ASSESSMENT OF THE IMPACT OF A NATIONAL INTERVENTION TO PROMOTE EXCLUSIVE BREASTFEEDING IN HONDURAS

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ACRONYMS

AED	Academy for Educational Development
CESAMO	Centro de Salud con Médico (Health Center with Physician)
CESAR	Centro de Salud Rural (Rural Health Post)
FEHMUC	Federación Hondureña de Mujeres Campesinas (Honduran Federation of Peasant Women)
HEALTHCOM	Communication for Child Survival Project
MOH	Ministry of Health
NCP	Nutrition Communication Project
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

This report presents the final results of an evaluation to assess the impact of a national intervention to promote exclusive breastfeeding in Honduras. The evaluation was conducted in two health regions, Regions V and VII, which represent some of Honduras' poorest areas. The breastfeeding promotion intervention was part of a larger nutrition communication strategy implemented by the Ministry of Health (MOH) with technical support from the USAID-funded Nutrition Communication Project. The nutrition component itself was part of a broader integrated child survival program (the Health Sector II Project) which included training and mass media activities for six priority health and nutrition interventions.

The study's objective was to evaluate the effectiveness of a three-pronged intervention (health personnel training, dissemination of print materials, and radio broadcasts) in increasing the prevalence of exclusive breastfeeding in the first six months and in improving health workers' knowledge and skills needed to more effectively promote optimal breastfeeding. The intervention's target population thus consisted of pregnant and lactating women, facility-based health personnel, and community health workers. The breastfeeding intervention was implemented by MOH personnel on a national basis. In Regions V and VII, activities were mainly carried out in 1992, though some training activities and distribution of print materials continued into 1993, and a final wave of radio spots was broadcast in Region V in August 1993.

The study design was a pre-post comparison that analyzed mother and health worker knowledge based on the actual degree of access or exposure they reported to have had to the different elements of the intervention. The pre-intervention surveys of health workers and mothers were conducted between February and April 1991. The post-intervention surveys were conducted in May and June 1993.

The evaluation concluded that all components of the intervention were carried out, but not with equal coverage and completeness. For health workers, the distribution of print materials attained high levels of coverage in both study regions, particularly the poster and the flip chart. Significant increases in access to key print materials were observed at the post measurement, compared with the levels found in the baseline survey. The overall amount of materials available in each region was, however, not as high as had been originally planned, due in part to the decision to extend the intervention nationally rather than limit it to two regions.

Coverage of training activities, however, was lower than expected and the quality of the training seems to have varied significantly by area. Retrospective information shows that 75% of all health workers were trained in Region V and only 32% in Region VII. While the training intervention seems to have adhered to the model curriculum and cascade approach in Region V, it appears not to have been extended systematically below the area level in Region VII.

For mothers, the coverage of radio and print materials was good. The radio spots reached nearly half of all target mothers, and the poster was seen by some two-thirds of the mothers

interviewed. Mothers reported very limited exposure to print materials other than the poster. The frequency of interpersonal contacts with health workers in which breastfeeding topics were discussed topics was also quite low. The radio message most commonly remembered by mothers was the campaign's main slogan, "breastmilk and nothing else in the first six months", which was recalled unprompted by 52% of mothers who had heard radio broadcasts.

The impact of this exposure to the different intervention channels was analyzed in terms of statistical significance of knowledge gains, and for mothers' breastfeeding practices, in terms of significant associations between increases in mothers' knowledge and the prevalence of exclusive breastfeeding.

The study found that in the aggregate, the intervention significantly increased the overall breastfeeding knowledge of health personnel and their knowledge of the appropriateness of exclusive breastfeeding in the first six months of life. The intervention seems to have been instrumental in making service providers more knowledgeable about the revised MOH norm which extended the recommended period for exclusive breastfeeding to six months.

With respect to the impact of individual intervention components, print materials demonstrated the most positive effect on health worker knowledge. Access to posters and flip charts seems to have had a wider impact than did access to the reference guide designed for health personnel. Training had little or no effect on improving knowledge of health workers. While the study did not collect process information which might explain why the training failed to have an impact, it appears that the cascade approach as implemented resulted not only in wide variations in coverage by health area, but also in the quality and thoroughness of the training content received by health workers at the facility level. It is also hypothesized that the training plan, which covered six different health and nutrition topic areas, may have led to insufficient time devoted to breastfeeding.

For mothers, overall exposure to the intervention was associated with knowledge gains in several areas, and these effects were heightened when exposure was narrowed to the specific channel, radio. Of particular note is the difference in knowledge about giving water to newborns, an area identified as especially deficient in the baseline survey: 45% of exposed mothers knew not to give water, compared with 29% of mothers not exposed to the intervention.

Exposure to the radio broadcasts proved to be strongly associated with higher scores on virtually all knowledge items, underscoring the striking effect which radio had in improving mothers' knowledge. The most important increases found related to mothers' knowledge of the appropriate feeding of newborns and the introduction of water and solids beginning at six months.

Exposure to print materials was associated with knowledge increases among mothers related to not giving water to newborns, exclusive breastfeeding up to six months, and introducing solids at six months. Because the main print material seen by mothers was the single-message poster, it is likely that these knowledge effects were actually the result of simultaneous exposure to

radio. Counseling, either individually or in groups, appears to have been infrequently practiced by health workers or not practiced effectively, and consequently, seems to have had little independent impact on mothers' knowledge.

The more important result obtained for mothers, however, was the study's finding that increases in mothers' knowledge were strongly associated with increased practice of exclusive breastfeeding through the first six months and in particular, in the first and sixth months. The prevalence of exclusive breastfeeding in first month increased from 48% at the baseline to 75% among high knowledge mothers at the post measurement, and in the sixth month, from 7% at the baseline to over 20% among high knowledge mothers at the post. While the improvement seen at the post measurement in the practice of exclusive breastfeeding was most pronounced among high knowledge mothers, a generalized improvement occurred for all mothers.

It is hypothesized that the largest gains from pre to post occurred in the first month due to the fact that in Region V, radio spots were broadcast about two weeks prior to the conduct of the post survey. It is suspected that mothers who had recently delivered were the most influenced by the messages heard about exclusive breastfeeding.

The study also examined the changes in specific feeding behaviors which underlie the increase in the prevalence of exclusive breastfeeding. The rise in exclusive breastfeeding appears to be mainly the result of decreases in mothers giving their infants water and other non-milk liquids. At six months of age, the use of water declined by about 17 percentage points (from 78% at the pre to 61% at the post), and the giving of other non-milk liquids (e.g., sugar water, broths) dropped by 18 percentage points (from 26% to 8%). The prevalence of giving cow's or powdered milk and solids each declined by about 10 percentage points.

The evaluation thus found that the intervention, mainly due to the strength of the radio component, achieved its ultimate objective of increasing the prevalence of exclusive breastfeeding in the first six months of life, largely by discouraging the use of water and other liquids. This is an impressive accomplishment indeed, given the difficulties inherent in modifying infant feeding practices.

I. INTRODUCTION

Since 1981, the United States Agency for International Development (USAID) has provided funding for the Academy for Education 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 1993, AED 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/Tegucigalpa expanded its support of communication activities to include nutrition communication--specifically, the promotion of breastfeeding, improved infant feeding, and growth monitoring activities. In 1990, AED's Nutrition Communication Project (NCP) initiated a three-year program of technical support to nutrition activities being carried out under the USAID-funded Health Sector II Project. An AED long-term advisor worked with the MOH Divisions of Health Education, Maternal and Child Health, and Food and Nutrition to develop and execute a communication strategy based on training of health workers and mass media activities.

An early activity of NCP support to the MOH was a qualitative research study of breastfeeding and infant feeding practices carried out in Regions IV and V of the country, using focus groups and in-depth interviews. The findings of this research provided an empirical basis for the design of an implementation plan for the promotion of breastfeeding using training, print materials, and mass media communication through radio.

NCP advisors assisted the MOH to develop, test and produce an array of communication and educational materials aimed at mothers, health workers, and other community members. A training plan was developed to train physicians, nurses, promoters and community agents, and direct NCP assistance was provided in the training of national level trainers who would replicate the training at the regional level Radio spots were produced and broadcast three campaign waves on national and regional radio stations

An evaluation plan was also designed, and the baseline surveys were conducted in 1991. The post-intervention surveys were carried out in 1993. This report presents the final results of the evaluation to assess the impact of the training and communication activities on health personnel and mothers' breastfeeding knowledge and practices in Regions V and VII. The report describes the overall study design, the breastfeeding promotion intervention as it was actually implemented, and the evaluation methodology. Findings from the pre- and post-intervention surveys are presented and discussed for health workers and then mothers. The final section summarizes the evaluation's key findings and makes recommendations based on the lessons learned.

II. STUDY OBJECTIVES AND DESIGN

The study's objective was to evaluate the effectiveness of a three-pronged intervention (health personnel training, dissemination of print materials, and radio broadcasts) in increasing the prevalence of exclusive breastfeeding to six months of age and in improving health workers' knowledge and skills needed to more effectively promote optimal breastfeeding. The intervention's target population thus consisted of pregnant and lactating women, facility-based health personnel, and community health agents (principally traditional midwives) supervised by MOH staff.

The evaluation sought to determine whether desired changes in health worker and mother knowledge and infant feeding behavior occurred as a result of the intervention. Specifically, the evaluation focused on awareness of the key messages of the intervention and on the practice of exclusive breastfeeding in the first six months of life. Data to measure the intervention's effects were to be collected in two surveys of health workers and of mothers of children under six months: a pre-intervention or baseline survey, and a post-intervention survey to be conducted approximately one year after the implementation of most of the intervention components.

The study design was originally conceived as quasi-experimental, with an intensive intervention to be conducted in two health regions (Region IV and V) and a third region (Region VII) to serve as the comparison region without intervention. However, early in the development of the breastfeeding communication plan, the Ministry of Health decided that the intervention would be extended nationally, thus covering all regions in the country, including the control region and the two study regions. Print materials were distributed nationally, national radio stations that reach the entire country were used to broadcast key messages, and regional radio stations in each region were used to varying degrees to broadcast the same spots. The training activities were also intended to be implemented nationally (including all three study regions), following a cascade approach whereby central level trainers trained by AED then trained regional level staff. Regional staff were then to replicate the training for area-level personnel, who in turn would provide training for facility-level staff. Because the implementation of the intervention at the facility level was not centrally controlled but rather left to regional staff, in actuality the thoroughness of the training varied among the regions. Region V organized a fairly systematic training program, while Region VII carried out a weak training effort.

Following the MOH decision to conduct a national program, thereby eliminating the possibility of a comparison region with no intervention, the revised evaluation design called for a pre/post comparison of health workers and mothers in only two regions: the high intensity intervention region (Region V) and the low intensity intervention region (Region VII). It was expected that the differences in intervention coverage between the two study regions would permit inferences to be drawn concerning the impact of the higher intensity intervention. However, the actual degree of health workers' and mothers' exposure to key elements of the intervention detected in the post sample varied only modestly between the two regions, possibly as a result of oversampling of health workers in the larger towns. The minor differences found in exposure suggested that the comparison by region alone would not be discriminating enough to explain

differences in the intervention's impact.

In order to best meet the evaluation objective of identifying changes attributable to the intervention, the impact analysis dropped the regional distinction and instead grouped mothers and health personnel based on the actual degree of access or exposure they reported to have had to the different elements of the intervention. For health workers, the intervention channels considered in the evaluation were training and access to print materials. For mothers, the intervention channels were exposure to radio broadcasts, exposure to print materials, and interpersonal contacts with health personnel at the facility and community level. Comparisons were made based on access or exposure to the intervention (yes access vs. no access) as well as how certain key variables shifted across time (i.e., pre vs. post measurement).

III. DESCRIPTION OF THE INTERVENTION

The breastfeeding promotion intervention evaluated through this study was part of the broader Nutrition Communication Plan developed for Honduras by the MOH with NCP support. The breastfeeding component was designed based on a review of several national surveys and the findings of the 1990 qualitative research. The latter study found that while breastfeeding was quite prevalent in Honduras, there was very limited practice of exclusive breastfeeding in the first six months of life. Water and teas were commonly given shortly after birth, and semi-solids were often introduced in the first months of life. The national breastfeeding communication strategy sought to impart to all health providers and to pregnant women and mothers, knowledge of the importance of exclusive breastfeeding and the ability to solve common problems encountered which might otherwise present a barrier to successful breastfeeding.

