents and mass media activities. The present evaluation is being undertaken to determine the extent to which the intervention reaches its intended target populations and to assess the efficacy of the planned strategy in fostering changes in breastfeeding practice.

THE INTERVENTION

The intervention is planned as a three-stage effort in which first breastfeeding, then supplementary feeding, and finally growth monitoring will be promoted to improve infant nutritional status. This evaluation will assess the first phase aimed at improving breastfeeding practices. The primary message to be promoted is that *exclusive* breastfeeding should be practiced until the infant reaches *six months* of age. Although breastfeeding is widely practiced in Honduras, exclusive breastfeeding is rarely practiced, according to developmental research carried out by NCP during August and September of 1990. In many cases water and teas are given from the first days of life and semi-solid foods are introduced within the first months of life.

The target populations have been identified as (1) institutional personnel (doctors, nurses, auxiliary nurses); (2) community health personnel (midwives); and (3) pregnant and lactating mothers. Breastfeeding has been promoted in Honduras before, most notably through PROALMA (*Proyecto de Apoyo a la Lactancia Materna*), a USAID-funded program conducted from 1982 to 1987 which trained doctors, nurses, and nurse auxiliaries in the importance and principles of breastfeeding. In the present project, a modified strategy will be employed which includes training for traditional birth attendants (TBAs, or midwives) and the strengthening of institutional health worker counseling skills. Initial program planning research showed that the majority of mothers receive prenatal care from midwives and give birth at home. Although they are affiliated with a health center, midwives work in the community and have more time to spend in one-to-one communication with the expectant mother. TBAs currently receive a week of training from the Ministry of Health and are supervised by an Auxiliary Nurse from the health center.

The present project plans to provide both institutional and community health workers with supplementary instruction in breastfeeding via a corps of regional professionals specially trained by the project. That is, the project will emphasize the "training of trainers" who will in turn train the health workers and midwives in their geographic area of responsibility. The objective is to impart to all health providers knowledge of the importance of breastfeeding for the health of the child, skills in communicating with mothers and motivating them to breastfeed, and the ability to solve common problems encountered which might otherwise present a barrier to successfully establishing proper breastfeeding practice.

Program messages will be disseminated via interpersonal channels and supported by both print and broadcast media, specifically radio spots, posters, and teaching charts. On-going radio spots will emphasize program messages, and all women taking training sessions will be given a poster/calendar to take home with them. Posters will be distributed to health centers carrying the primary message: "For the first six months, breastfeeding and nothing more: You can do it..." Other mass media activities, such as a radio call-in or soap opera may be undertaken as well.

Initially, the project will be implemented in Health Regions 4 and 5 only, but because health regions carry out educational activities in a semi-autonomous manner, other regions may engage in breastfeeding promotion and other nutrition education activities. Project evaluators can not restrict regional activities, so that ultimately, the control community may not serve as such because activities in the control region may get underway before the evaluation is complete. All regional efforts will be tracked by the Ministry and A.I.D. at the central level.

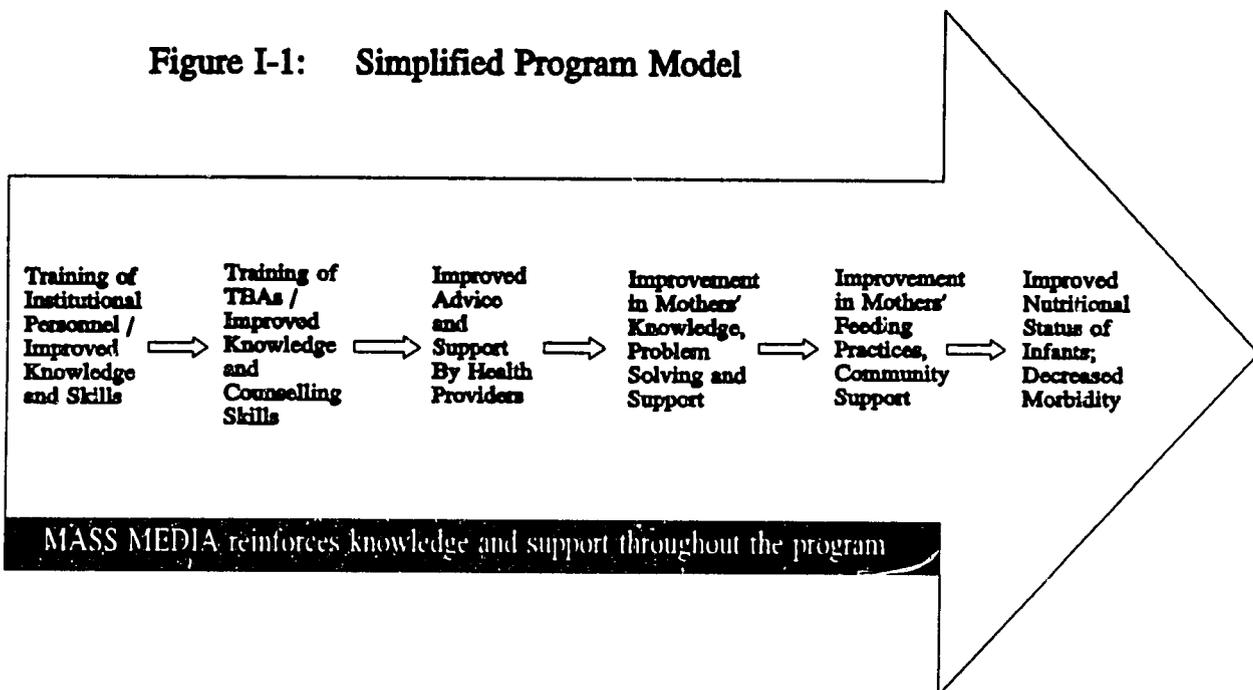
EVALUATION DESIGN AND METHODOLOGY

Design

The purpose of the evaluation is to document change in the project communities resulting from the intervention. Thus, a research design utilizing pre- and post-measurements in both project and control sites was selected. This design enables measurement of change in the project area which can be compared with measures in areas in which the intervention was not implemented. At the final evaluation, the "post" phase, two dimensions of potential change will be investigated: change in the project areas over time ("before" and "after"), and difference between project and control sites at the end of the intervention.

Control sites are deemed particularly important in this study, since Honduras is experiencing secular changes which may affect breastfeeding practice. For example, as food prices rise and milk becomes difficult to find, mothers may begin to make breastmilk a larger proportion of their infants' diets. At the same time, ads sponsored by UNICEF will be promoting breastfeeding on national television, and may account for some change in knowledge and practice of breastfeeding. The extent to which these external factors will affect breastfeeding practice is presently unknown; the control group is intended to provide information on changes due to influences outside the project.

Figure I-1: Simplified Program Model



The structure of the evaluation is based on a simplified linear model of how the intervention intends to increase the practice of exclusive breastfeeding to improve the nutritional status of infants. (See Figure I-1.) The model specifies a series of stages which must be accomplished before the ultimate objective is achieved. The model posits that change will be induced by training a team of health professionals to teach midwives and health workers proper infant feeding practice. It assumes that midwives and health workers will then give correct advice and improved support to mothers so that mothers' knowledge about breastfeeding and ability to solve feeding problems will be improved. It is hoped that with additional knowledge, skill, and support, mothers will consequently change their infant feeding practices, which will ultimately change the infant's nutritional status. This evaluation includes measures of each component of the model, with the exception of the final one, nutritional status.

Several features of the model and their effect on the evaluation should be noted. First, the model distinguishes between acquisition of knowledge and change in behavior. This separation is necessary because the literature on public health communication abounds with examples of efforts which have been successful in imparting knowledge but not in inducing behavior change. Second, although the project is primarily interested in changes in the nutritional status of the infant, those changes are mediated by the mother's caretaking behavior and by health workers' recommendations to the mother. Therefore, both health workers and mothers are surveyed. Third, although the project seeks to enhance the nutritional status of children, no measures of nutritional status will be taken as part of the evaluation. The link between exclusive breastfeeding and optimal growth is well documented, and it is assumed here that if breastfeeding habits are improved, infant health status will also improve.

Methodology

Data for the baseline study were collected via two surveys: one of mothers of children under six months of age and another of health providers. Both surveys are structured instruments which were administered by trained interviewers. The mothers' survey includes sections on current infant feeding practice, knowledge, potential exposure to the intervention (use of media and prenatal health services), and demographic information. Health providers were asked what they recommend regarding feeding for infants of given ages, what they know about various aspects of lactation management and infant feeding, what, if any, training they have received in breastfeeding, and what educational materials they have related to infant feeding. A copy of the mothers' survey is found in Appendix I, and a copy of the health provider instrument is found in Appendix II.

All interviewers were Hondurans who underwent four days of training in preparation for their fieldwork. Interviews were conducted during February, March, and April of 1991 under the direction of a Honduran field coordinator. A list of field personnel is found in the acknowledgements section at the beginning of this report. The data appear to be of good quality: there is very little missing data, and the data exhibit a high degree of internal consistency.

Implementation of the project began in October 1991 with limited radio broadcasts and the surveys will be re-administered after the project has been in full implementation for at least one year. For the survey of mothers, pre- and post-groups will consist of independent rather than paired samples. The primary reason for this is that children who are under six months of age at the time of the baseline interview will no longer be under six months old at the time of the post-intervention data collection cycle. Therefore, at the baseline, a sample of mothers of children under six months in the evaluation communities was selected, and at the post data collection phase, a sample of mothers of children under six months in those same communities will again be interviewed. Clearly, these will not literally be the same mothers, but will be representative of the same "theoretical" group of mothers and should be identical in all characteristics except their exposure to the intervention.

Sampling

The sample was drawn from both of the project regions -- Health Regions 4 and 5 -- as well as from Health Region 7, a control site which is known to be similar to the project area.

For the mothers' survey, respondents consisted of mothers of children six months of age and under. Another caretaker was interviewed only if she had primary responsibility for the child and was familiar with how the child was fed since birth.

The survey of mothers necessitated a fairly large sample, particularly since the expected change in percentage of mothers practicing exclusive breastfeeding was anticipated to be small, and a sufficiently large sample would be needed to statistically detect this effect. The sample size was constrained, however, by logistical and resource considerations. Because the target sample consists of mothers of children up to six months of age, fieldworkers needed to cover a large amount of territory before encountering a suitable respondent. Based on findings of the PROALMA study, it was estimated that a respondent would be found in every 15th to 20th house.¹ Therefore, a considerable amount of fieldwork time would be spent between interviews looking for suitable respondents, meaning that fewer interviews could be accomplished within a reasonable amount of time in the field. The sample for the community study was composed of 706 mothers, 448 from the two project sites, and 258 from the control site.

A multi-stage sampling strategy was employed, with stratification by type of health facility: (1) large urban health center; (2) medium-sized health centers staffed by a doctor and nurse (*Centro de Salud con Medico*, or CESAMO); or (3) small rural health posts staffed by an auxiliary nurse (*Centro de Salud Rural*, or CESAR). These differing health facilities are more fully described in the following chapter, which reports on the survey of health workers. A list of health centers included in this study is found in Appendix III.

¹ Zeldin, L. (1985). "Results of a 1986 baseline evaluation for maternal and child health care with emphasis on breastfeeding: Honduras." Honduras Ministry of Public Health, PROALMA, Wellstart. Tegucigalpa, Honduras.

In each of the three sites, the urban health center was included to insure urban-rural representation: Choluteca for Region 4, Santa Rosa de Copan in Region 5, and Juticalpa in Region 7, the control site. Within each urban area, several neighborhoods were selected at random, and a sample of eligible mothers was interviewed in each neighborhood.

Within each region, approximately 50% of the CESAMOs and 20% of the CESARs were randomly selected in order to disperse the interviews throughout the region. (There are three times as many CESARs as CESAMOs throughout the country.) The catchment area for each health center is comprised of five to fifteen communities. Since no more than 10% of the total number of interviews was to be taken from any one catchment area, two mothers per community were interviewed in the catchment area for CESAMOs and one mother per community was interviewed in the catchment area for CESARs, thus insuring further dispersment of the sample. Most of the sample is rural, as all of the CESARs and many of the CESAMOs are located in rural areas.

The health providers interviewed were associated with the same CESARs and CESAMOs as the sample mothers. For each CESAR and CESAMO selected, all available clinic staff were interviewed. In addition, wherever possible, one midwife was interviewed in each of the selected communities. (Some communities had no midwife.) A more detailed description of the types of health personnel interviewed is found in Chapter II. For the Health Provider study, a total of 446 providers were interviewed, composed of 319 from the project areas and 127 from the control area.

The number of mothers and health workers interviewed from each type of health facility is shown in Table I-1.

Table I-1: Number of Interviews, by Type of Facility²

	# HEALTH WORKERS	# MOTHERS
Urban CESAMO	8% (34)	16% (112)
CESAMO	48% (212)	41% (289)
CESAR	45% (200)	43% (305)
N	446	706

² A more detailed sample description is available from NCP.

II. HEALTH PROVIDER SURVEY

Health providers are the intermediary through which project messages will be disseminated to mothers in the community. Doctors, nurses, and auxiliary nurses will receive training in the importance of breastfeeding and be taught skills for working with mothers to solve the array of problems they may face while breastfeeding. Nurses will then train traditional birth attendants (midwives) in infant feeding so that during midwives' prenatal visits and immediately following delivery, they will work with mothers to encourage exclusive breastfeeding throughout infancy. In this section we report on baseline measures of knowledge of infant feeding among three categories of health providers:

- (1) **Midwives, or traditional birth attendants (TBAs):** TBAs are not formally part of clinic staff, but work in the community and are affiliated with a health center. They normally receive a week of training in midwifery from the Ministry of Health, and obtain periodic follow-up training and supplies at the health center with which they are affiliated.
- (2) **Nurses:** Both professional nurses and auxiliary nurses are included in this group. A professional nurse undergoes from three to five years of training, depending on whether s/he pursues the *Bachiller*, which covers nursing only, or whether s/he obtains a *Licenciatura*, a more academically-oriented degree which encompasses a broader university curriculum equivalent to a Bachelor's degree in the United States. An auxiliary nurse receives one year of training in a nursing school. All types of nurses must complete one year of social service.
- (3) **Doctors:** This group includes doctors at two stages of their careers: those who are performing their one year of required social service but who are not yet board-certified, and those who are already board-certified.

A primary objective of the study is to learn what health workers know and recommend regarding infant feeding. Of particular interest is what proportion of health providers believes that exclusive breastfeeding is ever appropriate and, if so, for how long.

Responses are broken down by type of health provider. Differences in outcome variables among the three groups of health personnel are in most cases tested by the chi-square statistic, since most variables in this study are categorical. For continuous variables the F statistic resulting from an analysis of variance is used to test for differences between means. The customary standard of .05 is used as the criterion level for statistical significance. Rather than simply indicate significance or non-significance based on a cut-off point, however, we report (in the tables) actual probabilities in order to provide more information about how the obtained responses compare.

We have also tested for differences between the project and control groups to check for initial equality of demographic characteristics and outcome indicators. For virtually all variables, the project and control groups were equal. Where differences occur, they are noted in the text; otherwise, project and control groups can be assumed to be equal.

CHARACTERISTICS OF THE SAMPLE

The sample consists of 446 health workers, 319 (71%) of whom work in the project area and 127 (29%) in the control area. Among the three main types of health providers interviewed -- midwives, nurses, and doctors -- 62% are midwives, 29% are nurses and 9% are doctors. Among the nurses, most (92%) are "auxiliary nurses" and the rest (8%) are professional nurses. Among the two types of doctors, 80% are those performing their one year of national service as part of their medical education, and 20% are certified physicians or specialists. Equal proportions of each type of health provider are found in the project and control groups. Table II-1 shows, by project and control area, how many of each type of health provider are included in the survey.

Table II-1: Type of Health Provider, by Group

TYPE OF HEALTH PROVIDER	PROJECT	CONTROL	TOTAL
TBA	62% (199)	61% (77)	62% (276)
Nurse	29% (92)	30% (38)	29% (130)
Doctor	9% (28)	9% (12)	9% (40)
Total	71% 319	29% 127	100% 446

The health providers in this study are associated with three types of government health facilities:

- (1) a CESAR, rural health post staffed only by an auxiliary nurse (with affiliated midwives and other community volunteers working in the catchment area), and offering the most basic health care services;

- (2) a CESAMO, small health clinic staffed by a doctor and 1-3 nurses, with services supplemented by affiliated midwives and other volunteers working in the community;
- (3) and an urban hospital-based CESAMO, usually serving as the outpatient clinic of the Regional hospital, and staffed by nurses and doctors, with supplementary services provided by community workers.

Clearly, because these facilities differ with respect to the configuration of their staffs, the distribution of type of health provider is not equal among facilities. As Table II-2 shows, traditional birth attendants are concentrated in the catchment areas of rural clinics, while doctors are concentrated in the urban and larger clinics. This means that, for the majority of variables where differences by health provider exist, these differences also carry over to differences by type of health facility.

Table II-2: Type of Health Provider, by Facility

TYPE OF HEALTH PROVIDER	URBAN CESAMO	CESAMO	CESAR	TOTAL
TBA	0 (0)	58% (122)	77% (154)	62% (276)
Nurse	71% (24)	28% (60)	23% (46)	29% (130)
Doctor	29% (10)	14% (30)	0 (0)	9% (40)
Total	8% 34	48% 212	45% 200	100% 446

Most of the clinic staff interviewed said that they had received some sort of specialized training in breastfeeding. During the early 1980s, a large-scale breastfeeding promotion project called PROALMA was carried out by the Ministry of Health and other local government agencies with funding from the United States Agency for International Development (USAID). The project aimed to improve maternity-related routines and practices by providing training in breastfeeding for doctors and nurses. (Traditional birth attendants were not included in the PROALMA project.) Seventy-three percent (73%) of those interviewed for the NCP survey said they had received some kind of specialized training course in breastfeeding, and 91% of those indicated that their training was through PROALMA or the Ministry of Public Health. Thirty-nine percent (39%) said they had received training within the past year.

FEEDING RECOMMENDATIONS OF HEALTH PROVIDERS

The major objective of the Nutrition Communication Project in Honduras is to promote *exclusive* breastfeeding until an infant has reached six months of age. This means that a child should receive breastmilk alone -- and no other liquid or food -- until s/he is six months old. Former educational messages disseminated by public health officials concerning infant feeding advocated exclusive breastfeeding until four - six months of age. Because few health workers had learned about the new six-month policy at the time of the baseline, we asked about feeding a three-month old and then about feeding a five-month old infant, with the expectation that, since the intervention had not yet been implemented, considerably more respondents would know the proper feeding according to the "old" four - six month policy. We examined health providers' knowledge of and recommended practices for feeding the newborn, feeding the three-month old child, and feeding the five-month old child in order to monitor changes in health worker knowledge, attitude and practice of infant feeding, while accommodating to changing national norms. Specifically, at the time of the baseline, no health workers could be expected to recommend exclusive breastfeeding until six months because the new norms were just being disseminated. The survey, therefore, was designed to measure "correct" KAP in an environment of changing national policy.

Feeding the Newborn

In order to initiate [ideal] breastfeeding practice (and for the health of the mother), it is recommended that a mother put the infant to the breast within ten minutes of giving birth (*apego precoz*). We asked the respondents "When would you recommend that a healthy mother first breastfeed her newborn child?" Answers were coded into the categories of within 10 minutes, within an hour, within eight hours, within 24 hours, and after 24 hours. Forty one percent (41%) of the health personnel interviewed thought that the child should be put to the breast immediately following delivery. There were very large differences, however, among the three categories of health provider in terms of the proportion recommending *apego precoz*. Only 24% of midwives, compared with 62% of nurses and 85% of doctors, recommended immediate initiation of breastfeeding. Table II-3 shows the distribution of answers regarding recommended timing of first feed by type of health provider.

Although health providers know that an infant should breastfeed, many do not know that absolutely nothing else -- not even water -- should be given until an infant reaches six months of age. We asked health providers whether they thought that a healthy newborn should receive water or sugar water. As Table II-3 shows, responses differed significantly by health provider. Among doctors, 83% correctly said "no," compared with 75% of nurses and 50% of midwives.

Table II-3: Recommended Feeding of the Newborn, by Health Provider

	TBA	NURSE	DOCTOR	TOTAL	p ¹
Timing of First Breastfeed					
● Within 10 minutes	24% (67)	62% (80)	85% (34)	41% (181)	} <.001*
● Within 1 hour	56% (154)	28% (36)	10% (4)	44% (194)	
● Within 8 hours	11% (29)	9% (11)	2% (1)	9% (41)	
● 8 - 24 hours	3% (7)	1% (1)	2% (1)	2% (9)	
● > 24 hours	7% (19)	2% (2)	0	5% (21)	
Shouldn't receive water	50% (137)	75% (98)	83% (33)	60% (268)	<.001*
N	62% 276	29% 130	9% 40	100% 446	

¹ Probability associated with the chi-square statistic

* Significant difference at the .05 criterion level

Feeding up to four months of age

The intent of asking about the feeding of a child up to three months of age was to determine how many health providers had accepted the former standard of exclusive breastfeeding for at least the first four - six months of life. Exclusive breastfeeding is not, however, as simple to measure as might appear. For instance, many liquids are given to an infant as folk remedies, but not considered to be "food". In order to obtain as accurate a measure as possible, we asked a series of questions to ascertain whether the respondent knew that nothing else besides breastmilk should be given. Respondents were asked three questions:

- 1) What liquids do you think an infant of three months should be given?
- 2) Should water or sugar water be given to a three-month old?
- 3) What foods do you think should be given a three-month old child?

The correct answer to the first question asking what liquids a three-month old should receive is "breastmilk" or even "none," for those who might assume that breastmilk is a given. In response to the first question, 74% of the health personnel mentioned some liquid other than breastmilk. (See Table II-4.) This is a very high percentage of health providers who are misinformed about how the young child should be fed. A far greater proportion of midwives than other health providers incorrectly recommended giving some kind of supplemental liquid: 85% of midwives, 58% of nurses, and 57% of doctors.

The second question, "Should water or sugar water be given to a child three months old?" might appear redundant with the first. However, often respondents who give water do not think of it as "giving liquids" to a child, so they might say the child should not be given liquids even though they would give it water. It is therefore important to ask specifically about water. For example, 26% of health providers did not mention any liquids except breastmilk when asked the first question; yet almost half (47%) of them responded "yes" to the second question asking whether water should be given. Only 17% of midwives, 41% of nurses, and 33% of doctors correctly stated that water should not be given to a three-month old.

A very high proportion -- 66% -- of health providers also believes that a three-month old should be eating foods. Again, TBAs were by far the least informed on this matter. Only 20% said a three-month old should not be given foods, compared with 54% of nurses and 65% of doctors.

In order to summarize a health provider's knowledge about correct feeding for a three-month old, a variable was calculated to indicate whether or not the respondent knew that the infant should be given exclusively breastmilk. That is, the respondent had to mention no other liquids than breastmilk, say that water should not be given, and say that no foods should be given. Table II-4 summarizes responses to questions regarding feeding of a three-month old by type of health provider. A very small percentage of health providers overall -- 9% -- met these criteria. Midwives lagged far behind their professional counterparts in this regard, with only 2% giving correct answers, compared with 22% of nurses and 20% of doctors. Even when a less strict definition of exclusive breastfeeding is used -- one which permits water to be given, but not other liquids or foods -- only 17% of health providers (6% of midwives, 32% of nurses, and 42% of doctors) fall into the "correct feeding" category. The data show that the majority of health providers have not accepted the original recommendation to wait until a child is at least four months of age before giving liquids or foods other than breastmilk.

Table II-4: Recommended Feeding for a Three-Month Old, by Health Provider

	TBA	NURSE	DOCTOR	TOTAL	P ¹
Mentions no liquid except breastmilk	15% (42)	42% (55)	43% (17)	26% (114)	< .001*
Would not give water	17% (48)	41% (53)	33% (13)	26% (114)	< .001*
Would not give foods	20% (54)	54% (70)	65% (26)	34% (150)	< .001*
Correct responses to all 3 items	2% (5)	22% (28)	20% (8)	9% (41)	.001*
N	276	130	40	446	

¹ Probability associated with the chi-square statistic

* Significant difference at the .05 criterion level

Feeding from four to six months of age

The same set of three questions as those asked pertaining to three-month olds was asked for the five-month old child, and the same responses are correct. Since the practice of exclusive breastfeeding has only recently been extended beyond the initial recommendation of four months to six, we would expect few health providers to answer correctly this set of questions. Indeed, very few did. As Table II-5 shows, only 5% of all health providers did not mention any liquid other than breastmilk. Again, this figure masks the great differences between type of health personnel; 3% of midwives, 5% of nurses, and 18% of doctors did not mention anything except breastmilk when asked the question, "What liquids do you think one should give to a child five months of age?"

When water was asked about specifically ("Should water or sugar water be given to a child five months of age?") only 7% overall said that water should not be given: 6% of midwives, 8% of nurses, and 18% of doctors.

A very small percentage (6%) of health providers thought that a child of five months should not yet be eating foods. Doctors, again, were best informed on this matter: 20% of them said no foods should be given, compared with 8% of nurses and 4% of midwives.

Given that the percentage of health providers who correctly answered the individual questions was small, the percentage of those who gave correct answers to all three questions on five-month olds was extremely small. Only 4 doctors (10%) and 4 nurses (3%) and none of the TBAs --

or less than 2% of all health providers surveyed – were recommending exclusive breastfeeding for the five-month old. Even with the most strict definition of exclusive breastfeeding, that which accepts giving water, the percentages are small: 1% of midwives, 3% of nurses, and 18% of doctors (3% of all health providers overall). These low figures are to be expected at this time (i.e., at the baseline), as the project messages regarding exclusive breastfeeding up to six months of age have not yet been disseminated.

Table II-5: Recommended Feeding for a Five-Month Old, by Health Provider

	TBA	NURSE	DOCTOR	TOTAL	p ¹
Mentions no liquid except breastmilk	3% (9)	5% (7)	18% (7)	5% (23)	.001*
Would not give water	6% (16)	8% (10)	18% (7)	7% (33)	.032*
Would not give foods	4% (10)	8% (10)	20% (8)	6% (28)	<.001*
Correct responses to all 3 items	0 (0)	3% (4)	10% (4)	2% (8)	<.001*
N	276	130	40	446	

¹ Probability associated with the chi-square statistic

* Significant difference at the .05 criterion level

INTRODUCTION OF LIQUIDS AND SOLIDS

We asked health providers at what age they would recommend the introduction of water or sugar water, the introduction of other liquids, and the introduction of semi-solid foods. We also asked at what age they would recommend the cessation of breastfeeding altogether.