The breastfeeding promotion component of the Nutrition Communication Plan had two primary messages:

- practice exclusive breastfeeding until the infant is six months of age;
- practice breastfeeding up to two years of age.

The first message was also intended to introduce the MOH's new norm regarding exclusive breastfeeding. The previous MOH standard was to exclusively breastfeed through four to six months, a vague message for both health workers and mothers. The new MOH standard set the period clearly at six months.

The main exclusive breastfeeding message was complemented by several other key messages which were intended to direct mothers and health workers as to specific feeding and weaning practices that should be adopted to protect the health of the infant. These messages included:

- a newborn needs colostrum/the first milk is good;

- a newborn does not need water to quench his thirst;
- infants under six months should not be given water or liquids other than breastmilk;
- infants under six months should not be given foods;
- water and solids can be introduced at six months;
- a mother who does not produce enough breastmilk should breastfeed more frequently;
- breastmilk dries up when other foods are given to the infant;
- pregnant and nursing women should eat more;
- breastfeeding helps protect against diarrheal diseases.

The communication plan contemplated three major channels to impart these messages to health workers and mothers: training for facility-based health care providers (primarily physicians, nurses and nurse auxiliaries) and community health agents (primarily traditional birth attendants or *parteras*), distribution of print materials to support training activities, and radio spots.

This study evaluates the intervention carried out by MOH personnel in Regions V and VII primarily in 1992, but with some training activities and distribution of print materials continuing into 1993 and a final wave of radio spots broadcast in Region V in August 1993. The two study regions represent some of Honduras' poorest areas. Region V, located on the western border with Guatemala and El Salvador, includes the Departments of Copán and Lempira. Though smaller in geographic size than Region VII, Region V is much more densely populated, with a 1993 population of 521,171. A large proportion of the population is Indian, and about 60% is illiterate. The MOH infrastructure in Region V includes some 117 health centers and rural health posts (known as CESAMOs and CESARs, respectively), divided into four Health Areas. Region VII, encompassing the mountainous Department of Olancho (known as the "Wild West" of Honduras), has a smaller population of 268,770, though covers a much larger geographic area than does Region V. The population in Region VII is largely mestizo and is dispersed in small rural communities. Region VII includes only 81 health centers and posts and is also divided into four Health Areas.

The planned approach to each intervention component and what is known about how they were actually carried out in the two regions are described below.

A. Training

The training component of the breastfeeding intervention followed a training-of-trainers model.

The Nutrition Communication Project trained staff of the MOH Division of Health Education in Tegucigalpa, who in turn trained teams at the regional level. Region headquarters staff in turn were to train Health Area level teams, who would be responsible for training health center and post staff and community health workers in their area. The trained health workers were expected to impart their newly gained knowledge and skills to mothers through counseling during routine consultations and through formal health talks (*charlas*).

The training activities were intended to be carried out in the context of a 40-hour seminar on Integrated Child Care designed by the MOH with technical assistance from NCP and others, covering acute respiratory infection and diarrhea case management, nutrition, environmental sanitation, and vector-borne diseases and emphasizing communication skills needs to effectively educate mothers. The breastfeeding content was included in the training seminar's module on nutrition for pregnant women and children under five and had a duration of about five hours. The breastfeeding content of the training curriculum covered the basic objectives and messages of the breastfeeding promotion program, introduced the print materials to be used at health facilities and discussed how to use these materials to train mothers and community-based health workers, and demonstrated effective educational techniques.

In practice, the degree and depth to which the prototype breastfeeding content was covered varied considerably by region and area. MOH Health Education Division staff (who had been trained by NCP staff in the breastfeeding communication strategy during the Integrated Child Care Seminar led by AED's HEALTHCOM Project) conducted the five-day Integrated Child Care training in Region V (in February 1992) and in Region VII (in March 1992) to prepare the regional trainer teams. The breastfeeding content in these regional level seminars was reported to be about five hours. Below the regional level, however, the duration and content of the actual breastfeeding promotion training were inconsistent. Process data on the training activities were not systematically recorded, but field visits by an AED consultant[1] reconstructed what training activities took place in each Region and Health Area.

In Region V, the regional team replicated the five-day training for groups in each of the four Health Areas, and each area team appears to have replicated the training four or five times to cover the facilities in their area. In addition to health facility staff, a large number of community health workers (285 *parteras* and 144 *guardianes de salud*) were given some training in breastfeeding promotion. Apart from the separate training of community health workers, the training in Region V seems to have generally been given to mixed groups of health workers (i.e., including physicians, professional nurses and auxiliary nurses). In Region VII, trainers from the central level Division of Health Education led a single five-day Integrated Child Care training for staff from the regional office and from all four Health Areas. The area teams, however, did not systematically replicate the training for staff of the facilities in their respective areas, citing as one reason a decision that facilities could not be closed to enable health workers to attend the training. Another difference in Region VII was that the training tended to be

[1] AED/NCP Consultancy of Dora Castillo de Méndez, August 1993.

targetted at auxiliary nurses and outreach workers rather than at all categories of personnel. The Region VII team did conduct two other training activities in 1992, drawing on the breastfeeding content of the Nutrition Communication Plan: a three-day training entirely on breastfeeding for nursing personnel of the Regional Hospital in Juticalpa and a five-day training for 47 community leaders from the Honduran Federation of Peasant Women (FEHMUC). The FEHMUC leaders are reported to have then replicated their training among 56 women's groups throughout Olancho.

Based on the information obtained by Castillo de Méndez, Table 1 presents the number of health personnel in Regions V and VII by professional category who were trained as part of the NCP-supported breastfeeding intervention. The breastfeeding training intervention appears to have reached three-quarters of health center and post staff in Region V, but only about half of nurse auxiliaries and about a third of all staff in Region VII. Auxiliary nurses and promoters are those typically responsible for health education and are hence of special interest to this study.

In addition to the training carried out under the aegis of the Nutrition Communication Plan, staff in some facilities in Region VII received approximately 30-60 minutes of content on breastfeeding promotion during separate training activities on Acute Respiratory Infections and Reproductive Risk that were carried out in the region in 1992.

TABLE 1
Breakdown of Employed and Trained Regional Staff by Professional Category

Professional Category	Region V		Region VII	
	Employed	Trained (%)	Employed	Trained (%)
Physicians	35	33 (94%)	18	1 (5%)
Dentists	19	2 (11%)		
Professional Nurses	26	18 (69%)	16	1 (6%)
Auxiliary Nurses	180	155 (86%)	102	51 (50%)
Promoters	49	49 (100%)	43	13 (30%)
Vector Evaluators			72	15 (21%)
Other	46	6 (13%)	23	8 (35%)
Total[2]	353	263 (75%)	274	87 (32%)

Source: Report by Dora Castillo de Mendez based on August 1993 field visit.

[2] Total does not include traditional midwives (*parteras*) or community health workers (*guardianes de salud*), who are not considered employees of the MOH. In Region V, some 285 midwives (out of an estimated 1166 in the region) and 144 community health workers (out of 881 in the region) were trained as part of the intervention. In Region VII, 47 community leaders were trained by regional MOH staff.

B. Print Materials

Prior to the intervention, very little educational material designed to support optimal breastfeeding was available for health workers, especially at the community level. The aim of the Nutrition Communication Plan was to provide health workers in direct contact with mothers of young children with educational tools to facilitate communication and to remind mothers (and health workers) of the key messages of the breastfeeding communication strategy.

Several different types of print materials promoting breastfeeding were produced and distributed as part of the breastfeeding promotion intervention to support the training activities and facilitate interpersonal communication. The materials were developed by the MOH Division of Health Education with technical assistance from the NCP and subjected to a thorough process of pre-testing and revision. The print materials developed included: a promotional poster, a poster with a calendar, a small cardboard flip chart for individual use, a large cloth flip chart for group talks, a manual for using the flip charts, a mini-reference guide on breastfeeding support aimed at health personnel, and a comic book and a flyer intended for mothers.

The plan was to distribute large quantities of these materials to the region headquarters for the regional teams to distribute to the area teams at the time of their training. The number of materials distributed to each area was supposed to take into account the size of the population in its catchment area. Promotional posters were to be placed in strategic locations within each health facility and in the communities, such as homes of community health agents, schools, nurseries, municipal offices, etc. The detailed pocket guide was developed as a mini-reference for health personnel. The flip charts were intended to be used by health personnel in talks with mothers and in training community health workers. The comic book was intended to be distributed to community health workers and to mothers after talks at the health facility. With two exceptions, all the materials contained all of the key messages of the communication plan. The exceptions were: (a) the posters, which contained only the primary slogan of the campaign, "Only breastmilk and nothing else in the first six months of life," and (b) the reference guide, which addressed all areas except for feeding of the neonate.

Systematic records of how the print materials were actually distributed were not kept as part of the intervention. During the 1993 field visit by Castillo de Méndez, data were obtained from regional officials on the number of print materials received by the two regional offices up to July 1993 and on the distribution of these materials to the areas. These data are presented in Table 2. For Region V, the figures reflect the number of materials of each type that the regional office reports to have distributed to the four Health Areas. For Region VII, the figures are the numbers of materials that the regional office reports to have received from the central level. In interpreting the numbers, it is useful to bear in mind this distinction, as well as the number of primary care facilities in each region (some 117 CESAMOs and CESARs in Region V and 81 in Region VII).

The timing of the distribution of the materials appears to have varied among the Health Areas. Information provided by the Region V office showed that the materials were generally sent out

shortly after each area-level team was trained, with the region distributing whatever materials it had available at the time (primarily flip charts, posters and comic books). Most materials were distributed during the period March-August 1992, when the majority of the training activities were carried out in Region V. A full complement of materials does not appear to have been provided to health facilities at one time or necessarily at the time staff were trained. In Region VII, information from the area level indicated that much of the print materials were distributed late in 1992 and into 1993, with one Health Area reporting that it received very few materials at all. Health Area officials in Region VII also reported receiving many fewer materials than were reported to be available at the regional headquarters. No distribution records were kept at the regional level in Region VII.

Data on the actual number of materials by type that were received in each health facility were not obtainable, but it is likely that some facilities received more materials than others, and in Region VII, that certain materials never reached some facilities. But even if one were to assume that each facility received an equal share of the materials available in each region, it is clear from the relation of the total number of materials to the number of primary care facilities in each region that the amount of materials available to each health facility was small, especially the materials destined for distribution to mothers and community health agents. For Region V, the ratio would be about 13 posters, 13 comic books, 34 flyers, 2 flip charts, and 2 reference guides per facility. For Region VII, the ratio would be 33 posters, 13 comic books, 1 flip chart and 6 reference guides per facility. The posters were by far the most ubiquitous print material and thus were the most likely material to have been seen by mothers.

TABLE 2
Print Materials Available by Region

Type of Print Material	Region V	Region VII
Promotional Posters	1623	525
Posters with Calendar	13	2109
Flip Charts (Total)	273	113
Flip Chart Manuals	73	100
Brief Reference Guides	303	510
Comic Books	1488	1021
Flyers	4000	-
No. CESAMOs and CESARs	117	81

Source: Report by Dora Castillo de Méndez based on August 1993 field visit.

C. Radio

Mass media communication using radio was the third component of the breastfeeding promotion intervention. Radio broadcasts were intended to provide the target population of pregnant and lactating women and mothers of young children with basic messages about optimal breastfeeding and to reinforce information communicated by health workers.

Radio was used in two ways. The first and primary way was to broadcast six different 30-second spots on breastfeeding topics over a mix of national and regional radio stations. The spots were developed by a professional media firm hired by the MOH and subjected to rigorous pre-testing. The messages transmitted in each spot (which took the form of conversations between two individuals) are summarized in Table 3. The spots were broadcast in three intensive waves: for four months in late 1991, for two weeks in July-August 1992, and for one month in mid-1993. Two national radio stations, nine regional stations in Region V, and five regional stations in Region VII were contracted to air the spots. The periods and frequency with which the radio spots were aired by region is shown in Table 4. As seen in the table, the third wave of broadcasts occurred only in Region V, beginning just before the final evaluation survey was carried out. The six spots are assumed to have each been broadcast with more or less the same frequency on each radio station.