When health providers were asked the correct age to introduce water to the infant, three months was the mean, median and mode age named. TBAs tended to believe that the child should be given water earlier than did nurses, and doctors generally named later ages. As Table II-6 shows, the mean age recommended for the introduction of water is 2.8 months for midwives, 3.3 months for nurses, and 4.0 months for doctors. Although these averages appear to be close to the initial recommendation to begin supplementary liquids and foods at four months of age, the relatively large standard deviations indicate the very wide variation of responses obtained, which ranged from one week to sixteen months. Sixty-four percent (64%) thought that the child needed water before four months of age, and, inexplicably, 13% named an age of six months or older.

Table II-6: Mean Age (in months) to Introduced Water, Other Liquids, & Food, by Health Provider

	TBA		NURSE		DOCTOR		TOTAL		p ¹
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
Age to introduce water	2.8	2.3	3.3	2.3	4.0	2.9	3.1	2.3	.006*
Age to introduce other liquids	4.4	2.4	4.5	2.1	4.7	2.1	4.4	2.3	.647
Age to introduce foods	4.8	2.8	4.9	1.6	4.9	1.5	4.9	2.4	.965
N	276		130		40		446		

¹ Probability associated with the F statistic (analysis of variance)

* Significant difference at the .05 criterion level

Health personnel were also asked at what age they would introduce other liquids (i.e., liquids other than water). As Table II-6 shows, they generally believed that other liquids should be introduced at a later age than water. The mean age named is 4.4 months, the median 4, and the mode is 6. The responses did not differ significantly by health provider; the mean age recommended for the introduction of other liquids is 4.4 months for midwives, 4.5 months for nurses, and 4.7 months for doctors. Again, although it appears from the means that health providers are following the former recommendation of introducing supplementary liquids after four months of age, the large standard deviations demonstrate that responses diverged considerably. In fact, 36% named an age less than four months as the ideal time to begin giving the infant liquids and, surprisingly, 34% named an age of six months to eighteen months.

The responses for the introduction of semi-solid foods closely resemble those for giving supplementary liquids. The mean response is 4.9 months, the median 4 months, and the mode 6 months. As Table II-6 shows, there is no significant difference in response by health provider; the mean age recommended by midwives is 4.8, by nurses is 4.9, and by doctors 4.9 months. Again, the standard deviations indicate a wide range of responses: 30% thought that foods should be introduced before the age of four months and 37% named an age from six to eighteen months. As the standard deviations also show, there is generally more consensus among doctors and nurses than among TBAs regarding the age to begin giving liquids and foods.

DURATION OF BREASTFEEDING

The Honduran Ministry of Public Health recommends that a child be breastfed for two years. We asked respondents at what age they recommend *destete*, or cessation of breastfeeding. Calculating the mean duration recommended was not particularly meaningful since 22% answered "until the child stops" or "until the mother no longer has milk." Interestingly, these were the much more common responses for nurses than for other health providers; 46% of nurses responded in this way, compared with 11% of TBAs and 18% of doctors. Apparently nurses tended to feel that duration of breastfeeding is determined by factors outside of the mother's control, such as a child rejecting the breast or the cessation of milk production. By converting responses to time categories, as in Table II-7, it can be shown that there are significant differences among health providers in recommended weaning age. Midwives recommended breastfeeding for longer periods than did nurses or doctors. This is the only question to which midwives tended to give better answers than did their professional counterparts.

Few health providers gave the sought-for answer of 24 months or more. Only about 10% of each type of health provider gave this response.

Table II-7: Recommended Weaning Age, by Health Provider

	TBA	NURSE	DOCTOR	TOTAL	p ¹
Within 1 year	18% (49)	12% (15)	25% (10)	17% (74)	} <.001*
12 - 17 months	51% (141)	31% (40)	45% (18)	45% (199)	
18 - 23 months	10% (27)	3% (4)	3% (1)	7% (32)	
24+ months	10% (28)	9% (11)	10% (4)	10% (43)	
Until child stops	9% (26)	43% (56)	18% (7)	20% (89)	
As long as milk lasts	2% (5)	3% (4)	0 (0)	2% (9)	
N	276	130	40	446	

¹ Probability associated with the chi-square statistic

* Significant difference at the .05 criterion level

OTHER KNOWLEDGE QUESTIONS

A series of questions related to lactation, breastfeeding technique, and infant feeding was asked of all health providers. In this section, each question and frequency of correct response is taken in turn. Then, the number of correct responses was combined into a knowledge index in order to obtain an idea of the extent to which each type of health provider is knowledgeable overall about various aspects of breastfeeding. Part of the series of knowledge questions is in "true-false" form. In these, a statement was read, and the respondent was asked to indicate whether s/he agreed with the statement, disagreed with it, or did not know. After that set of eight questions, several other questions were asked. Table II-8 summarizes, for each item, the percentage of respondents giving a correct response.

A mother who does not produce enough milk should put the child to the breast more frequently. (True)

The purpose of this item is to determine if health workers know that it is the child's sucking action which stimulates the production of milk, and that the volume of milk can be maintained by frequent feeds. The vast majority of respondents (93%) did agree with this statement, although there were differences by health provider. Virtually all nurses and doctors agreed with the statement, while 90% of TBAs agreed with it.

During the first days of life, the infant needs only colostrum and nothing else to satisfy it. (True)

Overall, 70% of health personnel agreed with this statement, although there were large differences in response by type of provider. Only 59% of midwives agreed, compared with 83% of nurses and 98% of doctors. The proportions of correct responses to this question are somewhat higher than the proportions who said they would not give water to the newborn (see Table II-3); apparently some respondents feel that giving water is not "giving anything."

Cow's milk or canned milk is as good as mother's milk. (False)

The great majority (92%) of clinic staff recognized that no other milk equals mother's milk. All of the nurses and 95% of the doctors correctly identified the statement as false; however, 13% of midwives did not, and need to be educated in this regard.

A poor or malnourished mother can feed her infant breastmilk alone, without any supplementary foods. (True)

In pre-project focus groups the idea was frequently voiced that women in Honduras are too poorly nourished to practice exclusive breastfeeding – that somehow the quantity or quality of their milk would be insufficient to sustain the young infant. Indeed, the survey data show that most midwives also believe that breastmilk alone is not sufficient; only 20% of them agreed with the statement. This compares with 55% of nurses and 70% of doctors.

A newborn needs water in addition to breastmilk in order to quench its thirst. (False)

The inaccurate belief that infants need water is widely held among midwives. Only 30% of them disagreed with the statement, compared with 72% of nurses and 83% of doctors. In the earlier section asking about feeding the newborn, approximately the same percentages of nurses and doctors (75% and 83% respectively) stated that they would not give water; midwives, however, are less consistent in their response, as 50% had earlier indicated they would not give water and now only 30% suggest they would not do so.

A breastfeeding infant needs more frequent feeds than does an infant fed with cow's milk. (True)

Breastmilk is more easily digestible than other milk, and therefore must be given at more frequent intervals than other milks. Some mothers or health workers may interpret the more frequent feeds needed by a breastfeeding infant as indicative of its being unsatisfied. Roughly equal proportions (55%) of midwives, nurses, and doctors agreed with the statement. Therefore, almost half of health providers need to be better informed about the differences in feeding patterns between breastfed and bottlefed infants.

A mother with inverted nipples will not be able to breastfeed her child. (False)

If nipples are properly prepared during pregnancy, inverted nipples can be corrected and breastfeeding can proceed normally. Fewer midwives (52%) than nurses (71%) or doctors (75%) knew that this condition can be corrected.

Why do you think a mother can get sore nipples?

The project will attempt to teach that sore nipples often can be avoided or corrected if the child is positioned properly at the breast. In other words, in many cases sore nipples need not present an obstacle to successful breastfeeding. The data show that only 2% of midwives, 8% of nurses, and 25% of doctors named the child's position at the breast as a cause of sore nipples. The most frequently cited reason was lack of hygiene, mentioned by 32% of personnel. Furthermore, 20% of midwives attributed soreness to the folk belief *fuego en la boca* or fire in the mouth -- a belief that the infant's gums, being hot, irritate the mother's nipples, causing cracking and bleeding.

What are the benefits of breastfeeding?

Respondents were asked what the benefits of breastfeeding are, and were permitted to name more than one response. The top three benefits cited were "nutritional" (cited by 66%), "better growth/development" (63%), and "protection/first vaccination" (62%). Table II-9 shows, in descending order of frequency, the proportion of each type of health provider who cited a given benefit. An extremely important benefit "undercited" particularly by TBAs is the hygienic properties of breastfeeding, mentioned by only 17% of midwives. Children given exclusively breastmilk are known to have significantly fewer cases of diarrhea because they are less exposed to disease-causing bacteria introduced by bottles. The contraceptive effects of exclusive breastfeeding during the early months are noticeably low on the list.

Doctors and nurses tended to name more benefits than did midwives; they named an average of 4-5 benefits each, compared with 2-3 named by midwives.

Do you think a child should receive ONLY breastmilk, and no other liquid or food, until six months of age?

This question gets directly to the point to assess the extent to which health providers already accept the new breastfeeding standard. Given responses to previous items, a surprisingly large percentage answered "yes" to this question: 20% of midwives, 31% of nurses, and 53% of doctors. Most of these affirmative answers contradict responses to prior items asking specifically about giving water, liquids, and foods for children under six months of age. It is probable that the other items are more reliable and valid than this, since they ask separately about the kinds of things that an infant might be given. As noted earlier, for example, people do not tend to consider giving water as "giving" anything. Recall that only 2% of health providers thought that a five-month old should be given breastmilk alone when separate questions were asked about giving water, other liquids and foods.

Table II-8: Percent of Correct Responses to Knowledge Questions, by Health Provider

ITEM	TBA	NURSE	DOCTOR	TOTAL	P ¹
Correct feeding for 3-month old	2% (5)	22% (28)	20% (8)	9% (41)	.001*
Correct feeding for 5-month old	0% (0)	3% (4)	10% (4)	2% (8)	<.001*
Introduce water after 6 months	12% (32)	13% (17)	25% (10)	13% (59)	.065
Introduce other liquids after 6 months	34% (93)	31% (40)	48% (19)	34% (152)	.145
Introduce foods after 6 months	35% (97)	40% (52)	43% (17)	37% (166)	.493
Breastfeed for 24+ months	10% (28)	9% (11)	10% (4)	10% (43)	.863
More frequent feeds produce more milk (T)	90% (248)	99% (128)	98% (39)	93% (415)	.021*
Newborn needs only colostrum (T)	59% (163)	83% (107)	98% (39)	70% (309)	<.001*
Cow's milk as good as mother's milk (F)	87% (239)	100% (130)	95% (38)	92% (407)	.001*
Poor mothers can breastfeed (T)	20% (54)	55% (72)	70% (28)	35% (154)	<.001*
Newborn needs water (F)	30% (83)	72% (93)	83% (33)	47% (209)	<.001*
Breastfed child needs more frequent feeds (T)	53% (147)	59% (77)	53% (21)	55% (245)	.204
Mothers with inverted nipples won't be able to breastfeed (F)	52% (144)	71% (92)	75% (30)	60% (266)	.002*
Names "position" as cause of sore nipples	2% (6)	8% (10)	25% (10)	6% (26)	<.001*
Names 3 or more benefits of breastfeeding ³	49% (134)	85% (111)	88% (35)	63% (280)	<.001*
Says infant can be given only breastmilk until 6 months	20% (55)	31% (40)	53% (21)	26% (116)	<.001*
Knowledge Score	5.5	7.4	8.4	6.3	<.001* ²
Standard Deviation	1.9	2.2	2.6	2.0	
N	276	130	40	446	

¹ Probability associated with the chi-square statistic

² Probability associated with the F statistic (analysis of variance)

³ See Table II-9 for a breakdown of benefits cited

* Significant difference at the .05 criterion level

Table II-9: Benefits of Breastfeeding Cited, by Health Provider

BENEFIT	TBA	NURSE	DOCTOR	TOTAL	p ¹
Nutritional	66% (183)	64% (83)	73% (29)	66% (295)	.597
Growth	69% (190)	54% (70)	53% (21)	63% (281)	.005*
Immunological	51% (142)	78% (101)	88% (35)	62% (278)	<.001*
Economic	22% (61)	73% (95)	70% (28)	41% (184)	<.001*
Convenience	15% (42)	47% (61)	50% (20)	28% (123)	<.001*
Hygienic	17% (46)	45% (58)	43% (17)	27% (121)	<.001*
Bonds mother-child	10% (28)	29% (37)	60% (24)	20% (89)	<.001 ²
Child spacing	7% (18)	16% (21)	13% (5)	10% (44)	.008*
Physiological	5% (14)	12% (16)	25% (10)	9% (40)	.001*
Mean # benefits cited	2.6	4.2	4.7	3.3	<.001 ²
N	276	130	40	446	

¹ Probability associated with the chi-square statistic

² Probability associated with the F statistic (analysis of variance)

* Significant difference at the .05 criterion level

Knowledge score

In order to summarize the level of knowledge about breastfeeding represented by the series of questions in the survey, an additive scale was devised. The above-described sixteen items are included in the scale. A "point" was given when answers met the following criteria:

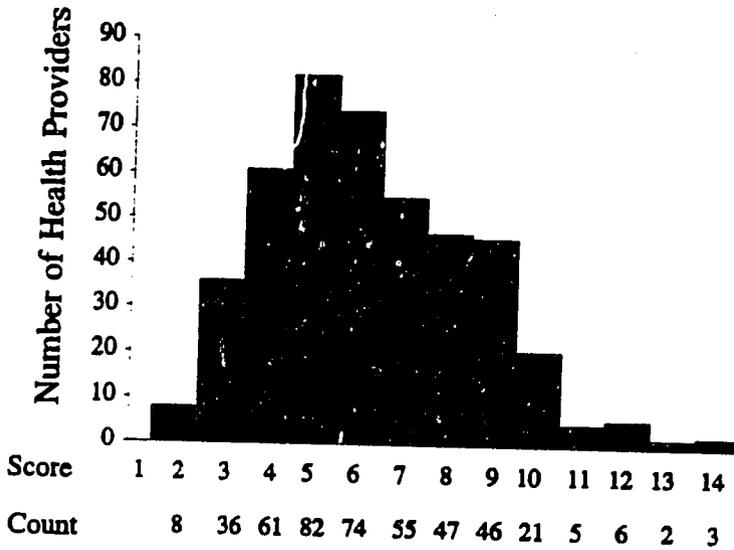
ITEM	CORRECT RESPONSE
Feeding for 3-mo old	only breastmilk
Feeding for 5-mo old	only breastmilk
Age for introducing water	6 months or older
Age for introducing other liquids	6 months or older
Age at which first foods be given	6 months or older
Duration of breastfeeding	2 years or more
More frequent feeds produce more milk	true
Newborn needs only colostrum	true
Cow's milk same as mother's milk	false
Poor mothers can breastfeed	true
Newborn needs water	false
Breastfed child needs more frequent feeds	true
Mother with inverted nipples can't breastfeed	false
Why mothers get sore nipples	position of child
What are benefits of breastfeeding	names 3 or more
Exclusive breastfeeding till 6 mos	yes

The highest possible score on the knowledge scale is 16. Figure II-1 depicts the distribution of the score for the total group, which approximates a normal curve. Scores range from two to fourteen correct answers per person, with a mean score for the total group of 6.3 points and a standard deviation of 2.3.

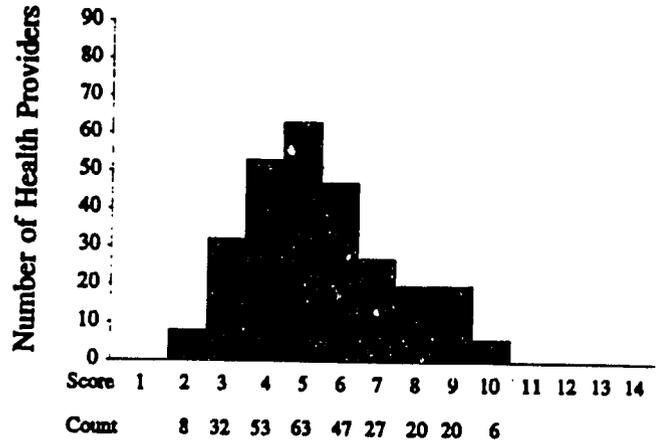
Figure II-1 also shows the distribution of knowledge scores for each type of health provider. Scores differed significantly by type of health provider. Midwives scored the lowest, with a mean score of 5.5 (SD 1.9). Nurses scored 7.4 (SD 2.2), and doctors achieved the highest score with 8.4 (SD 2.6). There is no difference in score between the project and control communities; both scored very close to the mean. It is hoped that when these measures are taken again after the intervention has been in place for at least a year, scores in the project communities will increase substantially.

Figure II-1: Distribution of Health Providers' Knowledge Score

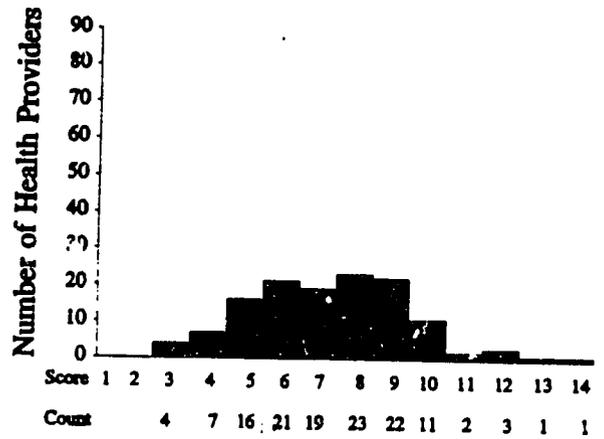
Total Sample



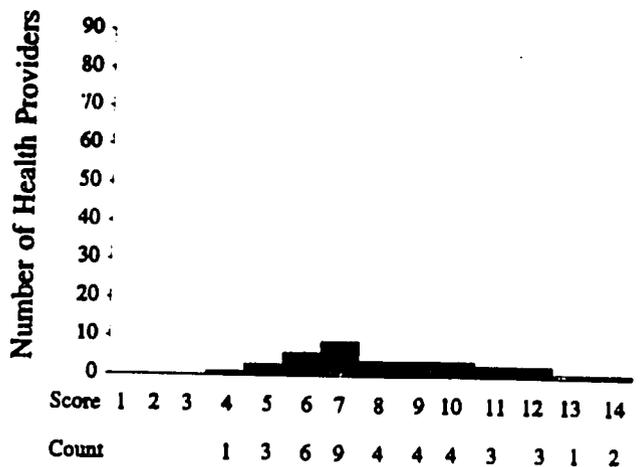
Midwives



Nurses



Doctors



EDUCATIONAL RESOURCES AVAILABLE FOR HEALTH PROVIDERS

Health providers reported that they had relatively few educational materials available to them regarding breastfeeding. They were asked specifically whether they had any flip charts, brochures, and posters in their health center. The question makes no distinction between materials designed to train health personnel themselves and materials they can use in teaching mothers. As Table II-10 shows, few health providers have material on breastfeeding: 12% said they had brochures, and 12% had some kind of poster; 7% reported having a flip chart. Respondents were also asked which materials they used most; they tended to say that they used whatever material they had.

Table II-10: Types of Materials Available, by Health Provider

MATERIAL	TBA	NURSE	DOCTOR	TOTAL	p ¹
Flip Chart	0 (1)	10% (13)	43% (17)	7% (31)	< .001*
Brochures	3% (8)	27% (35)	23% (9)	12% (52)	< .001*
Posters	2% (5)	29% (38)	23% (9)	12% (52)	< .001*
N	276	130	40	446	

¹ Probability associated with the chi-square statistic

* Significant difference at the .05 criterion level

Only eight out of the 276 midwives reported having didactic materials on breastfeeding available to them. This is not surprising, since midwives work in the community, and each would have to have her own materials to use -- in contrast to health center personnel who can share the same poster or flip chart. Small rural CESARs do not have the resources of the urban clinics or the larger CESAMOs, for, as Table II-11 shows, there are differences in availability of materials by type of health center. Flip charts are not found in the CESARs, and only 9% of CESARs have any kind of brochures. About 12% of all types of health centers have posters on breastfeeding.

Table II-11: Types of Didactic Materials Available, by Type of Facility

MATERIAL	URBAN CESAMO	CESAMO	CPSAR	TOTAL	p¹
Flip Chart	18% (6)	12% (25)	0	7% (31)	<.001*
Brochures	15% (5)	14% (29)	9% (18)	12% (52)	.284*
Posters	9% (3)	13% (28)	11% (21)	12% (52)	.601*
N	34	212	200	446	

¹ Probability associated with the chi-square statistic

* Significant difference at the .05 criterion level

Materials have been developed by project staff for use in training health providers and in assisting them to communicate with mothers. The "post" administration of this survey will assess the extent to which materials have been distributed to and utilized by health providers in their work with mothers.

SUMMARY

The Honduras Nutrition Communication Project will train health providers at all levels in the importance of breastfeeding and give them skills to encourage mothers to give their infants only breastmilk until six months of age. Former educational messages regarding infant nutrition advocated exclusive breastfeeding until four to six months of age. According to a strict definition of exclusive breastfeeding -- breastmilk alone, without any other food, water, or other liquid -- only a small proportion of the health providers sampled has adopted this initial (four-month) recommendation: 2% of midwives, 22% of nurses and 20% of doctors. Particularly problematic is the idea that the very young child needs water, but even if the definition of exclusive breastfeeding were modified to permit the giving of water, only 6% of TBAs, 32% of nurses, and 43% of doctors are currently recommending waiting until four months to begin supplementary liquids and foods.

The great majority of health providers know that breastmilk is superior to cow's milk (92%), and they know that more frequent feeds produce more breastmilk (93%). Only about 1/3 of them know that poor mothers are capable of sustaining their infants on breastmilk alone. The data suggests that skills in overcoming breastfeeding problems may be weak, as only 60% of

health providers knew that inverted nipples can be corrected, and only 6% thought of improper positioning of the infant at the breast as a cause of sore nipples.

Among the three types of health providers included in this baseline study -- doctors, nurses, and midwives -- the latter group is especially weak in its knowledge of correct infant feeding practices.

The survey found that health providers have few educational materials about breastfeeding at their disposal. Most educational materials are located in the larger health centers (CESAMOs). Materials are particularly scarce in the rural health posts (CESARs), and virtually no midwives had teaching materials available to them.

III. SURVEY OF MOTHERS

INTRODUCTION

The survey of mothers of infants under six months of age was designed primarily to measure knowledge of infant feeding and to document feeding practices. Of particular interest was the extent to which exclusive breastfeeding is practiced. The Honduras Nutrition Communication Project will promote exclusive breastfeeding until an infant reaches six months of age; former health communication programs had advocated exclusive breastfeeding up to *four* months of age. It was assumed that few, if any, mothers would know about the new six month standard at this time, before implementation of the project. It is hoped that when the survey is re-administered after the project, it will show that some portion of mothers has learned about the new standard.

The survey asks each mother what her infant is currently being fed, and also asks what the infant was given during its first three days of life. Because what a mother knows about feeding and what she actually does may not be the same, a separate section of the survey assesses the mother's knowledge of breastfeeding and weaning. Another section looks at the mother's utilization of health care services as well as access to communication media, as both will be vehicles for carrying project messages to the community. Some basic demographic information is collected as well. This chapter begins with a description of the demographic characteristics of mothers in the sample and is followed by a description of infant feeding patterns, mothers' knowledge of various aspects of infant feeding, and then their contact with electronic media and with health workers.

DEMOGRAPHIC CHARACTERISTICS OF SAMPLE MOTHERS

Tables III-1 and III-2 show the demographic and socioeconomic characteristics of the women in the sample -- mothers of infants under six months of age. The average age of sample mothers is 26, and most have three to four children. Level of schooling is low, with project mothers averaging 3 1/2 years of school and control mothers completing about 4 1/2 years of schooling. A fairly high proportion of mothers -- approximately three-quarters -- say they know how to read. Few are employed outside the home -- approximately 5%.

Table III-1: Demographic Characteristics of Sample Mothers, by Group

	PROJECT	CONTROL	TOTAL	P
Age	25.5 years	25.5 years	25.5 years	.912 ¹
# of living children	3.4 children	3.5 children	3.4 children	.590 ¹
# years of school	3.5 years	4.4 years	3.8 years	.001 ^{1*}
Knows how to read	75% (338)	77% (198)	76% (536)	.698 ²
Employed	4% (16)	6% (16)	5% (32)	.106 ²
N	448	258	706	

¹ Probability associated with the t-statistic

² Probability associated with the chi-square statistic

* significant difference at the .05 criterion level

The largely rural and impoverished nature of the sample is shown by the basic socioeconomic indicators included in the study. About 3/4 of the women live in a home with a dirt floor. Thirty-eight percent (38%) use a latrine as a sanitary facility, and another 55% have no sanitary facilities. More than half of the women (54%) obtain their water for drinking and household use from a river, creek, or well. Only 31% have an indoor faucet.

As Table III-3 shows, home births are common among the sample women: 60% delivered at home with the assistance of a midwife, and another 7% delivered at home without the assistance of any health provider. Twenty-seven percent (27%) gave birth in the Regional Public Hospital. Very few (4%) were attended by a private physician. These results concur with those of the National Epidemiology and Family Health Survey of 1987, which found that home births accounted for 60% of all births.³

³ *Epidemiology and Family Health Survey*. Honduran Ministry of Health, Management Sciences for Health, Association for Family Planning in Honduras (ASHONPLAFA) and Family Health International, Honduras, 1987.

Table III-2: Socioeconomic Characteristics of Sample Mothers, by Group

	PROJECT	CONTROL	TOTAL	P ¹
Type of Floor				
• Dirt	73% (325)	72% (186)	73% (511)	} .860
• Other	27% (122)	28% (72)	28% (194)	
Sanitary Facilities				
• Toilet	4% (17)	14% (35)	7% (52)	} < .001*
• Latrine	36% (162)	40% (103)	38% (265)	
• None	60% (269)	47% (120)	55% (389)	
Source of Water				
• River, Creek, Well	56% (29)	50% (130)	54% (379)	} .224
• Public Faucet	14% (63)	19% (48)	16% (111)	
• Indoor	30% (136)	31% (80)	31% (216)	
N	448	258	706	

¹ Probability associated with the chi-square statistic

* Significant difference at the .05 criterion level

Table III-3: Place of Delivery, by Group

	PROJECT	CONTROL	TOTAL	P ¹
Home without midwife	7% (32)	8% (20)	7% (52)	} P = .001
Home with midwife	64% (286)	52% (135)	60% (421)	
Regional public hospital	24% (107)	32% (83)	27% (190)	
Private hospital	3% (12)	2% (5)	2% (17)	
Other	2% (11)	6% (15)	4% (26)	
N	448	258	706	

¹ Probability associated with the chi-square statistic

* Significant difference at the .05 criterion level

CURRENT FEEDING PRACTICES

Feeding during the first three days of life

The survey asks about feeding during the first three days of the child's life since that is the time when breastfeeding should be established, and since it is known that there are certain practices particular to Honduras regarding the feeding of the newborn.

Virtually all mothers -- 99% -- had their newborns with them during the first three days of life and therefore could oversee the feeding of their infants. (Those who did not have their newborns with them were mostly mothers who had delivered by cesarian section.) The vast majority of mothers who had their newborns with them -- 96% -- breastfed their infants during the first three days of life.

About 77% of mothers, however, also gave the infant something besides breastmilk during the first three days. Table III-4 and Figure III-1 shows the proportion of mothers who gave

breastmilk as well as other things. About half (51%) gave *chupones* to the newborn. A *chupon* is any combination of herbs wrapped in cheese cloth, dipped in water and squeezed into the infant's mouth. The *chupon* is given for such reasons as to make the infant even-tempered or to clean out the infant's intestines. The practice can be dangerous because of the potential for introducing bacteria from the cloth or the unboiled water, or for introducing harmful ingredients. A greater proportion of project than control mothers gave a *chupon*, at comparative rates of 56% and 44%.

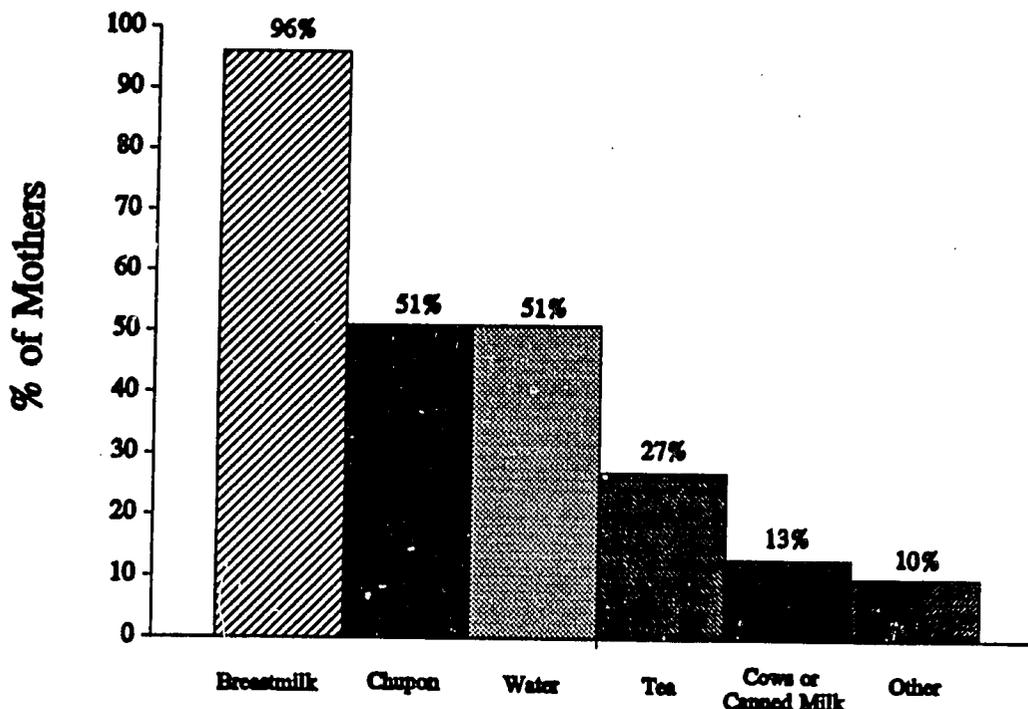
Table III-4: Foods Given to the Newborn, by Group
% of mothers giving various foods to the 0-3 day old infant

FOOD GIVEN	PROJECT	CONTROL	TOTAL	p ¹
Breastmilk	96% (423)	97% (247)	96% (670)	.489
Chupon	56% (248)	44% (111)	51% (359)	.002*
Water/ Sugar water	53% (233)	48% (122)	51% (355)	.258
Tea	24% (104)	33% (83)	27% (187)	.012*
Milk	13% (56)	14% (36)	13% (92)	.661
Other substances	7% (33)	13% (34)	10% (67)	.016*
N	448	258	706	

¹ Probability associated with the chi-square statistic

* Significant difference at the .05 criterion level

Figure III-1: Foods Given to the Newborn
% of mothers giving various foods to the 0-3 day old infant



About half (51%) of the mothers reported giving water or sugar water during the first three days of life, and 27% reported giving teas during that period. A greater proportion of control mothers (33%) gave tea than did project mothers (24%). Ten percent (10%) reported giving other substances such as corn starch, chocolate, various oils as purges, mashed potatoes, or herbs. But the substance most often mentioned was oral rehydration solution, perhaps because the loose stools during the first three days resemble diarrhea.

Breastfeeding practices

Initiation of breastfeeding: As indicated earlier, 96% of mothers initiated breastfeeding within the infant's first three days of life. Another 4% did breastfeed after that period, meaning that nearly all mothers have breastfed their infants.

The recommended practice is to put the child to the breast as soon as it is born (*apego precoz*). Honduran custom leaves room for improvement in this regard: 8% of mothers breastfed within

ten minutes after giving birth, 43% (cumulatively) within the first hour, 67% within the first eight hours and 78% in the first 24 hours post-partum. Twenty-two percent (22%) initiated breastfeeding more than 24 hours after giving birth. It may be recalled that 85% of health providers recommend giving the breast within one hour of delivery; since only 43% of mothers report actually doing so, it appears that health providers are either not communicating with mothers or they are not doing so in a convincing manner.

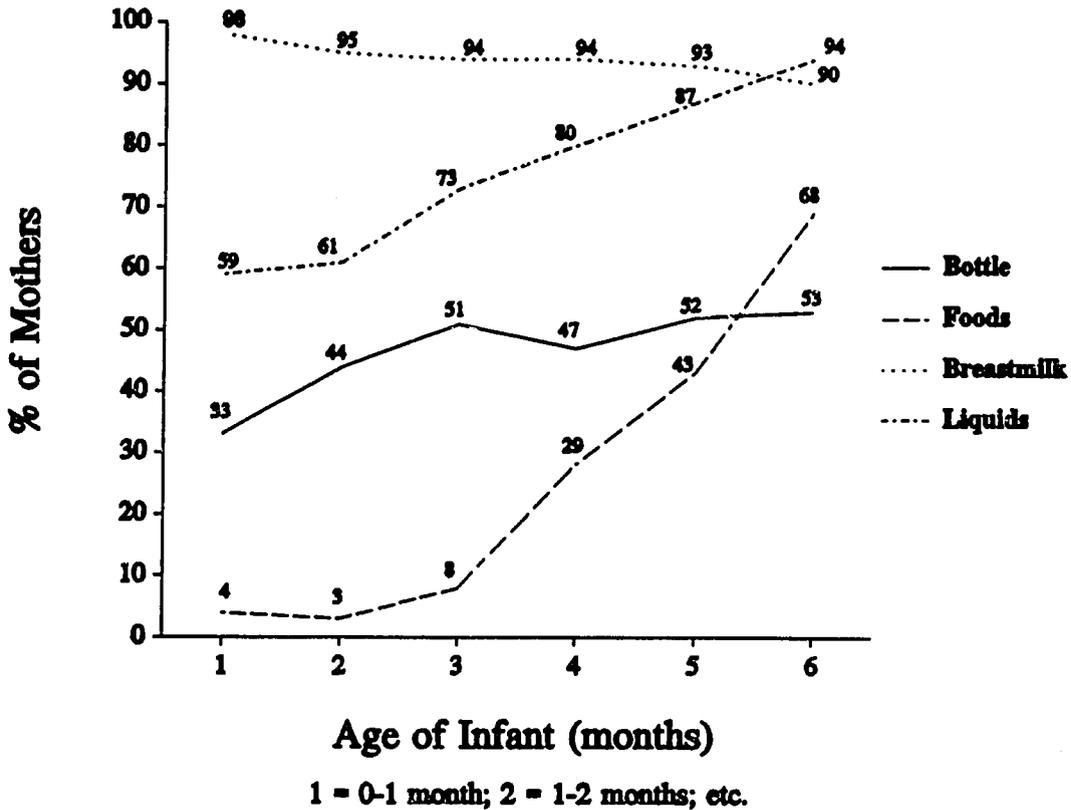
Duration: A very high proportion of mothers continues to breastfeed throughout their child's first six months of infancy. According to an analysis by monthly age cohorts (see Table III-5 and Figure III-2), 90% of infants in the 5-6 months cohort are still breastfeeding; overall, 95% of all sample infants are breastfeeding. The sample includes only infants up to six months old; however, we asked mothers how long they planned to breastfeed and they replied that, on average, they planned to breastfeed for 15 months.

Table III-5: Infant Feeding, by Age
% being fed breastmilk, other liquids, and foods

	AGE IN MONTHS						TOTAL
	1*	2	3	4	5	6	
Exclusively breastmilk	40% (57)	37% (40)	25% (27)	18% (19)	13% (13)	5% (7)	23% (163)
Breastmilk	98% (140)	95% (103)	94% (101)	94% (101)	93% (94)	90% (125)	94% (664)
Liquids	59% (84)	61% (66)	73% (78)	80% (85)	87% (88)	94% (130)	75% (531)
● Milks	22% (32)	22% (24)	38% (41)	28% (30)	38% (38)	39% (54)	31% (219)
● Water	40% (57)	40% (43)	51% (55)	56% (60)	75% (76)	83% (115)	58% (406)
● Teas	9% (13)	10% (11)	7% (7)	7% (7)	4% (4)	10% (14)	8% (56)
● Other liquid	11% (15)	17% (18)	25% (27)	16% (17)	28% (27)	29% (40)	20% (144)
Foods	4% (5)	3% (3)	8% (9)	29% (29)	43% (43)	69% (96)	27% (187)
N	143	108	107	107	101	139	705

* 1 = 0-1 months; 2 = 1-2 months, etc.

Figure III-2: Infant Feeding, by Age
% given breastmilk, other liquids, foods, and bottle

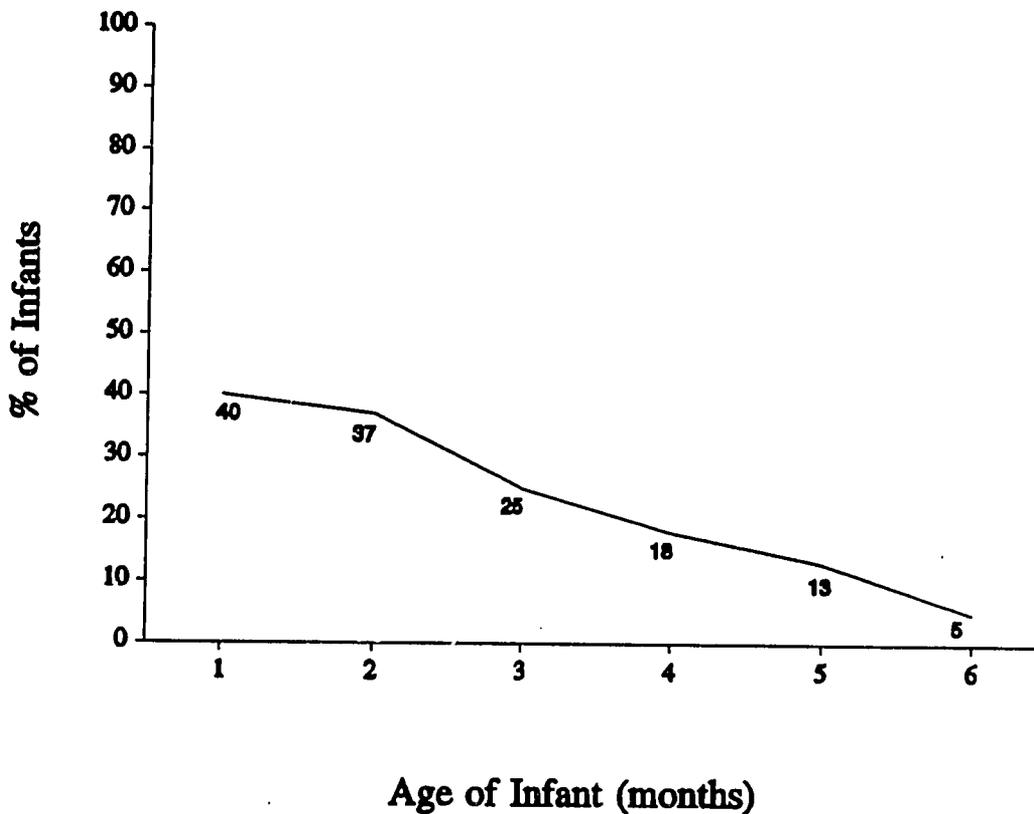


Frequency of breastfeeding: Mothers breastfeed frequently, averaging 9.6 times in a 24-hour period. Number of feeds per day was not affected by whether the child had diarrhea or whether its nose was stuffed from a cold or flu. This is positive, as it indicates that mothers continue breastfeeding when a child is sick, thus providing the child with nutritional benefits to help fight the illness.⁴

⁴ In a related analysis, we looked at incidence of diarrhea and of respiratory illness (specifically, whether the child had a stuffed nose) and its relation to exclusive breastfeeding. We would have expected a lower incidence of illness among children fed only breastmilk. However, no relationship was found; 23% of children given exclusively breastmilk and 22% of those given complementary liquids or foods had had diarrhea on the day prior to the interview. Similarly, the incidence of stuffed noses was the same for the two groups: 53%.