TABLE 3
Key Messages Contained in Radio Spots

	BASIC MESSAGES
Radio Spot #1	Colostrum is the best first food for newborns and gives them all they need
Radio Spot #2	Pregnant and lactating women need to eat more, and only breastmilk for the infant
Radio Spot #3	Only breastmilk and nothing else in the first six months, breastmilk has all the baby needs
Radio Spot #4	Give other foods at six months; continue breastfeeding through two years
Radio Spot #5	To produce enough breastmilk, breastfeed and nothing else; breastfeed more often to produce more milk; milk begins to dry up if other foods are given to the baby
Radio Spot #6	Breastmilk and nothing else is the best food to make a baby grow healthy and strong. exclusive breastfeeding protects against cholera

Source: Transcripts of radio spots

The second way radio was used was to present a mini-series on breastfeeding issues on a popular one-hour weekly call-in radio program called "The Doctor and Your Health." The program is broadcast on Thursday mornings on one of the national radio stations used in the campaign. Eight shows of the program were devoted to breastfeeding issues over an eleven-week period from July to October 1992. The topics presented on the shows included the importance of exclusive breastfeeding, how to overcome difficulties with breastfeeding, the value of colostrum, the importance of early initiation of breastfeeding, how working mothers can continue to breastfeed, how to stimulate milk production, breastfeeding on demand, and introduction of other foods at six months. Callers to the program posed breastfeeding-related questions to the physician moderator and expert guests.

TABLE 4
Period and Frequency of Radio Broadcasts[3]

	Region V	Region VII	National Level
9/91 - 12/91 (122 days)	15,250 spots	-	244 spots
7/92 - 8/92 (14 days)	868 spots	756 spots	560 spots
7/92 - 10/92 (11 weeks)	-	-	8 one-hour shows
5/93 - 7/93 (38 days)	4,218 spots	-	-

Source: Inventario de Emisiones Radiales, Annex 8, Final Report by Patricio Barriga

IV. EVALUATION METHODOLOGY

A. Research Questions

As noted above, the objective of the evaluation was to determine the effectiveness of the breastfeeding promotion intervention in modifying health workers' and mothers' knowledge and the practice of exclusive breastfeeding. To make this determination, the evaluation addressed four basic research questions:

Was the intervention carried out and what did it consist of?

The first task in establishing attribution of measured effects is to determine the extent to which the intervention as designed actually reached the target population. This question has already begun to be addressed in the previous section describing the intervention and how it was carried out in the two regions studied. The post survey examined the extent to which the intervention

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[3] Radio spots were also broadcast on local stations in other regions of the country outside of the two study regions.

reached the target population, by looking at the coverage of each element of the intervention as measured by respondents' reported exposure. The report also reviews the findings of the pre-intervention survey to establish the baseline against which future improvements could occur.

What impact did the intervention components have on knowledge and practices?

The evaluation looks at the possible impact of the intervention in three ways. First, using only the post-intervention data, the study compares the knowledge of those exposed to the intervention with that of respondents who were not exposed, to determine if any statistically significant differences exist. Comparisons are made based on exposure to individual elements in the intervention (e.g., individual print materials) as well as to aggregate measures of exposure. Second, for those variables where statistically significant differences are found, the study compares the post measurement with the pre-intervention data to explore the magnitude of the improvements for exposed vs. non-exposed. Knowledge gains over time would be expected to be higher among the group exposed to the study intervention than among those not exposed. Third, in the case of impact of the intervention on mothers' breastfeeding practices, the hierarchy of expected effects holds that exposure affects knowledge, and knowledge affects practices. Mothers' breastfeeding practices are thus examined by mothers' level of knowledge.

What aspects of the intervention program were the most successful?

The strength of the statistical association between exposure to an intervention component and the desired effects will be tempered against process information about how readily the component was implemented (i.e., feasibility) to determine which parts of the three intervention components worked the best.

What lessons can be learned from the study to improve the effectiveness of similar intervention programs in the future?

Finally, in drawing overall conclusions from the intervention, the evaluation considers how the breastfeeding promotion activities could have been implemented differently to enhance their effectiveness. Specifically, the study focuses on what was learned about the successes and failures of different aspects of the intervention that could be applied to future efforts to promote optimal breastfeeding in Honduras.

B. Sampling

The pre-intervention survey took place in three health regions: Regions IV, V and VII. Due to financial constraints, however, the post-intervention measurement was conducted in only two regions, Regions V and VII. For this reason, pre-post comparisons presented here exclude Region IV. Differences in knowledge and/or breastfeeding practices for the pre measurement

that exist between this report and the baseline report[4] prepared in 1991 are the result of the exclusion of Region IV in the analysis presented here.

For both the pre and post measurements, the sampling unit was the facility. A multi-stage sampling approach was used to select the study sites. Facilities were first stratified by type: (a) small rural health posts staffed by an auxiliary nurse, known as *Centros de Salud Rurales* or CESARs; (b) medium-sized health centers, staffed with one or more doctors and nurses, known as *Centros de Salud con Médico* or CESAMOs; and (c) large urban health centers, often based in hospitals, known as CESAMOs Urbanos. Because there are about three times as many CESARs as CESAMOs in each region, approximately half of the CESAMOs and about 20% of the CESARs were randomly selected for the purpose of ensuring that data collection was extended throughout each region. Table 5 shows the number of facilities sampled in each survey, as compared to the total number of facilities in each region. With a few exceptions, the same facilities sampled in the pre measurement were included in the post measurement.

TABLE 5
Number of Facilities Sampled in Pre and Post Measurements by Region

Facility Type	Region V			Region VII		
	Pre	Post	Total in Region	Pre	Post	Total in Region
CESAMO	12	13	31	11	10	20
CESAR	15	16	86	11	12	61
Total	27	29	117	22	22	81

Once a facility was selected, all available personnel at the facility were interviewed. Three types of health workers were of principal interest in the intervention and therefore in the analysis because of their direct provider role in maternal and child care: physicians (including both recent graduates not yet board-certified and those already board-certified with varying years of experience); nurses (both professional and auxiliary); and midwives (*parteras*), who while not MOH employees, nonetheless have an affiliation with MOH health centers, receiving monthly training and support. Most often, monthly midwife trainings amounted simply to resupplying midwives with birthing kits. Because midwives do not work in the MOH facilities, they were interviewed in the community. An attempt was made to interview one midwife in each community in a health facility's catchment area.

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[4] Baume, Carol A., Zeldin, Leslie, and Rosenbaum, Julia. Prácticas de la Lactancia y el Desteste en Honduras. Baseline Study. Academy for Educational Development/Nutrition Communication Project. 1991.

The sample universe for mothers consisted of mothers with infants six months of age and under living in each of the communities in the catchment area of the health facility. Each health center has some five to fifteen communities or neighborhoods in its catchment area. To ensure dispersion of the mothers' sample, in the pre-intervention measurement, one mother was interviewed per community in a CESAR catchment area and two mothers per community in a CESAMO catchment area. In the post measurement, this was increased to two mothers per CESAR community and three to four mothers per CESAMO community. Someone other than the mother was interviewed if she had primary responsibility for the child and was familiar with how the child was fed since birth. In order to facilitate identification of eligible mothers (i.e., having an infant under six months), health worker respondents (especially midwives) were often asked to identify mothers with children under six months. While this approach may have biased the mothers' sample in favor of mothers with higher contact with health workers, in fact mothers' exposure to breastfeeding messages through interpersonal contacts at the post measurement was very low. The sample sizes for both the health workers' and mothers' surveys are shown by region and measurement in Table 6.

TABLE 6
Number of Health Professionals and Mothers Sampled in Pre and Post Measurements by Region

Respondent	Region V		Region VII	
	Pre	Post	Pre	Post
Physicians	7	30	7	10
Nurses	35	101	35	62
Subtotal	55	131	42	72
Mothers	220	300	258	254

Data were also collected at the pre- and post-intervention measurements from a large number of midwives associated with the different health facilities visited: 176 midwives were interviewed in the baseline survey and 116 in the post survey. However, although the intervention was originally conceived of as including midwives, in practice there was very limited participation of midwives in the training intervention and distribution of print materials. For this reason, midwives are excluded from the analysis presented in this report. A summary of findings from the midwife interviews is presented in Annex 3 of the report to shed light on persistent knowledge gaps among midwives that need to be addressed in future breastfeeding interventions.

C. Instruments and Data Collection

The mother and health worker instruments were developed based on the findings of the

qualitative research on breastfeeding carried out by the NCP in Honduras in 1990. Copies of the instruments used in the pre- and post-intervention measurements are included in Annex 1. The pre and post instruments for each target group are identical except for addition of questions in the post intervention measurement that deal with: (a) the exposure to the different intervention components used to deliver messages, (b) the content of the main messages disseminated through the intervention, and (c) whether the intervention materials had been used to train midwives.

The pre-intervention measurement was conducted between February and April 1991. The post-intervention measurement was conducted in May and June 1993. The interviewers were Honduran professionals given a four-day training on the instruments and interview techniques. Process information related to the implementation of the intervention in Regions V and VII was collected retrospectively in August 1993 through interviews with national, regional and area level officials by AED consultant Dora Castillo de Méndez.

D. Data Analysis

1. Independent Variables

For health workers, three measures of exposure were used in the analysis: an aggregate measure of exposure (i.e., exposure to any element of the intervention), exposure to training, and exposure to any print material. The aggregate exposure measure combines exposure to training and print. The measure of access to messages via print aggregates three different types of print materials: poster, flip chart and reference guide. Exposure to print was based only on access to these three materials because they were the most widely distributed materials.

Exposure to training refers only to training related to breastfeeding organized by the Ministry of Health. At the post measurement, such training was sponsored primarily by the MOH Divisions of Health Education, Maternal and Child Health, and Food and Nutrition, with technical assistance from the Nutrition Communication Project.

Access to the NCP-supported training and print materials was measured through dichotomous variables requiring Yes-No answers. A "Yes" answer was coded as 1, and a "No" answer was coded as 0. Aggregate measures were constructed by adding the different channels through which information was received; these were then dichotomized. For example, for the aggregate exposure variable, there are two possible options, independent of the number of channels through which information was received: exposed (to any pertinent channel) and not exposed. Because the poster contained only one message, the analysis considered poster as a pertinent channel only for knowledge items about exclusive breastfeeding in the first six months.

Three measures of exposure were also used in the analysis of mothers: radio, print materials and interpersonal communication. Exposure via radio taps whether at least one radio spot was heard and whether at least one message was recalled unprompted. Exposure via print materials taps whether intervention-related materials were received and whether intervention-related posters or flip charts were observed. Exposure via interpersonal communication taps whether

intervention-related messages were communicated by health workers or midwives during prenatal or postnatal visits or group talks.

The exposure items listed above were all dichotomized variables. Originally, they were coded as 1=Mentioned and 2=Not mentioned. However, these variables were recoded and reinterpreted as 1=Yes and 0=No. An aggregate measure of exposure was constructed by adding the different channels through which information was received.

2. Dependent Variables

The questionnaires used in the study included numerous items related to knowledge. The analysis assumed that relationships between exposure to the messages delivered by the intervention and knowledge of that information would be better studied by constructing knowledge scales.

For the health worker instrument, four distinct topics were identified that related to the content of the intervention and were based on theoretical assumptions of what knowledge items should be examined together from a programmatic perspective. The four subject areas were: exclusive breastfeeding for newborns, exclusive breastfeeding in the first six months (which, to reduce ambiguity, was measured by asking about breastfeeding of a five-month old infant), benefits of breastfeeding, and skills for resolving breastfeeding-related problems. An overall knowledge scale was created by combining the four individual scales.

Alpha coefficients, which measure internal consistency, were calculated to determine the reliability of the scales. An alpha coefficient is often viewed as a correlation between one scale and other possible scales containing the same number of items. Because alpha coefficients are correlation coefficients, they may range from 0 to 1. In practice, a scale is considered reliable and thus internally consistent when an alpha coefficient of .70 or more is obtained.

Based on the reliability of the five scales, it was decided to limit the use of scales to three areas: exclusive breastfeeding for newborns, exclusive breastfeeding in the first six months, and overall knowledge. Results for the other knowledge areas (benefits and skills) are presented individually for each knowledge item. The alpha coefficients for the three scales used are shown in Table 7. The most reliable scale is that for exclusive breastfeeding in the first six months.

TABLE 7
Alpha Coefficients for Knowledge Scales Used for Health Workers

SCALE	ALPHA
Exclusive breastfeeding for newborn	.46
Exclusive breastfeeding in the first six months	.71
Overall	.61

The construction of scales assumes that knowledge is additive. A full score means that respondents are fully knowledgeable about training content regarding the issue being measured. The higher the score, the more knowledgeable a respondent would be about that subject matter. The reverse is also true. The lower the score, the less knowledgeable a respondent would be. The expectation is that with training, scores improve, even though they may not necessarily become full scores.