Exclusive breastfeeding: Although breastfeeding is common, *exclusive* breastfeeding -- without any other supplemental liquid or food -- is not nearly as commonly practiced. In order to measure exclusive breastfeeding, mothers were asked what they had given their child in the 24 hours prior to the interview. Specifically, they were asked, "Did you give cow's milk?", "Did you give water?", etc. According to this measure, the proportion of infants given only breastmilk drops from 40% of those less than one-month old, to 18% of four-month olds, to 5% of six-month olds. (See Table III-5 and Figure III-3). Overall, 23% of infants under six months of age are fed exclusively breastmilk, with no difference between project and control groups.

Figure III-3: Exclusive Breastfeeding, by Age
% fed breastmilk only



1 = 0-1 month; 2 = 1-2 months; etc.

Because of the way exclusive breastfeeding was measured, the figures on this variable may be slightly conservative. For example, mothers who gave teas were considered "non-exclusive"

breastfeeders; yet over half who gave tea said they did so as a "remedy," meaning that they may not give tea routinely. In any event, if this were the case, the proportion of exclusive breastfeeders would increase by only a few percentage points.

Reasons for not breastfeeding: The few mothers who had never breastfed (less than 1%) cited illness, working outside the home, and no milk let-down as reasons for not breastfeeding. Among the 5% of women who initiated breastfeeding but stopped, most cited physical inability or the infant's desire to stop: their milk dried up (37%) or their breastmilk was not sufficient to fill the infant (3%); the infant did not want to breastfeed (23%); they needed to work or study (14%); or they were ill (11%).

Introduction of other liquids and foods

In order to document feeding patterns, each mother was asked to report everything her child ate or drank the previous day. The principal objective was to determine whether the infant was being given supplementary liquids and/or foods. Table III-5 and Figure III-2 show, for each monthly age cohort, the proportion of infants being given breastmilk, other liquids, and foods.

Mothers reported that liquids (other than breastmilk) are given from a very early age. By the age of one month, nearly 60% are already being given some kind of liquid, a figure which increases to 80% of four-month olds and 94% of six-month olds. Water is the most common liquid given.

Foods are generally introduced at a later age than liquids. A small percentage of infants (less than 8%) are given foods before they reach three months of age, but after that age, the figure climbs quickly -- to 29% of four-month olds, 43% of five-month olds, and 69% of six-month old infants.

Among mothers who gave other liquids, 62% gave them in bottles; this translates into 46% of all infants in the sample being given a bottle. The extent of bottle use differs somewhat between project and control regions: 42% of mothers in the project communities and 52% in the control regions gave bottles to their infants under six months of age. Figure III-2 shows the proportion of bottlefed infants for each monthly age cohort. Of those mothers who give other liquids to their infants, 80% report they were never told not to use bottles, and among those mothers advised not to use bottles, 64% report they gave their children bottles.

A breakdown of the above-described feeding variables by project and control groups is found in Table III-6.

In order to enable comparability of data with the National Epidemiology Survey, the feeding data are also broken down by the categories they use, which are: exclusive breastfeeding; breastfeeding and other milks; breastfeeding and other liquids (excluding milks) or foods; breastfeeding and other milks and liquids or foods. These breakdowns are found in Table III-7.

Table III-6: Infant Feeding, by Group
% being fed breastmilk, other liquids, and foods

	PROJECT	CONTROL	TOTAL	P ¹
Exclusively breastmilk	23% (103)	23% (60)	23% (163)	1.00
Breastmilk	95% (425)	93% (240)	94% (665)	.400
Liquids	76% (340)	74% (192)	75% (532)	.729
• Milks	26% (115)	40% (104)	31% (219)	<.001*
• Water	61% (274)	52% (133)	58% (407)	.013*
• Teas	6% (28)	11% (29)	8% (57)	.019*
• Other liquid	22% (97)	18% (47)	20% (144)	.269
Foods	25% (114)	23% (74)	27% (188)	.349
N	448	258	706	

¹ Probability associated with the chi-square statistic

* Significant difference at the .05 criterion level

KNOWLEDGE OF INFANT FEEDING

Mothers were asked a series of questions regarding their knowledge of breastfeeding and weaning. A number of items ask about the correct age to introduce liquids and foods to an infant's diet while others ask about more general aspects of breastfeeding. We report here mothers' responses to individual items, and then combine them into a knowledge scale to indicate an overall level of knowledge and to compare project and control groups. A listing of items is found in Table III-7.

Table III-7: Percent of Correct Responses to Knowledge Items, by Group

	PROJECT	CONTROL	TOTAL	P ¹
Correct feeding for 3-month old	3% (13)	4% (9)	3% (27)	.666
Correct feeding for 5-month old	1% (3)	1% (2)	1% (7)	.872
Water introduced after 6 months	9% (42)	11% (28)	10% (70)	.527
Foods introduced after 6 months	35% (158)	23% (59)	31% (217)	.001*
A mother who doesn't produce enough milk should breastfeed more often (yes)	80% (358)	90% (232)	84% (590)	< .001*
A newborn needs only colostrum (yes)	66% (296)	67% (172)	66% (468)	.872
Cow's milk is as good as breastmilk (no)	88% (392)	92% (236)	89% (628)	.105
A poor or malnourished mother can exclusively breastfeed her young infant (yes)	18% (82)	14% (37)	17% (119)	.176
A newborn needs water in addition to breastmilk to quench its thirst (no)	33% (146)	34% (88)	33% (234)	.680
A breastfeeding baby needs more frequent feeds than a bottlefed baby (yes)	57% (257)	61% (157)	59% (414)	.365
Knowledge Score				
• Mean	3.9	3.9	3.9	.613 ²
• s.d.	1.5	1.3	1.3	
N	448	258	706	

¹ Probability associated with the chi-square statistic

² Probability associated with the t-statistic

* Significant difference based on criterion level of <.05

Each respondent was asked what she would feed a three-month old, and what she would feed a five-month old. According to the new feeding recommendations, the answer for both ages is "breastmilk only," but since the former recommendation was to introduce complementary foods after four months of age, we asked separately about three-month olds and five-month olds in order to distinguish those mothers who know about the former recommendation and those who have heard about the new recommendation. Of course, some will have heard neither and believe that breastmilk alone is not sufficient to nourish a young infant past the first few weeks of life.

In asking about feeding the three- and five-month old, the unprompted question was asked, "What liquids do you think should be given an infant of three/five months of age?" Because water is often not considered a "drink," the respondent was asked specifically, "Should water or sugar water be given a three/five-month old?" Then the question was asked, again unprompted, "What foods do you think should be given an infant of three/five months of age?"

The previous message from the Ministry of Health to exclusively breastfeed for four to six months of age and then gradually introduce other liquids and foods does not appear to have been accepted by mothers. For the three-month old, 86% of mothers said they thought the infant should be given liquids (besides breastmilk) and 80% thought it should be given some kind of food. When water was asked about specifically, 86% said they thought it should be given. For the five-month old, 92% mentioned liquids, 95% mentioned foods, and 95% said that water should be given. Only 3% of mothers correctly described how to feed the three-month old, if by correct we mean that she did not mention any liquids besides breastmilk, said that no foods should be given, and said that water should not be given. Less than 1% gave the correct responses for the five-month old.

It is possible that these poor results are partly an artifact of the way the questions were asked. Because we asked "What liquids should be given..." and "What foods should be given...", mothers may have felt that they had to name *something*. We had also expected that "breastmilk" would be named in response to the first question. However, only 22% mentioned it for the three-month old, and 15% for the five-month old. Since 94% of the sample children *are* breastfeeding, it is probable that in responding to the question, most mothers either thought that breastmilk was a "given" or that by asking "What liquids..." we were implicitly asking about liquids other than breastmilk. In any event, the infrequent mention of breastmilk does not tally with the very high levels of breastfeeding. Therefore, in the calculation of the "correct feeding" variables above, the specific mention of breastmilk was not required -- only that other liquids and foods were *not* mentioned, and that the answer "no" was given to the question about giving water.

The percentage of mothers giving the correct response to the other individual items is shown in Table III-7. Each item is briefly described here in turn.

At how many months do you think a child should be given water or sugar water for the first time?

Most mothers think that the child needs water from a very early age. The largest single response (given by 42% of mothers) was between 0 and 1 month of age, with 14% saying 2 months, and 19% saying 3 months. The average age cited was 2.7 months (SD 2.1). Only 11% of mothers thought the child should be 6 months or older when first given water.

At how many months do you think a child should be given foods for the first time?

Mothers also believe that foods should be given to the child at an earlier age than recommended, although their responses are much closer to the correct norm than are their responses to the prior liquids question. The modal response to this question was 3 months, given by 30% of mothers. Another 16% said 4 months, and 13% said 5 months. The average age cited was 4.5 months (SD 2.1). Overall 31% said 6 months or older, with a larger proportion of project mothers (35%) giving a correct response than control mothers (23%).

Mothers were asked to indicate whether they agreed or disagreed with the following statements (correct answers are given in parentheses following the statement):

A mother who doesn't produce enough milk should put her child to the breast more often. (Yes)

The intent of this question is to determine whether or not mothers know that it is principally the sucking action of the infant which produces milk. There is a high level of knowledge on this item, with 80% of project mothers and 90% of control mothers giving the correct response.

During the first days of life, a child needs only colostrum and nothing else to satisfy it. (Yes)

A fairly large proportion (66%) of mothers agreed with this statement, even though 77% actually give the newborn something else, such as a *chupon*, water, or tea. It is likely that mothers do not consider a *chupon* as either "food" or "liquid" -- especially since the rationale for giving the *chupon* is not related to nourishment. This means that a mother could believe colostrum to be sufficient nourishment, but still give a *chupon* for other reasons.

Cow's milk or canned milk is as good as and nourishes as well as mother's milk. (No)

This item was answered correctly by more mothers than any other, with 89% disagreeing with the statement.

A poor or malnourished mother can breastfeed exclusively, without giving supplementary foods. (Yes)

Generally, malnourished women are just as capable as healthy women of breastfeeding exclusively for six months, as the quality of mother's milk is normally not affected by sub-optimal nutritional status.⁵ Since malnutrition usually goes hand in hand with poverty, it is recommended that a mother spend her scarce resources on nourishing herself and continuing to breastfeed, instead of spending on bottles and formula.

Relatively few mothers (17%) agreed with this statement, and it is likely that the belief that the quality or quantity of a poor mother's milk is deficient leads to the widespread practice of prematurely supplementing breastmilk with other liquids or foods.

A newborn needs water in addition to breastmilk in order to quench its thirst. (No)

One-third (33%) of mothers correctly did not agree with this statement. The fact that 66% of mothers hold this erroneous belief undoubtedly contributes to the high level of incorrect feeding for the newborn.

A child who is breastfeeding needs to feed more times per day than a child being fed cow's milk or canned milk. (Yes)

The majority of mothers -- 59% -- knew this statement to be true.

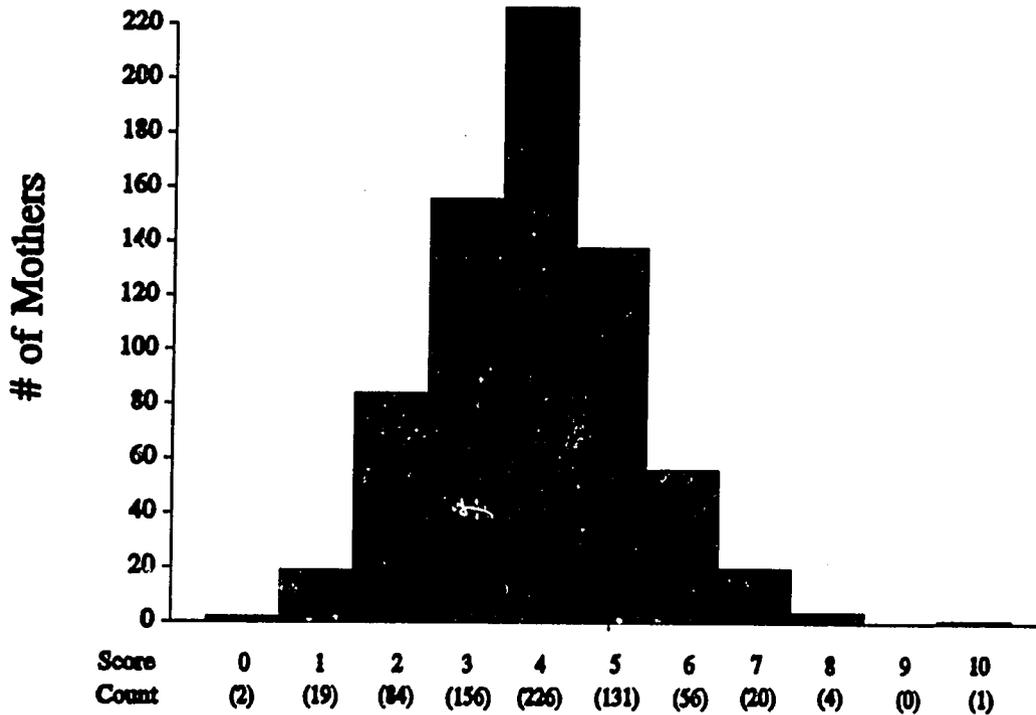
Overall, the weakest area among the knowledge items concerns the perception that the very young child needs to be given liquids in addition to breastmilk. Apparently women are not aware that breastmilk contains a large proportion of water (87%),⁶ and that adding water to an infant's diet is not only unnecessary, but constitutes a potential source of infection and illness as well.