The content of each of the three scales used for health workers is shown in Annex 2. Each scale is composed of a different number of items. For example, the scale "Exclusive Breastfeeding for Newborn" has four items, whereas the scale "Exclusive Breastfeeding in the First Six Months" has nine items. The composite scale for overall knowledge contains 26 items. To facilitate comparison of knowledge scores, the value reported for scaled subject areas is the percent of correct responses given. That is, a value of 50% would mean that a respondent was able to respond correctly to half of the items that make up a given scale.

Scales similar to those considered for health workers were also explored for mothers. None of the scales proved sufficiently reliable (i.e., showed adequate internal consistency), and so results for mothers do not use scales. The analysis of the interaction between knowledge, exposure and breastfeeding practice does, however, classify mothers as high knowledge or low knowledge, based on whether the number of correct responses given was above or below the median number of correct responses for the mothers as a group.

In addition to the knowledge items, the questionnaire for mothers also addressed breastfeeding practices. The key dependent variable of interest in the evaluation was the practice of exclusive breastfeeding to six months of age. Exclusive breastfeeding was measured through 24-hour recall[5] (i.e., the instrument included several questions concerning what the child was fed during the 24 hours prior to the interview). The respondent was asked whether the child had been fed: breastmilk, powdered or cow's milk, water, teas, or other liquids and solids. By definition, an exclusively breastfed child was one who was fed only breastmilk and none of the other foods. Based on this exclusionary principle, an exclusive breastfeeding variable was constructed. This variable was used to identify exclusive breastfeeders among children whose age ranged from 0 to 6 months. Data regarding the practice of exclusive breastfeeding are presented by the child's age using one-month intervals.

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[5] Some studies have found discrepancies in the levels of exclusive breastfeeding based on the recall period used to measure the practices, mainly 24-hour versus one week (Piwoz, 1994). In a recent study conducted in Peru (Creed Kanashiro et al., 1994), however, very little difference was found in breastfeeding levels using the two methods. The study suggests that any one of the two can be used. The discrepancies in reported behavior are minimal and maybe due to the introduction of other foods besides breastmilk on an irregular basis.

V. FINDINGS

A. Health Workers

1. Summary of Pre-Intervention Findings

The baseline survey[6] conducted during February through April 1991 in three health regions (e.g., IV, V and VII) identified several areas of deficient knowledge among health workers in the study regions. Among the three main types of health workers interviewed, midwives showed the greatest deficiencies in the areas of knowledge needed to effectively promote breastfeeding.

With respect to the MOH norm prevailing at that time, only a small proportion of health workers recommended exclusive breastfeeding through four months of age: 2% of midwives, 22% of nurses and 20% of physicians interviewed. The vast majority of health workers recommended giving water to breastfeeding infants.

Most health workers knew the benefits of breastmilk and colostrum but were less well prepared to effectively counsel mothers on how to overcome breastfeeding-related problems. While 93% knew that increasing the frequency of breastfeeding produces more breastmilk, only 20% of midwives and 55% of nurses knew that poor mothers could successfully breastfeed and produce sufficient breastmilk. Only 6% of all health workers understood that the position of the nursing infant could be the source of painful nipples.

Health workers also reported having very limited access to educational materials on breastfeeding promotion, particularly at the level of the rural health posts. Fewer than 3% of the 276 midwives interviewed reported having any promotional material on breastfeeding available, and under 30% of nurses had access to reference guides or posters.

2. Comparability of Pre and Post Samples

As was noted in the section on methodology, the facilities sampled for the post measurement were nearly identical to those included in the pre measurement. The actual samples chosen, however, included a much larger number of health workers in the post survey (40 physicians and 163 nurses), with the increase coming mainly from the larger health centers and occurring disproportionately in Region V. Tables 8 and 9 compare the size of towns from which health facilities were sampled in the pre and post surveys in Regions V and VII, respectively. The majority of health workers interviewed in both health regions were located in health centers in larger towns. The proportion of health workers from larger towns rose slightly in the post surveys, although the increase was statistically significant only for Region VII.

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[6] The pre-intervention sample from Regions V and VII included 14 physicians, 70 nurses and 176 midwives.

TABLE 8
Distribution of Health Workers Interviewed by Size of Town where Health Facility is Located and Measurement Region V

Location of Facility	Pre		Post	
	n	%	n	%
Larger Towns	39	71%	107	82%
Smaller Towns	16	29%	24	18%
Total	55	100%	131	100%

$Chi^2 = 2.66$, df 1, p = .10

TABLE 9
Distribution of Health Workers Interviewed by Size of Town where Health Facility is Located and Measurement Region VII

Location of Facility	Pre		Post	
	n	%	n	%
Larger Towns	29	69%	62	86%
Smaller Towns	13	31%	10	14%
Total	42	100%	72	100%

$Chi^2 = 4.79$, df 1, p = .02

The distribution of personnel interviewed by measurement, region and professional category (i.e., nurse or physician) are presented in Tables 10 and 11. The tables show how the increase in the size of the post survey sample resulted primarily from increases in the number of personnel interviewed in the larger health centers. The post intervention measurement in Region V is also marked by a larger relative proportion of physicians, increasing from around 13% in the baseline survey to 23% in the post survey.

TABLE 10
Number of Personnel Interviewed at Pre-Test
Analyzed in this Report by Region and Professional Category

Type of Facility	Region V						Region VII					
	MD		Nurse		Subtotal		MD		Nurse		Subtotal	
	n	%	n	%	n	%	n	%	n	%	n	%
CESAR			16	33.3	16	29.1			14	40.0	14	33.3
CESAMO	7	100.0	22	45.9	29	52.7	7	100.0	14	40.0	21	50.0
CESAMO Urbano			10	20.8	10	18.2			7	20.0	7	16.7
Total	7	100.0	48	100.0	55	100.0	7	100.0	35	100.0	42	100.0

TABLE 11
Number of Personnel Interviewed at Post-Test
Analyzed in this Report by Region and Professional Category

Type of Facility	Region V						Region VII					
	MD		Nurse		Subtotal		MD		Nurse		Subtotal	
	n		n	%	n	%	n	%	n	%	n	%
CESAR			19	18.8	19	14.5			10	16.1	10	13.9
CESAMO	10	33.3	34	33.7	44	33.5	7	70.0	26	41.9	33	45.8
CESAMO Urbano	20	66.7	48	47.5	68	52.0	3	30.0	26	41.9	29	40.3
Total	30	100.0	101	100.0	131	100.0	10	100.0	62	100.0	72	100.0

3. Access to Print and Training

According to the program description presented above, a higher level of program intensity was expected in Region V than in Region VII. The difference in intensity would be detectable at the post intervention measurement. To determine if the sample chosen reflects this expectation, program coverage levels in the two regions at the post measurement are compared in Table 12. Coverage levels can be defined as the percentage of respondents who: (a) had access to print materials in the aggregate or to specific materials, and (b) participated in training activities sponsored by the intervention. Both the number and percentage of respondents that reported access to intervention messages via print materials or training are included.

TABLE 12
Regional Coverage of Health Workers by Channel at Post Measurement

Channel	Region VII (N = 72)		Region V (N = 131)	
	n	%	n	%
Any Print	66	91.7	109	83.2
Reference Guide	42	58.3	65	49.6
Poster	56	77.8	97	74.0
Flip Chart	47	65.3	84	64.1
Training	19	26.4	36	27.4

None of the differences in exposure to intervention activities between the two regions presented in Table 12 is statistically significant. This result was unexpected, given what is known about the differences in program intensity between the two regions and in view of the findings of Castillo de Méndez during her August 1993 field interviews in Region V and VII. Castillo de Méndez found that 75% of personnel in Region V said they had been trained as compared with only 32% in Region VII.

It could be argued either that the study's post intervention sample did not necessarily reflect program performance or that in reality, there was little difference in the reach of the training and print materials between the two regions. In either case, the lack of differences between the regions regarding coverage makes it unadvisable to carry out the impact analysis using a regional breakdown. Instead, assessment of the intervention's impact is based on actual exposure to intervention messages via the different channels.

Table 13 presents the number and percentage of respondents indicating access to any print materials on

child nutrition/breastfeeding at the facility where they work, both at the pre and post measurements. Print materials included an array of options: promotional and educational posters, reference guide for personnel, cloth or cardboard flip charts, flip chart manuals, and comic books. From the pre to the post measurement, the proportion of personnel acknowledging access to print materials increased from 62% to 86%. That increase is statistically significant ($p \leq .001$).

TABLE 13
Health Worker Access to Any Print Material by Measurement

	Pre		Post	
	n	%	n	%
No Access	37	38.1	28	13.8
Access	60	61.9	175	86.2
Total	97	100.0	203	100.0

Table 14 shows the breakdown of the main types of child nutrition/breastfeeding print materials to which respondents reported to have had access at their work site at the pre and post measurements. Both the number and percentage of respondents are presented. Access to all types of print materials included in the table increased significantly from the pre to the post measurement ($p \leq .001$). The percentage of respondents indicating access to posters and flip charts in the health facility more than doubled between measurement points and nearly doubled for reference guides.

TABLE 14
Health Worker Access to Main Types of Print Materials by Measurement

Access to:	Pre		Post		p
	n	%	n	%	
Reference Guides	28	28.9	107	52.7	***
Posters	29	29.9	153	75.4	***
Flip Charts	17	17.5	131	64.5	***

*** Very highly significant, $p \leq .001$

Table 15 shows the number and proportion of respondents that indicated at each measurement point having participated in any training activities regarding breastfeeding in the past year. Curiously, the proportion of respondents who received training dropped substantially between the two measurements, with the post survey capturing a much smaller proportion of health personnel who reported having received some breastfeeding training in the past year. The decrease is statistically significant ($p \leq .001$).

TABLE 15
Health Worker Participation in Training Activities in the Past Year by Measurement

	Pre		Post	
	n	%	n	%
Not Trained	32	33.0	148	72.9
Trained	65	67.0	55	27.1
Total	97	100.0	203	100.0

A possible explanation for this finding is that the post-measurement sample was biased against participation in the training intervention because it took a larger proportion of respondents from large facilities, where staff turnover and the influx of recent medical and nursing graduates are often higher. That is, by oversampling in larger facilities, the post survey may have captured a large number of respondents who were not even present in the region during the 1992 training activities.

4 Impact of Overall Intervention on Knowledge

Table 16 shows the impact of exposure to any aspect of the intervention on the different knowledge scales and individual knowledge items. Exposure here is defined as access to intervention messages via any channel, i.e., any combination of print and training. The figures presented are the mean knowledge scores obtained for the group not exposed versus the group exposed to the intervention.

The data in Table 16 indicate that there are statistically significant differences between the study groups on the measures of: (a) overall knowledge, and (b) exclusive breastfeeding in the first six months. When all professional categories are considered, exposure to the intervention makes a difference. Exposed staff are more knowledgeable than non-exposed staff in these two content areas.

When results are broken down by professional category, nurses exhibit the same statistically significant differences as found for health workers as a whole: exposed nurses are more knowledgeable overall than non-exposed nurses and are more aware of the appropriateness of exclusive breastfeeding in the first six months.