These eight items as well as the "three-month feeding variable" and "five-month feeding variable" described at the beginning of this section were combined into an additive scale with a maximum score of ten. One "point" was given for each correct response, with the new six-month standard counted as correct, even though we did not expect mothers to know it at this time. The items are summarized below. Figure III-4 shows the distribution of the knowledge score.

⁵ Lawrence, Ruth A. (1985). *Breastfeeding: A Guide for the Medical Profession* (second edition). C.V. Mosby Co.

⁶ Lacerva, Victor (1983). *Lactancia Materna, El Manual Moderno*. Mexico, D.F.

Figure III-4: Distribution of Mothers' Knowledge Score



mean: 3.9

s.d.: 1.3

N=706

ITEM

- Correct feeding for 3-mo old
- Correct feeding for 5-mo old
- Age for introducing water
- Age at which first foods be given
- More frequent feeds produce more milk
- Newborn needs only colostrum
- Cow's milk as good as mother's milk
- Poor mothers can breastfeed
- Newborn needs water
- Breastfed child needs more frequent feeds

CORRECT RESPONSE

- only breastmilk
- only breastmilk
- 6 months or older
- 6 months or older
- true
- true
- false
- true
- false
- true

Project mothers and control mothers achieved identical mean scores -- 3.9 out of 10 -- with a relatively small standard deviation of 1.3. This means that the majority of mothers correctly answered three to five questions. Clearly, there is considerable room for the project to improve mothers' knowledge regarding breastfeeding.

ACCESS TO COMMUNICATION MEDIA AND HEALTH SERVICES

The project will utilize mass media as well as interpersonal communication via health workers to disseminate its messages. Thus the survey asks about access to radio and television as well as about health care seeking patterns during pregnancy. Table III-8 summarizes the results of this section of the survey.

Table III-8: Potential Contact with Communication Channels, by Group
% of mothers owning a TV and radio and having contact with health workers

	PROJECT	CONTROL	TOTAL	p ¹
Has functioning television	9% (42)	14% (37)	11% (79)	.044*
Has functioning radio	50% (219)	52% (135)	50% (354)	.379
Obtained prenatal care	75% (337)	75% (194)	75% (531)	.993
Obtained prenatal care from a government hospital or health center	69% (307)	57% (147)	64% (454)	.002*
N	448	258	706	

¹ Probability associated with the chi-square statistic

* Significant difference at the .05 criterion level

Electronic media

There is a moderate amount of access to communication media among the sample population, with 52% of mothers having a radio in the house and 12% owning a television. Virtually all radios and the great majority of televisions were reported to be in working condition, 98% and 88% respectively. Among those houses with a working radio, mothers listen to the radio an average of three hours per day, and 63% of these respondents reported they had heard something

about infant feeding on the radio at some time. Among those households with a working television, an average of two to three hours of television are watched per day.

Prenatal care

On the average, mothers travel one hour to the health center they most often visit. A fairly high proportion – 75% – of all respondents reported they received prenatal care. Most sought care in a public health center – a CESAMO (40%) or CESAR (33%). Others received care in a public hospital (13%) or from a private physician (15%). The control region shows more use of private physicians for prenatal care than the project regions, 24% compared with 9%, and less frequent use of CESARs, 22%, than CESAMOS, 39%. The majority of mothers (82%) utilize the services of the health center which pertains to their community, although more mothers in the project region do so (85%) than do control mothers (74%).

Overall, 66% of mothers saw a midwife while they were pregnant. A higher proportion of project than control mothers had contact with a midwife during pregnancy, at comparative rates of 73% and 54%. Since giving birth, 37% have seen a midwife; again, a greater proportion of project than control mothers have done so (41% of project mothers and 30% of control mothers).

Mothers may visit the clinic or a midwife, or may visit both, or neither. Mothers who visited the health center averaged five visits, and those who saw a midwife averaged three visits. The average number of total prenatal visits was 5.6. Thus, the amount of contact with health providers during pregnancy is fairly high.

As a measure of the extent to which health providers pass on nutritional information to their clients, mothers were asked whether they had received an advice about feeding the infant. Only 21% of mothers said they had, with most (75%) reporting this was given by a nurse or a physician at the health center. The project will encourage more communication between health provider and mother about infant feeding.

SUMMARY

The data from this baseline study indicate that general breastfeeding indicators are positive: over 99% of mothers have ever breastfed their infants, 67% initiate breastfeeding within eight hours of giving birth, and 90% continue to breastfeed until the infant reaches six months of age. Further, mothers plan to continue breastfeeding for well over one year. Feedings are frequent throughout the day and night.

Although the vast majority of mothers are breastfeeding, relatively few are breastfeeding exclusively. Supplementary liquids are given the child from a very early age. Almost 60% of infants under one month of age are already being fed liquids; at four months of age, 80% are fed supplementary liquids. About 50% are given bottles after the age of two months. Foods

are not given as early as liquids; most infants are introduced to foods after four to five months of age.

Knowledge of various aspects of breastfeeding and weaning were generally low. The great majority of mothers did know that breastmilk was superior to commercial milk, and that more breastfeeding produces more milk. The weakest knowledge areas concerned the best age to give liquids.

Mothers' potential contact with the project is fairly high. About half of the mothers had a working radio; they average several hours per day listening time. The percentage of mothers reporting they had already heard something about infant feeding on the radio was fairly high (63%). About three quarters of mothers receive prenatal care, and about three quarters of those mothers utilize their local government health care facility. Mothers average five to six visits with a health provider during their pregnancy.

These results suggest that the early introduction of liquids, particularly water, is one of the weakest aspects of infant feeding in the regions surveyed.

IV. CONCLUSIONS

A breastfeeding intervention which includes training of midwives presents a special opportunity and a special challenge. Among the three types of health providers included in this study -- doctors, nurses, and midwives -- traditional birth attendants lag considerably behind their professional counterparts in their knowledge of infant feeding. They hold many incorrect beliefs about the proper feeding of an infant, some of which place the infant at risk for malnutrition and others which increase the risk of exposure to infection. Since some 60% of births take place at home with the assistance of a midwife, it is particularly important that this group be firmly versed in the basics of sound infant feeding practice. A midwife present at birth can assist a mother to establish proper breastfeeding techniques as soon as the child is born, and can be an influential force for discouraging the use of any kind of supplemental liquid or food. Similarly, mothers who deliver in a hospital can be strongly influenced by the attending nurse or doctor to initiate breastfeeding immediately after giving birth and to feed only breastmilk until the child is six months of age. Although the PROALMA project trained institutional health workers in breastfeeding promotion and lactation management, this baseline, as well as the PROALMA II final evaluation⁷, demonstrates that health workers still need further training and support.

The most problematic aspect of infant feeding concerns the idea that the young child needs liquids, particularly water, in addition to breastmilk. It is generally known that foods should not be introduced until at least after four months of age, but it is common for health providers, especially midwives, to believe that water needs to be given from the first weeks of life. This is one of the most widespread and dangerous beliefs, for several reasons. First, giving the child water exposes it to the risk of infection from either unclean water or unsanitary utensils such as bottles, spoons, or cups. Second, a child whose small stomach is partially filled with water will be able to take in less breastmilk, meaning that the nutritional benefits of the breastmilk will literally be diluted and limited. Third, as the child takes in less breastmilk, the mother begins to decrease her production of milk, and she soon may find that she does not have enough for the child. Thus, a vicious cycle is created whereby she gives more supplementary foods and produces less milk, etc.

Given that midwives are generally ill-informed about proper infant feeding and that they provide the bulk of prenatal and postnatal care in the rural areas, rural care consequently must be of considerably inferior quality to that offered in more urbanized areas.

⁷ *Informe de la Evaluación Final del Proyecto de Apoyo a la Lactancia Materna: PROALMA II - 1988*. (1990). Ministerio de Salud Pública. Tegucigalpa, Honduras.

Based on the results of the baseline study, the Nutrition Communication Project in Honduras should take into consideration the following:

- Breastfeeding is nearly universally practiced and mothers tend to breastfeed for a sufficiently long period of time; 90% of infants 5-6 months old are still being breastfed. Therefore, general messages that breastfeeding is "good" are not necessary. The problem is *exclusive* breastfeeding, much more rarely practiced. It appears that one obstacle is the idea that poor women are too malnourished to sustain their babies on breastmilk alone.
- Midwives need to be included in training since they are particularly ill-informed about proper feeding of infants. Presently, there is little training designed specifically for TBAs. The least amount of attention needs to be given to doctors who, as a group, are the best informed as to proper infant feeding. However, there is considerable room for improvement among all types of providers.
- The fact that the very young infant does not need water should be the centerpiece of educational efforts directed to both mothers and health providers. It appears that water is usually the first item given to the child besides breastmilk, and is often given from the first days of life. The idea that the infant needs water is the most prevalent of incorrect feeding beliefs. If water were not given, the practice of exclusive breastfeeding would become much more widespread.
- The hygienic benefits of breastfeeding should be stressed, especially as they relate to decreased incidence of diarrhea. Health providers seem to be less aware of this important benefit than of nutritional/growth benefits.
- It is important to include problem-solving skills and communication skills as a component of the training. Relatively few health workers know that inverted nipples can be corrected, or know the importance of proper positioning to alleviate the problem of sore nipples. There are other areas where health providers have accurate information but mothers do not, suggesting that there needs to be better communication between provider and client, and a more proactive stance on the part of the health provider.

APPENDIX I

HEALTH PROVIDERS QUESTIONNAIRE

2. Do you believe that a healthy newborn should be given water, sugared water, or "suero"
- a. Yes b. No
3. a. What liquids do you think should be given to a three month old infant? (Do not read the answers. After each response ask:)
1. Breastmilk
- a. Yes b. No
2. Other liquids like fresh milk, juices, soup, etc
- a. Yes b. No
- b. Should water or sugar water be given to a three months old infant?
1. Yes 2. No
- c. What food do you think should be given to a three month old infant? (Do not read the answers. After each response ask:)
1. No solid food
- a. Yes b. No
2. Solid food like gruel, fruit, or others
- a. Yes b. No
4. a. What liquids do you think should be given to a five month old infant? (Do not read the answers. After each response ask:)
1. Breastmilk
- a. Yes b. No
2. Other liquids like fresh milk, juices, soup, etc
- a. Yes b. No
- b. Should water or sugar water be given to a five month old infant?
1. Yes 2. No

- c. **What food do you think should be given to a five month old infant? (Do not read the answers. After each response, ask:)**
1. **No solid food**
 - a. Yes
 - b. No
 2. **Solid food like gruel, fruit, or others**
 - a. Yes
 - b. No
5. **At what age do you recommend a child should be given water or sugared water**
 _____ months _____ days
6. **At what age do you recommend a child should be given other liquids like juices, fresh or canned milk, soups, etc.**
 _____ months _____ days
7. **How old do you recommend a child should be when he/she is given his first food like gruels and fruit?**
 _____ months _____ days
8. **How old do you recommend a child should be when the mother stops breastfeeding?**
 _____ months
- Code 96 1. When the child does not want to be breastfed anymore
 97 2. When the mother starts to work
 98 3. When the mother can not produce any more milk

I am going to read some statements to you. I want you to tell me whether you agree, disagree or do not know.

9. **A mother that does not produce enough milk should try to breastfeed more often.**
- a. Yes
 - b. No
 - c. Does not know

10. During the first days of a child's life, he/she needs only colostrum ("leche amarilla"/yellow milk) and nothing else.
- a. Yes b. No c. Does not know
11. Canned or fresh milk is as good as mothers milk.
- a. Yes b. No c. Does not know
12. A mother who is poor or malnourished can feed her infant adequately just breastfeeding him/her, without giving other foods.
- a. Yes b. No c. Does not know
13. A newborn baby needs water as well as breastmilk to quench his/her thirst.
- a. Yes b. No c. Does not know
14. A child who is breastfed needs to be fed more often than a child who is given fresh or canned milk.
- a. Yes b. No c. Does not know
15. A mother that has inverted nipples will not be able to breastfeed her child.
- a. Yes b. No c. Does not know
16. Fresh or canned milk is more fattening than mother's milk.
- a. Yes b. No c. Does not know
17. When food in addition to breastmilk is given to the child, the mother's milk dries up.
- a. Yes b. No c. Does not know

18. What are the benefits of breastfeeding? (DO NOT READ ALL OF THE ANSWERS. Answer each question as you read them, take your time and ask, something else?)