TABLE 16
Impact of Any Exposure at Post Measurement
Mean Percentages by Study Group and Professional Category

Scale/Knowledge Item	No Access	Access	p
Overall			
All Professions	**55.9**	**66.5**	**.001****
Nurses	**57.5**	**67.5**	**.03***
Physicians	53.5	63.8	.15
Exclusive Breastfeeding for Newborn			
All Professions	97.2	93.2	.06
Nurses	96.4	93.5	.25
Physicians	98.5	91.3	.15
Exclusive Breastfeeding in the First Six Months			
All Professions	44.9	67.5	.00***
Nurses	50.7	69.8	.02*
Physicians	35.5	56.3	.11
Benefits			
All Professions			
Protection against disease	86.7	84.8	.75
Hygienic	11.1	23.4	.07
Fosters closer relationship mother-child	28.9	18.4	.12
Convenient	33.3	35.4	.79
Nurses			
Protection against disease	85.7	83.7	.52
Hygienic	7.1	22.2	.07
Fosters closer relationship mother-child	17.9	14.8	.68
Convenient	39.3	34.1	.60
Physicians			
Protection against disease	88.2	91.3	.75
Hygienic	17.6	30.4	.36
Fosters closer relationship mother-child	47.1	39.1	.62
Convenient	23.5	43.5	.19
Skills			
All Professions			
Breastmilk more frequently to increase milk production	100.0	98.1	.46
Nipples split due to position child held	20.0	25.9	.41
If given other foods, breastmilk dries up	66.7	59.5	.38
Nurses			
Breastmilk more frequently to increase milk production	100.0	98.5	.99
Nipples split due to position child held	14.3	24.4	.24
If given other foods, breastmilk dries up	60.7	60.0	.94
Physicians			
Breastmilk more frequently to increase milk production	100.0	95.7	.99
Nipples split due to position child held	29.4	34.8	.72
If given other foods, breastmilk dries up	76.5	56.5	.19

*** very highly significant, $p \leq .001$
** highly significant, $p < .01$

These data suggest that exposure to the intervention as a whole made a difference in raising the awareness of health workers, particularly nurses, of the new MOH norm for exclusive breastfeeding (i.e., expanding the recommended period for exclusive breastfeeding from at least four months to a full six months).

Nevertheless, the results for both study groups indicate that there are persistent knowledge gaps among health workers in the two regions, regardless of their exposure to the NCP-supported intervention. Only a third to a half of health workers compared to the % trained according to Melendez are knowledgeable of the full range of benefits of breastfeeding and of practical ways of overcoming difficulties with breastfeeding.

5. Impact of Print on Knowledge and Message Recall

Table 17 shows the impact of print materials on knowledge. The data indicate that there are statistically significant differences between staff with and without access to these materials. Staff with access to print materials obtained higher scores in two scales: overall knowledge and exclusive breastfeeding in the first six months. These differences were significant for health workers as a whole and for nurses when professional categories were considered separately. When physicians were considered separately, a significant difference was found only for the scale for exclusive breastfeeding in the first six months. In addition, both health workers as a whole and nurses as a group with access to print materials were significantly more aware of the hygienic benefits of breastfeeding than were personnel without access.

A significant negative relationship between access and knowledge was found for physicians for the item, "If the infant is given other foods, breastmilk dries up." Physicians with access to print materials scored lower on this item than did physicians without access.

Tables 18 through 20 permit an independent assessment of the effectiveness of each major type of print material distributed as part of the intervention in increasing knowledge in the different content areas investigated. When all professional categories are considered, posters and flip charts seem to have had the strongest impact, and the reference guides, the most limited.

Staff as a whole and nurses as a group reporting access to posters in their facilities obtained significantly higher scores on the knowledge scale for exclusive breastfeeding in the first six months. Access to flip charts demonstrated a similar effect, significantly increasing both knowledge of exclusive breastfeeding in the first six months and overall knowledge for all personnel and for nurses as a group. Access to flip charts was also associated with a small but significant increase in the percentage of all health workers aware of the hygienic benefits of breastfeeding.

Access to the reference guide was associated only with small and conflicting differences with respect to knowledge of the benefits of breastfeeding. The reference guide appears to have made no difference with respect to overall knowledge or awareness of the intervention's key message on exclusive breastfeeding up to six months.

TABLE 17
Impact of Print at Post Measurement
Mean Percentages by Study Group and Professional Category

Scale/Knowledge Item	No Access	Access	p
Overall			
All Professions	**55.0**	**66.8**	**.005****
Nurses	**57.5**	**67.1**	**.03***
Physicians	60.0	75.2	.09
Exclusive Breastfeeding for Newborn			
All Professions	96.0	93.5	.81
Nurses	96.6	93.4	.32
Physicians	95.0	93.7	.48
Exclusive Breastfeeding in the First Six Months			
All Professions	**42.9**	**68.1**	**.005****
Nurses	**50.7**	**69.8**	**.02***
Physicians	**32.4**	**59.1**	**.03***
Benefits			
All Professions			
Protection against disease	86.0	85.5	.86
Hygienic	**10.0**	**24.2**	**.03***
Fosters closer relationship mother-child	30.0	17.6	.06
Convenient	32.0	35.9	.61
Nurses			
Protection against disease	83.3	84.2	.91
Hygienic	**6.7**	**22.6**	**.05***
Fosters closer relationship mother-child	16.7	15.0	.82
Convenient	36.7	34.6	.83
Physicians			
Protection against disease	90.0	90.0	.99
Hygienic	15.0	35.0	.14
Fosters closer relationship mother-child	50.0	35.0	.34
Convenient	25.0	45.0	.18
Skills			
All Professions			
Breastmilk more frequently to increase milk production	100.0	98.0	.32
Nipples split due to position child held	18.0	26.8	.21
If given other foods, breastmilk dries up	70.0	58.2	.14
Nurses			
Breastmilk more frequently to increase milk production	100.0	98.5	.50
Nipples split due to position child held	13.3	24.8	.18
If given other foods, breastmilk dries up	63.3	59.4	.69
Physicians			
Breastmilk more frequently to increase milk production	100.0	95.0	.31
Nipples split due to position child held	25.0	40.0	.31
If given other foods, breastmilk dries up	80.0	50.0	.05*

*** very highly significant, $p \leq .001$
** highly significant, $p \leq .01$
* significant, $p \leq .05$

TABLE 18
Impact of Poster at Post Measurement
Mean Percentages by Study Group and Professional Category

Scale	No Access	Access	p
Exclusive Breastfeeding in the First Six Months			
All Professions	50.2	69.3	.001***
Nurses	51.9	72.1	.001***
Physicians	46.5	54.2	.51

*** very highly significant, $p \leq .001$

To further explore the impact of the print materials, Tables 21 and 22 examine the relationship of access to specific print materials (flip chart and reference guide) and recall of the key messages of the intervention. Access to either type of print material was only significantly associated with a small increase in recall of the main slogan of the intervention, "Only breastmilk and nothing else in the first six months of life." No significant differences were found with respect to recall of the other main messages.

It should be noted that ability to recall other key messages of the intervention (e.g., feed colostrum, introduce other foods after six months, breastfeed up to two years) was low to moderate for both study groups, suggesting that the print materials were not particularly effective in communicating these messages.

TABLE 19
Impact of Flip Chart at Post Measurement
Mean Percentages by Study Group and Professional Category

Scale/Knowledge Item	No Access	Access	p
Overall			
All Professions	59.6	68.2	.001***
Nurses	60.4	68.7	.001***
Physicians	57.7	65.5	.21
Exclusive Breastfeeding for Newborn			
All Professions	94.4	93.9	.77
Nurses	94.0	94.0	.99
Physicians	95.5	93.0	.63
Exclusive Breastfeeding in the First Six Months			
All Professions	52.1	71.4	.001***
Nurses	56.2	73.0	.001***
Physicians	42.9	61.1	.11
Benefits			
All Professions			
Protection against disease	88.9	83.2	.27
Hygienic	12.5	25.2	.03**
Fosters closer relationship mother-child	25.0	18.3	.26
Convenient	31.9	36.6	.50
Nurses			
Protection against disease	88.0	82.3	.36
Hygienic	12.0	23.0	.10
Fosters closer relationship mother-child	16.0	15.0	.87
Convenient	34.0	35.4	.86
Physicians			
Protection against disease	90.9	88.9	.83
Hygienic	13.6	38.9	.07
Fosters closer relationship mother-child	45.5	38.9	.68
Convenient	27.3	44.4	.26
Skills			
All Professions			
Breastmilk more frequently to increase milk production	100.0	97.7	.19
Nipples split due to position child held	19.4	27.5	.20
If given other foods, breastmilk dries up	66.7	58.0	.22
Nurses			
Breastmilk more frequently to increase milk production	100.0	98.2	.34
Nipples split due to position child held	16.0	25.7	.17
If given other foods, breastmilk dries up	60.0	60.2	.98
Physicians			
Breastmilk more frequently to increase milk production	100.0	94.0	.26
Nipples split due to position child held	27.3	38.9	.43
If given other foods, breastmilk dries up	81.8	44.4	.01**

*** very highly significant, $p \leq .001$
** highly significant, $p \leq .01$

TABLE 20
Impact of Reference Guide at Post Measurement
Mean Percentages by Study Group and Professional Category

Scale/Knowledge Item	No Access	Access	p
Overall			
All Professions	62.9	67.2	.08
Nurses	64.8	67.0	.41
Physicians	58.4	68.6	.14
Exclusive Breastfeeding for Newborn			
All Professions	na	na	na
Nurses	na	na	na
Physicians	na	na	na
Exclusive Breastfeeding in the First Six Months			
All Professions	60.5	68.2	.09
Nurses	66.5	68.9	.64
Physicians	46.7	62.6	.21
Benefits			
All Professions			
Protection against disease	87.5	83.2	.38
Hygienic	14.6	26.2	.04*
Fosters closer relationship mother-child	27.1	15.0	.03*
Convenient	26.0	43.0	.01**
Nurses			
Protection against disease	88.1	81.3	.24
Hygienic	11.9	25.0	.04*
Fosters closer relationship mother-child	17.9	13.5	.45
Convenient	25.4	41.7	.03
Physicians			
Protection against disease	86.2	100.0	.19
Hygienic	20.7	36.4	.31
Fosters closer relationship mother-child	48.3	27.3	.23
Convenient	27.6	54.5	.11
Skills			
All Professions			
Breastmilk more frequently to increase milk production	99.0	98.1	.62
Nipples split due to position child held	20.8	28.0	.23
If given other food ...astmilk dries up	61.5	60.7	.91
Nurses			
Breastmilk more frequently to increase milk production	100.0	97.9	.23
Nipples split due to position child held	17.9	26.0	.22
If given other foods, breastmilk dries up	58.2	61.5	.68
Physicians			
Breastmilk more frequently to increase milk production	96.6	100.0	.53
Nipples split due to position child held	69.0	54.5	.39
If given other foods, breastmilk dries up	27.6	45.5	.28

na not applicable because feeding of newborn was not specifically addressed in the reference guide
** highly significant, $p \leq .01$
* significant, $p \leq .05$

TABLE 21
Relationship between Flip Chart and Recall of Main Intervention Messages by Study Group and Professional Category

Message	No Access	Access	p
All Professions			
Feed colostrum immediately after birth	19.4	25.2	.35
Breastfeed exclusively up to 6 months	37.5	50.4	.08
Introduce other foods after 6 months	8.3	17.6	.07
Breastfeed up to 2 years	6.9	5.3	.69
Correct completion of slogan	75.0	88.5	.01**
Aggregate recall score (t test)	30.5	36.2	.06
Physicians			
Feed colostrum immediately after birth	16.7	23.5	.99
Breastfeed exclusively up to 6 months	50.0	64.7	.64
Introduce other food after 6 months	0.0	29.4	.13
Breastfeed up to 2 years	16.7	5.9	.48
Correct completion of slogan	66.7	100.0	.06
Aggregate recall score (t test)	33.3	42.6	.20
Nurses			
Feed colostrum immediately after birth	18.0	26.0	.31
Breastfeed exclusively up to 6 months	34.1	45.8	.19
Introduce other food after 6 months	9.1	16.7	.23
Breastfeed up to 2 years	6.85	5.2	.70
Correct completion of slogan	81.3	88.5	.28
Aggregate recall score (t test)	31.2	34.6	.38

** highly significant, $p \leq .01$

TABLE 22
Relationship between Reference Guide and Recall of Main Intervention Messages by Study Group and Professional Category

Message	No Access	Access	p
All Professions			
Feed colostrum immediately after birth	25.0	21.5	.55
Breastfeed exclusively up to 6 months	41.7	49.5	.26
Introduce other foods after 6 months	14.6	14.0	.90
Breastfeed up to 2 years	4.2	7.5	.32
Correct completion of slogan	78.1	88.8	.04*
Aggregate recall score (t test)	32.5	35.7	.26
Physicians			
Feed colostrum immediately after birth	33.3	9.1	.31
Breastfeed exclusively up to 6 months	50.7	72.7	.40
Introduce other food after 6 months	16.7	27.3	.64
Breastfeed up to 2 years	8.3	9.1	.94
Correct completion of slogan	83.3	100.0	.47
Aggregate recall score (t test)	39.6	40.9	.86
Nurses			
Feed colostrum immediately after birth	23.6	23.5	.99
Breastfeed exclusively up to 6 months	34.5	47.1	.14
Introduce other food after 6 months	18.2	11.8	.29
Breastfeed up to 2 years	3.6	7.1	.39
Correct completion of slogan	81.8	89.4	.20
Aggregate recall score (t test)	31.3	35.0	.30

* significant, $p \leq .05$

6. Impact of Training on Knowledge and Message Recall

Tables 23 and 24 present results regarding the impact of training on knowledge.

No differences were found between the trained and non-trained groups when health workers were considered as a whole. When nurses were considered separately, statistically significant differences were found only regarding the appropriateness of exclusive breastfeeding in the first six months and negatively for knowledge that breastmilk dries up when other foods are given. Training seems to have had no impact on physician knowledge.

The differences found between physicians and nurses cannot necessarily be explained by the way the training was conducted, since different types of health personnel were apparently trained together (although in Region VII, few physicians and professional nurses participated in the training).

No relationship was found between exposure of nurses and physicians to training and ability to recall the key messages of the intervention.

The impact of training was also examined for the 116 midwives interviewed in the post-measurement survey. As is discussed in Annex 3, overall midwife knowledge related to several key breastfeeding knowledge areas did improve between the two measurements. There is not strong evidence, however, that these improvements were related to the training midwives received as part of the intervention. Exposure to training was found to have a statistically significant association only with respect to recall of one message, "Feed colostrum immediately after birth." Some 28.6% of the trained midwives recalled this message, while only 13.4% of midwives not trained knew the message ($p = .04$). The small difference found between midwives who received training about breastfeeding and those who did not suggests that the training had little lasting impact on midwives.

TABLE 23
Impact of Training at Post-Measurement
Mean Percentages by Study Group and Professional Category

Scale/Knowledge Item	No Access	Access	p
Overall			
All Professions	64.2	67.9	.18
Nurses	64.8	69.3	.12
Physicians	62.0	56.7	.54
Exclusive Breastfeeding for Newborn			
All Professions	94.1	93.9	.94
Nurses	93.5	95.3	.38
Physicians	96.3	83.3	.06
Exclusive Breastfeeding in the First Six Months			
All Professions	61.9	71.8	.06
Nurses	64.7	75.5	.05*
Physicians	52.6	42.6	.53
Benefits			
All Professions			
Protection against disease	84.6	87.0	.66
Hygienic	20.1	22.2	.74
Fosters closer relationship-mother-child	21.5	18.5	.64
Convenient	33.6	38.9	.48
Nurses			
Protection against disease	83.5	85.4	.76
Hygienic	18.3	22.9	.50
Fosters closer relationship-mother-child	15.7	14.6	.86
Convenient	33.0	39.6	.42
Physicians			
Protection against disease	81.2	100.0	.38
Hygienic	26.5	16.7	.61
Fosters closer relationship-mother-child	41.2	50.0	.69
Convenient	35.3	33.3	.93
Skills			
All Professions			
Breastmilk more frequently to increase milk production	98.7	98.1	.79
Nipples split due to position child held	26.8	18.5	.22
If given other foods, breastmilk dries up	64.4	51.9	.10
Nurses			
Breastmilk more frequently to increase milk production	99.1	97.9	.52
Nipples split due to position child held	25.2	16.7	.24
If given other foods, breastmilk dries up	65.2	47.9	.04*
Physicians			
Breastmilk more frequently to increase milk production	97.1	100.0	.67
Nipples split due to position child held	32.4	33.3	.96
If given other foods, breastmilk dries up	61.8	83.3	.31

significant, $p \leq .05$

TABLE 24
Relationship between Training and Recall of Main Intervention Messages by Study Group and Professional Category

Message	Not Trained	Trained	p
All Professions			
Feed colostrum immediately after birth	24.2	20.4	.57
Breastfeed exclusively up to 6 months	46.3	44.4	.81
Introduce other foods after 6 months	15.4	11.1	.43
Breastfeed up to 2 years	7.4	1.9	.14
Correct completion of slogan	81.9	88.9	.23
Aggregate recall score (t test)	34.9	32.4	.43
Physicians			
Feed colostrum immediately after birth	21.1	25.0	.99
Breastfeed exclusively up to 6 months	57.9	75.0	.99
Introduce other foods after 6 months	21.1	25.0	.99
Breastfeed up to 2 years	10.0	0.0	.99
Correct completion of slogan	10.5	0.0	.99
Aggregate recall score (t test)	39.4	43.7	.59
Nurses			
Feed colostrum immediately after birth	25.0	20.5	.55
Breastfeed exclusively up to 6 months	43.8	38.6	.57
Introduce other foods after 6 months	15.6	11.4	.50
Breastfeed up to 2 years	7.3	2.4	.23
Correct completion of slogan	84.4	90.9	.29
Aggregate recall score (t test)	34.8	30.7	.25

7. Interactions between Access and Knowledge over Time

Table 25 presents results of the analysis of variance conducted to determine the impact of the interaction between measurement (pre versus post) and channel (any exposure, print or training) on knowledge. Effects over time were explored only for those channel and knowledge area combinations where statistically significant differences were found between study groups at the post measurement. The values reported in the table are the significance levels of the interactions. Statistically significant interactions are indicated by asterisks and shading.

Analysis of results for exposure to any part of the intervention indicates that a statistically significant interaction effect is found regarding exclusive breastfeeding in the first six months, when all professional categories are combined. Significant interactions are also found for access to print materials and improved overall knowledge, when all professional categories are combined, and for access to print and knowledge of the appropriateness of exclusive breastfeeding in the first six months, again when all professional categories are combined. No statistically significant interaction effects were found between training and any of the knowledge areas.

TABLE 25
p values of Interaction Effects over Time by Type of Channel and Professional Category for Certain Knowledge Areas

Scale	Any Exposure	Print	Training
Overall			
All Professions	.16	.01**	.69
Nurses	.39	.21	.75
Physicians	.15	.21	.74
Exclusive Breastfeeding in the First Six Months			
All Professions	.03*	.001***	.15
Nurses	.17	.21	.14
Physicians	.11	.08	.68
Breastfeeding is More Hygienic			
All Professions	.87	.98	.82
Nurses	.92	.80	.81
Physicians	.77	.53	.67

*** very highly significant, $p \leq .001$
** highly significant, $p \leq .01$
* significant, $p \leq .05$

Significant interactions may be interpreted as an indication that the NCP-supported intervention had an impact above and beyond that which may have occurred as a result of any other breastfeeding program that may have been implemented during the period elapsed between measurement points.

Figure 1 illustrates the impact on overall knowledge of the significant interaction between time effects and exposure. For the scale of overall knowledge, in the interactions where all professional categories are included, the increase from the pre to the post measurement is much larger among the staff with access to print materials than among those without access. The average knowledge increased from 37.8 to 55.0% among staff not exposed to the print materials, while it increased from 38.6 to 66.8% among those exposed to them.

Figure 2 illustrates the significant impact of exposure to any aspect of the intervention on the knowledge scale for exclusive breastfeeding in the first six months. The highly significant impact of access to print materials on this same knowledge scale is shown in Figure 3. These figures show that knowledge gains over time related to the new standard of exclusive breastfeeding up to six months of age among respondents with access to any aspect of the intervention and in particular, to print materials, are higher than those observed among respondents with no such access. It may be concluded that the intervention's print materials contributed to increased knowledge of the principal message of the MOH's Nutrition Communication Plan, that exclusive breastfeeding should continue through six months, not through only four months.

FIGURE 1
Impact of the Interaction between Measurement and Access to Print on Overall Knowledge for All Professions

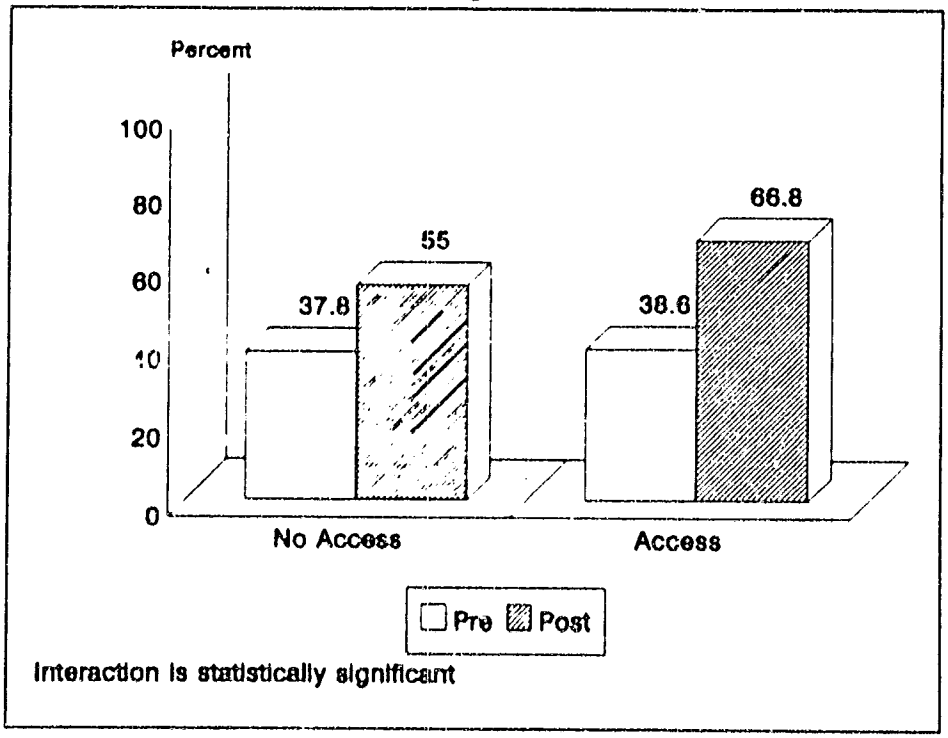


FIGURE 2

Impact of the Interaction between Measurement and Exposure to Any Aspect of the Intervention on Knowledge of How to Feed a Child in the First Six Months for All Professions

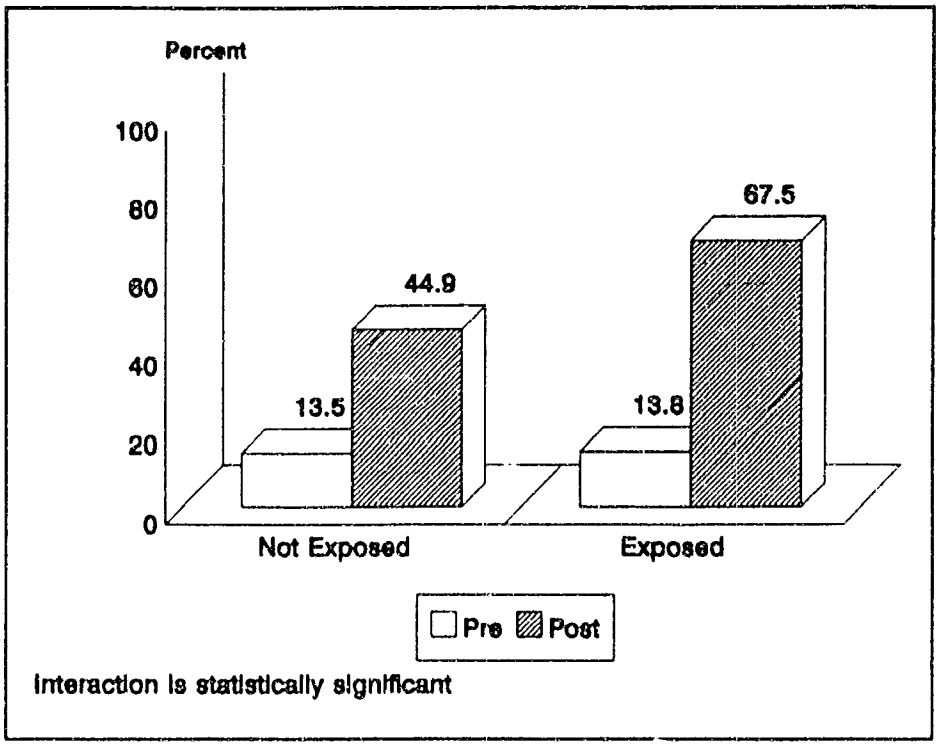
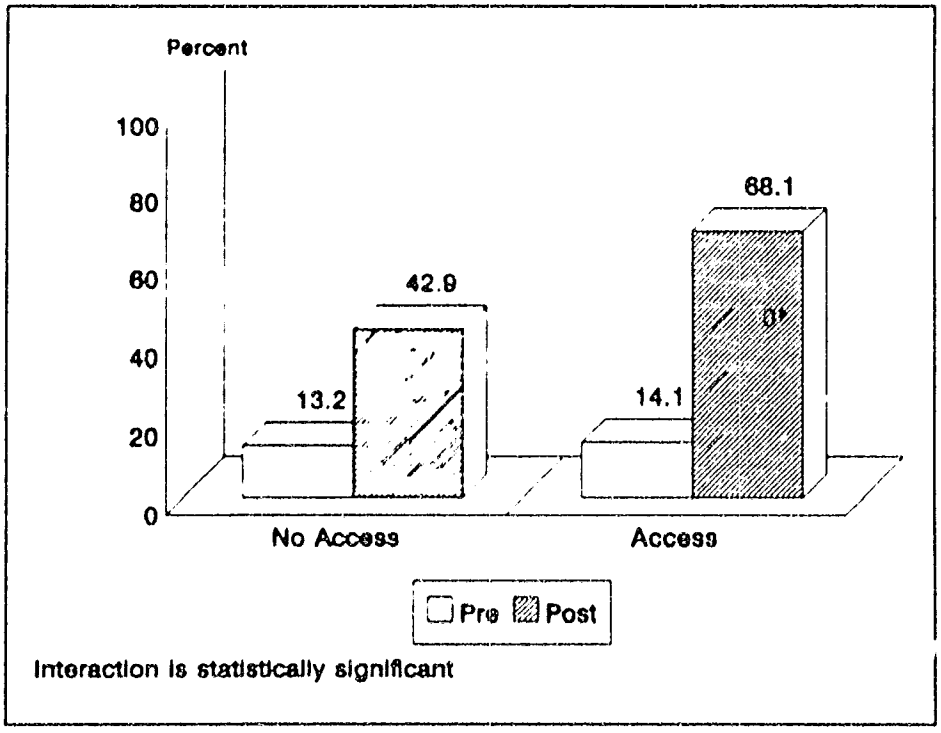