- 1. Protects against illness/child's first vaccine**
 - a. Yes
 - b. No
- 2. Nutritious**
 - a. Yes
 - b. No
- 3. Better growth/development**
 - a. Yes
 - b. No
- 4. Hygienic**
 - a. Yes
 - b. No
- 5. More economical (saves time, money, energy)**
 - a. Yes
 - b. No
- 6. Convenience (easier)**
 - a. Yes
 - b. No
- 7. Physiological (less post-partum bleeding, etc.)**
 - a. Yes
 - b. No
- 8. Birth spacing(amenorrhoea)**
 - a. Yes
 - b. No
- 9. Mother-child bonding**
 - a. Yes
 - b. No
- 10. Other:_____**
 - a. Yes
 - b. No

- 53'

19. Why do you think mothers get sore/hurt nipples?
- By the way the child is positioned when breastfeeding.
 - Other: _____
20. Do you believe a child should receive no other liquids but breastmilk until he/she is six (6) months old?
- Yes
 - No
21. a. Have you received or attended any course or talk on breastfeeding/lactation? (if not, mark it and go to #22)
- Yes
 - No
- b. Who gave the lecture/course?
- MCH or PROALMA (ALACMA)
 - Yes
 - No
 - Other: _____
 - Yes
 - No
- c. When did you attend the course/talk?
- during the last year
 - between 1 and 2 years ago
 - more than 2 years ago
22. a. What educational materials on child nutrition do you have here at the Health Center?
- Flipchart
 - Yes
 - No
 - Brochures
 - Yes
 - No

3. Posters

a. Yes b. No

4. Others: _____

a. Yes b. No

b. Which one do you use the most?

1. Flipchart

a. Yes b. No

2. Brochures

a. Yes b. No

3. Posters

a. Yes b. No

4. Others: _____

a. Yes b. No

55

APPENDIX II
MOTHERS QUESTIONNAIRE

3. Where was the child born? (Do not read all the answers, mark just the one that corresponds)
- a. At the house with a Midwife
 - b. At the house without a Midwife
 - c. In a Local/Public Hospital
 - d. With a Private Doctor
 - e. Other: _____

FEEDING PATTERNS:

4. a. Were you with your child during the first three days after he/she was born?
- 1. Yes
 - 2. No (if no, go to 5)

If not, Why? _____

- b. Think back to the first three (3) days of the child's life: (read each question)
- 1. Did the child use a "Chupon" (feeding pacifier) during the first three days?
 - a. Yes
 - b. No
 - 2. Was the child given any water or sugared water during the first three days?
 - a. Yes
 - b. No
 - 3. Was the child given any tea or any other liquid during the first three days?
 - a. Yes
 - b. No
 - 4. Was the child given any milk (fresh, powder or canned) during the first three days?
 - a. Yes
 - b. No

5. Was the child given anything else during the first three days?

a. Yes b. No

6. Was the child breastfed during the first three days? (if yes, mark it and go to #7)

a. Yes b. No

5. Was the child ever breastfed? (if yes, mark it and go to #7)

a. Yes b. No

6. Why did you decide not to breastfeed the child? (Choose only one answer)

1. Milk didn't come in
2. Had problems nursing (sore nipples, plethora, mastitis, etc.)
3. Mother was sick/on medication
4. Work/study outside the house
5. The child did not want to
6. Wanted to give the child better food (by giving him other type of milk)
7. Other: _____

(go to #13)

7. After the birth, when was the child put to the breast for the first time? (Choose only one answer)

1. Immediately after being born (within the first 10 minutes)
2. The first hour after birth
3. Within 8 hours after birth
4. 8-24 hours after birth
5. More than 24 hours after birth

8. Are you still breastfeeding the child? (if Yes, mark it and go to # 11)

a. Yes b. No

9. Why did you stop breastfeeding? (Don't read answers) (Choose only one answer)

- 1. The child can eat now
- 2. The child did not want to anymore
- 3. The child would not be satisfied/needed more food
- 4. To have time to work/study
- 5. Lactation problems
- 6. Was sick (the mother)
- 7. Did not produce milk/milk would not let down
- 8. Other _____

10. How old was the child when you stopped breastfeeding him/her?
months: _____ (go to #13)

11. For how long do you plan to breastfeed your child?

_____ months.

- ___ until the child does not want to be breastfed anymore
- ___ until I have to go back to work
- ___ for as long as I have milk

NOW THINK OF THE LAST 24 HOURS:

12. a. How many times did you breastfeed the child yesterday (during the day)?

b. How many times did you breastfeed the child at night?

13. a. Did you give your child canned, or fresh milk yesterday or last night?

- 1. Yes
- 2. No

b. Did you give the child any tea yesterday or last night?

- 1. Yes
- 2. No (if not, go to d)

- c. If you gave the child tea, was it for medicinal purposes?
1. Yes 2. No
- d. Did you give the child water yesterday or last night?
1. Yes 2. No
- e. Did you give the child any other type of liquid yesterday or last night?
1. Yes 2. No

(If ALL of the answers to # 13 are "NO", go to # 16)

14. How old was the child (in weeks) when you gave him/her any other liquid besides breastmilk?
_____ weeks

15. a. Did you feed him any of the liquids you mentioned above in a bottle yesterday or last night?
1. Yes 2. No
- b. How old was the child when you first gave him/her the bottle?
weeks: _____
never: _____
- c. Do you remember anyone telling you that you should not use a bottle to feed any liquids to the child?
1. Yes 2. No

16. Did you give the child any food like gruel (atole), fruits, beans, rice or tortillas yesterday?
1. Yes 2. No

61

17. How old was the child when you first gave him/her any other food, besides breastmilk?

_____ (weeks)

KNOWLEDGE

18. a. What liquids do you think should be given to a three month old infant? (Do not read the answers. After each response ask something else.)

1. Breastmilk

a. Yes

b. No

2. Other liquids like fresh milk, juices, soup, etc

a. Yes

b. No

b. Should water or sugary water be given to a three-month old infant?

1. Yes

2. No

c. What food do you think should be given to a three-month old infant? (Do not read the answers. After each response ask something else.)

1. No solid food

a. Yes

b. No

2. Solid food like gruel (atoles), fruit, or others

a. Yes

b. No

19. a. What liquids do you think should be given to a five month old infant? (Do not read the answers. After each response ask something else.)

1. Breastmilk

a. Yes

b. No

2. Other liquids like fresh milk, juices, soup, etc

a. Yes

b. No

62'

b. Should water or sugar water be given to a five month old infant?

1. Yes 2. No

c. What food do you think should be given to a five month old infant? (Do not read the answers. After each response ask something else.)

1. No solid food

1. Yes 2. No

2. Solid food like gruel (atoles), fruit, or others

1. Yes 2. No

20. How old do you think a child should be before being given water or sugar water for the first time?

_____ months

21. How old do you think a child should be before being given solid food for the first time?

_____ months

I am going to read some statements to you. I want you to tell me whether you agree, disagree or do not know.

22. A mother that does not produce enough milk should try to breastfeed more often.

- a. Yes b. No c. Does not know

23. During the first days of a child's life, an infant needs only the "first milk" (colostrum) to satisfy his hunger.

- a. Yes b. No c. Does not know

63

24. Canned or fresh milk is as good and nutritious as mother's milk.
a. Yes b. No c. Does not know
25. A mother who is poor or malnourished can feed the baby adequately, by just breastfeeding him/her, without giving other foods.
a. Yes b. No c. Does not know
26. A newborn baby needs to be given water besides being breastfed to quench his/her thirst.
a. Yes b. No c. Does not know
27. A child who is breastfed needs to be fed more often than a child who is given fresh or canned milk.
a. Yes b. No c. Does not know
28. Fresh or canned milk is more fattening than mother's milk.
a. Yes b. No c. Does not know
29. When foods other than breastmilk are given to the child, the mother's milk dries up.
a. Yes b. No c. Does not know

MORBIDITY

30. Did the child have diarrhea yesterday?
a. Yes b. No
31. Did the child have a stuffy nose yesterday?
a. Yes b. No

64

ACCESS

32. How long does it take you to get to the Health Clinic you visit most often?

_____ hours
_____ minutes

33. a. Do you have a T.V. at home? (if not, mark it and go to # 34)

1. Yes 2. No

b. Is your T.V. working now? (if not, mark it and go to # 34)

1. Yes 2. No

c. How many hours of T.V. did you watch yesterday?

_____ hours

34. a. Do you have a radio at home? (if not, mark it and go to # 35)

1. Yes 2. No

b. Is your radio working now? (if not, mark it and go to # 35)

1. Yes 2. No

c. How many hours did you listen to the radio yesterday

_____ hours

d. Have you ever heard anything on how to feed a child on the radio?

1. Yes 2. No

35. a. Did you receive any prenatal care during your last pregnancy? (if not, mark it and go to # 36)

1. Yes 2. No

**b. How many times did you go to receive prenatal care?
Number of times _____**

c. Where did you go to receive the prenatal care?

1. CESAMO
2. CESAR
3. Hospital
4. Private Clinic

(d. Interviewer, If the mother went to a CESAR or CESAMO, was it the center "assigned" to their community?

1. Yes 2. No)

36. a. Did you go to a midwife during your last pregnancy? (If not, go to # 36 c)

1. Yes 2. No

b. How many times did you go to see her?
Number of times _____

c. Have you gone to see a midwife after your last pregnancy?

1. Yes 2. No

37. a. Have you received any advice or attended any talks on how to feed your child? (If not, go to # 38)

1. Yes 2. No

b. Who gave you the advice/talk?

1. Nurse/Doctor from the Health Clinic

- a. Yes b. No

2. A midwife

- a. Yes b. No

3. Other _____

- a. Yes b. No

DEMOGRAPHY

38. a. Do you work outside of the house?
1. Yes 2. No (go to #39)
- b. How many hours a week do you work (outside of the house)?
Number of hours _____
39. a. Can you read?
1. Yes 2. No
- b. How many years of school did you attend?
_____ years
40. How many children do you have?
_____ children
41. How old are you?
_____ years
42. The floor of your house is made out of:
a. Dirt b. Other
43. The water you use:
a. Comes from the river, well or ravine
b. From the faucet (communal)
c. From the faucet (at home)
44. Toilet Facilities
a. There is a toilet in the house
b. There is access to a latrine
c. Go out to the bushes/outside

APPENDIX III

HEALTH CENTERS INCLUDED IN THE SAMPLE

REGION 4

Hospital

Location

Hospital del Sur

Choluteca

CESAMO

Location

Los Prados

Los Prados

Caridad

Caridad

Dr. Isaac Reyes

Guascorán

Hipolito Q. Cruz

Pespire

Dr. Carlos Pinel

El Triunfo

Dr. Carlos Musselly

San Lorenzo

General Pilar Martinez

Namasigue

Dr. Cornelio Midence

Morolica

Lic. Manuel Salinas Lopes

Orocuina

Lic. Romulo Alvarado Romero

Coray

CESAR

Location

Oscar Andino Molina

El Tular

Juan de Dios Paredes

San Isidro

Yusguare

Yusguare

Las Uvas

Las Uvas

Gracias a Dios

Los Llanitos

El Conchal

El Conchal

San Antonio de Guaruma

San Antonio de Guaruma

La Arada

La Arada

Gracias a Dios

El Madreal

Alejandro Flores

Agua Fría

San Jose

San Jose

Tapaire

Tapaire

Moropocay

Moropocay

Galeras

Galeras

Vicente Peres Ortiz

Alubaren

REGION 5

Hospital

Hospital de Occidente

Location

Santa Rosa de Copán

CESAMO

Dr. Jose Ramón Villeda Morales
Dr. George Frazer
Dr. Filadelfo Bueso
Dr. Rogelio C. Chacón
San Manuel
La Virtud
Dr. Luciano Milia Cisneros
Mr. Monico Romero
Licda. Camila Alvarado
Dr. Virgilio Rodezno
Dr. Jesus Humberto Medina

Location

Lepaera
El Paraíso
Santa Rita
San Nicolas
San Manuel
La Virtud
Erandique
Corquin
Dulce Nombre
Ocotepeque
La Entrada

CESAR

San Agustin
Dr. Alejandro Melara
San Jerónimo
Dr. J. Eduardo Gauggell
Sesenti
San Juan
Hector Rolegio España
Dr. Alberto Hernandez Santos
Gabriel Izaguirre
Caiquin
Dr. Alberto Hernandez
Cabañas
Aldea Nueva
Tambla
San Francisco del Valle

Location

San Agustin
Jagua Lempiza
San Jeronimo
La Elencita
Sesenti
San Juan
Sinuapa
Dolores
La Jigua
Caiquin
Las Flores
Cabañas
Aldea Nueva
Tambla
San Francisco del Valle

REGION 7

Hospital

Hospital San Francisco

Location

Juticalpa

CESAMO

Concordia
Gregorio A. Lobo
Dr. Sebastian Pastor
Manuel de Jesus Subirana
Guayape
Dr. Marcial Salgado Galeas
Manto
Mangulile
Yocón
Dr. Angel Donoso Vargas

Location

Concordia
Catacamas
Campamento
Dulce Nombre de Culmí
Guayape
San Francisco de La Paz
Manto
Mangulile
Yocón
La Unión

CESAR

Agua Caliente
Bacadilla
Guamiles
Siguaté
Conquire
Terrero Blanco
San Fernando
Ocotillal
Las Minas
Silka
San Pedro de Catacamas

Location

Agua Caliente
Bacadilla
Guamiles
Siguaté
Conquire
Terrero Blanco
San Fernando
Ocotillal
Las Minas
Silka

San Pedro de Catacamas