FIGURE 3

Impact of the Interaction between Measurement and Access to Print on Knowledge of How to Feed a Child in the First Six Months for All Professions



B. Mothers

1. Summary of Pre-Intervention Findings

The baseline survey conducted in regions IV, V, and VII documented that mothers in the study areas had, overall, a favorable attitude towards breastfeeding. Virtually all (99%) mothers in the study area breastfed their infants, and some 90% were breastfeeding infants at six months of age. Mothers tended to breastfeed frequently, averaging 9.6 feedings per 24-hour period. The practice of exclusive breastfeeding in the first six months was, however, quite low. Almost 60% of infants under one month of age were receiving liquids other than breastmilk, and by four months of age, 80% of infants were receiving other liquids. The most commonly given liquids besides breastmilk were water and sugar water, followed by other milk. Half (51%) of mothers had given their infant a bottle with water or sugar water in the first three days of life. Solids were introduced later than liquids, with most infants receiving foods between four and six months of age.

Mothers' knowledge with respect to optimal breastfeeding and infant feeding practices was in general low. Only 1% of mothers thought an infant of five months should be exclusively breastfed, and 33% that neonates did not need any water to supplement breastmilk. Some 66% agreed that neonates should be given only colostrum. Only 10% felt that water should be given to infants beginning at six months, and 31% thought that solids should only be introduced at six months. The majority of mothers (89%) knew that breastmilk was superior to cow's milk, and 84% knew that mothers who did not produce enough breastmilk should nurse their infants more frequently. Only 17% thought that very poor or undernourished mothers could breastfeed exclusively.

Some 50% of the mothers interviewed had a functioning radio at home and listened to radio an average of three hours a day. Of mothers interviewed, 75% had received some type of prenatal care, and 64% had received it in an MOH facility. Some 66% of mothers saw a midwife during their last pregnancy. These findings indicated that there was strong potential for the intervention to reach the target population in the study areas.

2. Comparability of Pre and Post Samples

The comparability of the mothers' samples in the two measurements was examined with respect to size of town of residence, socio-demographic characteristics, and household living conditions.

Tables 26 and 27 compare the distribution of mothers by size of their community of residence for Regions V and VII, respectively. In Region V, the post sample drew a significantly larger proportion of mothers from smaller towns (60%) than did the pre sample (48%). In Region VII, there were no appreciable differences between the pre and post samples, with both samples drawing about a third of respondents from smaller towns.

TABLE 26
Distribution of Mothers Interviewed by Size of Town Where Health Facility is Located and Measurement
Region V

Location of Facility	Pre	Post
Larger Towns	115 (52.3%)	118 (39.3%)
Smaller Towns	105 (47.7%)	182 (60.7%)
Total	220 (100.0%)	300 (100.0%)

$Chi^2 = 8.6$, df = 1, p = .001

TABLE 27
Distribution of Mothers Interviewed by Size of Town Where Health Facility is Located and Measurement
Region VII

Location of Facility	Pre	Post
Larger Towns	171 (66.3%)	169 (66.5%)
Smaller Towns	87 (33.7%)	85 (33.5%)
Total	258 (100.0%)	254 (100.0%)

$Chi^2 = .05$, df = 1, p = .95

Table 28 compares the socio-demographic characteristics of mothers at the pre- and post-intervention measurements. No statistically significant differences were found with respect to mothers' average age, literacy level, average years of education, average number of living children, and degree of employment outside the home. Thus, in terms of major socio-demographic variables, the samples are comparable.

Clear differences were found between the pre and post samples with respect to household characteristics. As shown in Table 29, living conditions of respondents at the post-intervention measurement were better than those for respondents at the pre-intervention measurement, with significantly more mothers in the post survey reporting having indoor running water (55% versus 35%), a toilet (14% versus 9%), and a non-dirt floor (37% versus 28%). The general trend observed of improvement in living conditions over the two-year period was also found in both regions when data were analyzed separately by geographic area.

TABLE 28
Socio-demographic Characteristics of Mothers Interviewed by Measurement

Characteristic	Pre	Post	p
Sample Size	478	554	
Mean Age	25.6 yrs	25.7 yrs	.94
Literate	76.2%	75.3%	.74
Mean Number of Schooling Years	3.8 yrs	4.1 yrs	.10
Mean Number of Living Children	3.5	3.3	.14
Employed Outside Home	4.8%	6.9%	.16

TABLE 29
Household Characteristics of Mothers Interviewed by Measurement

	Pre	Post	p
Water Source			
Indoor Running	35.4%	55.1%	} .001***
Public Faucet	17.8%	11.9%	
Other Source	46.9%	33.0%	
Sanitary Facilities			
Toilet	9.0%	13.9%	} .001***
Latrine	40.8%	46.9%	
None	50.2%	39.2%	
Floor			
Non-dirt	27.9%	36.3%	} .001***
Dirt	72.1%	63.7%	

*** very highly significant, $p \leq .001$

In terms of the implications of these differences for study results, it may be concluded that the pre and post samples are reasonably comparable. While highly significant differences were found with respect to household characteristics, there is no reason to expect that these improvements would directly enhance breastfeeding knowledge or practice independently from the intervention. If anything numerous studies have shown that increases in income are associated with decreases in breastfeeding. The most likely source of substantive difference between the two samples, if any, would be the size of town of residence. Since health facilities are generally more accessible in larger towns, the larger proportion of mothers sampled from small towns in Region V might be expected to make it harder to show improvements at the post measurement based on interpersonal contacts with health personnel if indeed respondents in smaller towns had more limited access to government health services. Comparison of the use of prenatal and postnatal services did not, however, suggest important differences between the pre and post samples.

3. Exposure to Radio Spots, Print Materials, and Breastfeeding Messages via Interpersonal Contacts

As was the approach for health workers, the analysis first tested the hypothesis that exposure to information sources and intervention messages would be more frequent in Region V, the high intensity region. Table 30 compares indicators of exposure to the various channels of the intervention between mothers in Regions V and VII. Exposure is defined as either access to or retention of messages disseminated through the channel.

With respect to exposure to breastfeeding spots on the radio, no statistically significant difference was found between regions for the proportion of mothers indicating having heard breastfeeding radio spots. Unprompted recall of radio spot content was more frequent, however, in Region V (19%) than in Region VII (13%), and the difference was statistically significant. This difference is in the expected direction, particularly given the fact that radio spots were broadcast only in Region V shortly before the post survey.

When asked on which radio stations they had heard these messages, by far the most commonly cited station was *Radio América*, one of two stations with national coverage that was used to broadcast breastfeeding messages. Some 46% of mothers who had heard breastfeeding spots on the radio cited *Radio América* as a source. The two next most commonly cited stations had regional coverage only in Region V: *La Voz del Occidente* was cited by 17% of mothers, and *Radio Sultana* by 13%. The other national station used, *HRN*, was cited by 10% of the mothers. The radio messages most commonly cited by mothers were "breastmilk and nothing else in the first six months" (mentioned unprompted by 52% of mothers who had heard radio messages) and "don't give foods in the first six months" (mentioned by 17% of mothers).

Concerning exposure to print materials, no difference was found in terms of mothers receiving flyers or comic books on breastfeeding; in both regions, the proportion of mothers receiving print materials was very low (about 5%). There was a significant difference between the regions with respect to exposure to the promotional poster, with 69% of mothers in Region V recalling

having seen the poster as compared with 58% in Region VII. The coverage of the poster was, nonetheless, fairly good in both regions.

TABLE 30
Exposure Indicators for Mothers by Channel and by Region at Post Measurement

Channel	Region VII	Region V	p
Radio	% of respondents		
Heard spots	44.1	48.7	.28
Remembers at least one message (unprompted)	12.6	19.0	.04*
Print			
Received flyer/comic book	5.1	5.3	.91
Saw poster	57.9	69.3	.01**
Any print	59.4	70.0	.01**
Interpersonal			
Cites at least one message from:			
- MOH prenatal visits	9.8	17.3	.01**
- Midwife prenatal visits	3.5	7.0	.07
- MOH postnatal visits	4.3	9.0	.03*
- Midwife postnatal visits	0.8	2.3	.15
Attended breastfeeding group talk	4.7	5.3	.74
Spoke to neighbor/friend about breastfeeding	19.3	20.7	.69
Any interpersonal source	33.5	41.0	.07

highly significant, $p \leq .01$
significant, $p \leq .05$

Opportunities for interpersonal contacts about breastfeeding were good. In all, use of prenatal care was high: 82% of mothers interviewed received some prenatal care at MOH facilities, with half of the mothers receiving five or more prenatal consultations. Some 54% of mothers interviewed saw a midwife during their last pregnancy. Only 35% of mothers received some type of postnatal care at MOH facilities, and 22% had a postnatal visit from a midwife.

With respect to communication of breastfeeding information during these contacts, statistically significant differences between the two regions were found for receipt of breastfeeding messages during prenatal and postnatal care obtained at MOH facilities. The absolute magnitude of these differences is fairly small, however, and overall the proportion of mothers who recalled the breastfeeding messages given by health workers was low. Very few mothers had participated in group talks on breastfeeding. The message most frequently remembered by mothers as having been communicated by health workers during their contacts--"only breastmilk in the first six months"--was recalled unprompted by 13% of mothers who received prenatal care at MOH facilities, by 4% of mothers who saw midwives prenatally, and by 17% of mothers who received postnatal care at MOH facilities.

Thus, while certain statistically relevant differences were found between the two study regions, the magnitude of these differences was not enough to warrant further analysis of the intervention's possible impact on mothers by region. Instead, as was done for health workers, the analysis of the intervention's impact on mothers is based on comparing knowledge of those mothers actually exposed to breastfeeding information through the relevant intervention channels with that of mothers who were not exposed.

4. Impact of Exposure on Knowledge

Tables 31 through 34 explore whether significant differences exist for the key knowledge items between exposed and non-exposed mothers for the intervention as a whole and for each of the three major channels: print material, interpersonal contacts with health workers, and radio.

Table 31 shows that significant differences were found between the two study groups when exposure was defined in the least discriminating way, as exposure to any part of any channel of the intervention. Mothers exposed to any part of the intervention scored significantly higher with respect to exclusive breastfeeding of newborns and the introduction of solids beginning at six months. Of particular note is the difference in knowledge about giving water to newborns, an area identified as especially deficient in the baseline survey: 45% of exposed mothers knew not to give water, compared with 29% of mothers not exposed to the intervention. Mothers exposed to the intervention also scored higher on knowledge of the need to breastfeed more frequently to produce more breastmilk, although this knowledge item was high for non-exposed mothers as well.

TABLE 31
Impact of Any Exposure on Mothers' Knowledge
Mean Percentages of Correct Responses by Study Group

KNOWLEDGE ITEM	NOT EXPOSED	EXPOSED	p
2 Exclusive Breastfeeding of Newborn			
A newborn does not need water to quench his thirst.	29.5	45.4	.001***
A newborn needs colostrum and nothing else.	71.3	84.5	.001***
Exclusive Breastfeeding in the First Six Months			
5-month olds should be breastfed.	9.0	13.4	.19
5-month olds should not be given other liquids.	15.6	16.7	.77
5-month olds should not be given (sugar) water.	12.3	14.6	.52
5-month olds should not be fed (other) foods.	4.1	10.6	.03*
5-month olds should not be fed solids.	7.4	13.7	.06
Water can be introduced at 6 months.	14.8	21.3	.11
Solids can be introduced at 6 months.	27.0	43.1	.001***
Skills			
A mother that does not produce sufficient breastmilk must breastfeed more frequently.	81.1	91.2	.001***
When you give other foods, breastmilk dries up.	68.0	75.9	.08

*** very highly significant, $p \leq .001$
* significant, $p \leq .05$

Table 32 indicates that exposure to print material was statistically associated with improved knowledge of several key breastfeeding messages. Mothers who were exposed to at least one print material (primarily posters but also flyers and comic books) demonstrated greater awareness that newborns do not need water, that five-month-old infants should continue to be breastfed, that solids should be introduced at six months, and that increasing the frequency of breastfeeding increases breastmilk production. Given, however, that the main print material to which mothers were exposed (i.e., the poster) bore only one message, it is likely that the knowledge effects seen here to be associated with exposure to print are actually the result of exposure to another channel.

TABLE 32
Impact of Exposure to Any Print Material on Mothers' Knowledge
Mean Percentages of Correct Responses by Study Group

KNOWLEDGE ITEM	NOT EXPOSED	EXPOSED	p
Exclusive Breastfeeding of Newborn			
A newborn does not need water to quench his thirst.	29.0	48.8	.001***
A newborn needs colostrum and nothing else.	77.7	83.7	.09
Exclusive Breastfeeding in the First Six Months			
5-month olds should be breastfed.	8.3	14.7	.03*
5-month olds should not be given other liquids.	14.5	17.5	.37
5-month olds should not be given (sugar) water.	11.4	15.5	.18
5-month olds should not be fed (other) foods.	4.7	11.6	.01**
5-month olds should not be fed solids.	8.8	14.1	.07
Water can be introduced at 6 months.	17.1	21.3	.23
Solids can be introduced at 6 months.	34.2	42.4	.04*
Skills			
A mother that does not produce sufficient breastmilk must breastfeed more frequently.	82.9	92.2	.001***
When you give other foods, breastmilk dries up.	74.1	74.2	.97

*** very highly significant, $p \leq .001$
** highly significant, $p \leq .01$
* significant, $p \leq .05$

Fewer differences in knowledge of key messages were found based on exposure to breastfeeding information through interpersonal communication with health workers. Table 33 shows that statistically significant differences were found for four knowledge items: feed only colostrum to newborns, 5-month olds should not be fed other foods, water can be introduced at six months, and a mother must breastfeed more frequently to increase her supply of breastmilk.

TABLE 33
Impact of Exposure to Interpersonal Channels on Mothers' Knowledge
Mean Percentages of Correct Responses by Study Group

KNOWLEDGE ITEM	NOT EXPOSED	EXPOSED	p
Exclusive Breastfeeding of Newborn			
A newborn does not need water to quench his thirst.	40.3	48.2	.13
A newborn needs colostrum and nothing else.	78.7	92.9	.001***
Exclusive Breastfeeding in the First Six Months			
5-month olds should be breastfed.	11.5	16.1	.19
5-month olds should not be given other liquids.	15.6	19.6	.30
5-month olds should not be given (sugar) water.	14.5	12.5	.59
5-month olds should not be fed (other) foods.	7.9	14.3	.04*
5-month olds should not be fed solids.	11.1	17.0	.09
Water can be introduced at 6 months.	18.1	26.8	.04*
Solids can be introduced at 6 months.	37.8	46.4	.09
Skills			
A mother that does not produce sufficient breastmilk must breastfeed more frequently.	87.3	95.5	.01**
When you give other foods, breastmilk dries up.	73.1	78.6	.24

*** very highly significant, $p \leq .001$
** highly significant, $p \leq .01$
* significant, $p \leq .05$

The most striking results for the impact of any aspect of the intervention on mothers' knowledge are found in Table 34, which examines the impact of exposure to any radio spot. Highly significant differences were found with respect to almost all of the key knowledge areas. The most important differences occurred with respect to appropriate feeding of newborns and introduction of water and solids at six months of age. Some 50% of those exposed to the radio spots thought that newborns should not be given water as compared with 34% of those not exposed, while 88% of those exposed to the radio spots thought that newborns need only colostrum, versus 76% of those not exposed. Seventeen percent of those exposed to any breastfeeding radio broadcast thought that five-month olds should not be given solids, versus 8% of those not exposed. Knowledge that water and solids should be introduced beginning at six months of age was also markedly higher among the exposed group: 25% among the exposed versus 15% among the non-exposed for the introduction of water, and 48% versus 32% for the

introduction of solids. Small but significant knowledge gains were also seen with respect to mothers' knowledge of factors that affect breastmilk production.

TABLE 34
Impact of Exposure to Any Radio Spot on Mothers' Knowledge
Mean Percentages of Correct Responses by Study Group

KNOWLEDGE ITEM	NOT EXPOSED	EXPOSED	p
Exclusive Breastfeeding of Newborn			
A newborn does not need water to quench his thirst.	34.5	50.4	.001***
A newborn needs colostrum and nothing else.	76.0	88.0	.001***
Exclusive Breastfeeding in the First Six Months			
5-month olds should be breastfed.	9.1	16.3	.01**
5-month olds should not be given other liquids.	13.5	19.8	.05*
5-month olds should not be given (sugar) water.	12.2	16.3	.16
5-month olds should not be fed (other) foods.	5.7	13.2	.001***
5-month olds should not be fed solids.	8.1	17.1	.001***
Water can be introduced at 6 months.	15.2	25.2	.001***
Solids can be introduced at 6 months.	31.8	48.4	.001***
Skills			
A mother that does not produce sufficient breastmilk must breastfeed more frequently.	85.5	93.0	.001***
When you give other foods, breastmilk dries up.	69.9	79.1	.01**

*** very highly significant, $p \leq .001$
** highly significant, $p \leq .01$
* significant, $p \leq .05$

In conclusion, of all the intervention channels targeted at mothers, the radio spots seem to have had the strongest impact on mothers' knowledge. Exposure to the radio messages appears to have yielded significant improvements in almost all the key knowledge areas. Given that the most prevalent print material seen by mothers was the poster which carried only the slogan, "only breastmilk and nothing else in the first six months," it is likely that the positive effects seen for print materials as a whole may actually be due largely or at least partially to mothers' simultaneous exposure to radio broadcasts, which contained a broader array of messages.

5. Relationship between Knowledge and the Practice of Exclusive Breastfeeding

The previous section discussed knowledge gains associated with exposure to the different channels of the intervention. But from a programmatic perspective, the more important relationship is how the behavior of interest--exclusive breastfeeding of infants under six months--is affected by the intervention. The conceptual model underlying the breastfeeding intervention is that training, print materials and radio broadcasts affect knowledge, and knowledge affects behavior. The intervention is thus expected to affect mothers' breastfeeding practices by increasing knowledge of appropriate breastfeeding behaviors.

In this section, the analysis considers what evidence the study found for a relationship between increased knowledge of appropriate breastfeeding practices and the prevalence of exclusive breastfeeding. To explore this relationship, mothers interviewed in the post measurement were divided into two equal-sized categories, based on cumulative knowledge scores for the eleven knowledge items assessed for mothers. The median number of correct responses to all breastfeeding knowledge questions was used to divide mothers into "high knowledge" (defined as mothers with scores at or above the median) and "low knowledge" (defined as mothers with scores below the median). An association was then sought between knowledge status and the practice of exclusive breastfeeding, as measured through 24-hour recall.

Table 35 shows that when mothers of infants in all age groups are combined, there is a positive and highly statistically significant relationship between knowledge and the practice of exclusive breastfeeding. Over 46% of high knowledge mothers breastfed exclusively, while only 32% of low knowledge mothers did so.

TABLE 35
Relationship between Knowledge and the Practice of Exclusive Breastfeeding for all Mothers at the Post Measurement

	Practices Exclusive Breastfeeding	
	Yes	No
High Knowledge	46.5%	53.5%
Low Knowledge	31.9%	68.1%

$Chi^2 = 12.31$, df = 1, p = .0005 (very highly significant)

The infant feeding behaviors underlying these differences in exclusive breastfeeding prevalence can be gleaned from Table 36, which shows how the two knowledge groups varied with respect to specific foods and liquids given to their infants in the previous 24 hours. While the vast majority of mothers in both knowledge categories breastfed, important and statistically significant differences occurred between the high and low knowledge mothers with respect to giving water,

solids and other liquids. The most striking difference occurs with respect to giving water to the infant. While 32% of mothers as a whole and 47% of low knowledge mothers gave water, only about 23% of high knowledge mothers did so. This finding strongly suggests that the intervention had an impact on mothers' awareness of the inappropriateness of water for infants under six months. Giving water to infants under six months was found in the baseline survey to be a particularly common practice among mothers and was therefore addressed as a key message of the intervention.

TABLE 36
Foods Reported Given to Infants in the Previous 24 hours
by Mother's Knowledge Level
Post Measurement

Food Given	% of Mothers Who Gave Food Item			p
	All Mothers	Mothers w/low knowledge	Mothers w/high knowledge	
Breastmilk	94.4	92.4	96.0	.07
Water	31.9	47.0	22.8	.001***
Milk	26.9	29.5	27.8	.21
Solids	19.1	23.1	15.8	.03
Other Liquids	9.4	12.4	6.9	.03
Tea	8.5	9.2	7.9	.60

*** very highly significant, $p \leq .001$
** very significant, $p \leq .01$
* significant, $p \leq .05$

The relationship between mothers' knowledge level and the practice of exclusive breastfeeding was then examined by age of the child. Table 37 shows that when high and low knowledge mothers are compared by infant age, sizeable differences emerge, beginning in the earliest age category and continuing up to six months of age. These differences attain statistical significance in the third- and sixth-month age groups. The most persuasive difference is seen in the last age group. For infants between five and six months of age, 20% of high knowledge mothers continued to exclusively breastfeed while none of the low knowledge mothers did so.

Table 38 compares the prevalence of exclusive breastfeeding of all mothers at the baseline survey with that of high knowledge mothers at the post measurement. This comparison better illustrates the effect of the intervention on the practice of exclusive breastfeeding by increasing

mothers' knowledge. The increases in exclusive breastfeeding at the post measurement reach statistical significance for the first-, third- and sixth-month age groups.

TABLE 37
Exclusive Breastfeeding by Age of Child and by Knowledge Level of the Mother at the Post Measurement

Age	Low Knowledge	High Knowledge	p Level from Chi^2 Analysis
up to 1 month	62.2%	75.4%	.15
up to 2 months	44.1%	55.6%	.31
up to 3 months	28.8%	50.8%	.02**
up to 4 months	28.3%	32.7%	.63
up to 5 months	20.6%	36.7%	.11
up to 6 months	0.0%	20.5%	.01***

*** very highly significant, $p \leq .001$
** very significant, $p \leq .01$
* significant, $p \leq .05$

TABLE 38
Exclusive Breastfeeding by Age of Child
All Mothers at Baseline Compared with High Knowledge Mothers at the Post Measurement

Age	All Mothers at Baseline	High Knowledge Mothers at Post	p Level from Chi^2 Analysis
up to 1 month	48.0%	75.4%	.001***
up to 2 months	49.3%	55.6%	.51
up to 3 months	31.9%	50.8%	.03*
up to 4 months	23.7%	32.7%	.27
up to 5 months	21.3%	36.7%	.07
up to 6 months	7.1%	20.5%	.02*

*** very highly significant, $p \leq .001$
* significant, $p \leq .05$

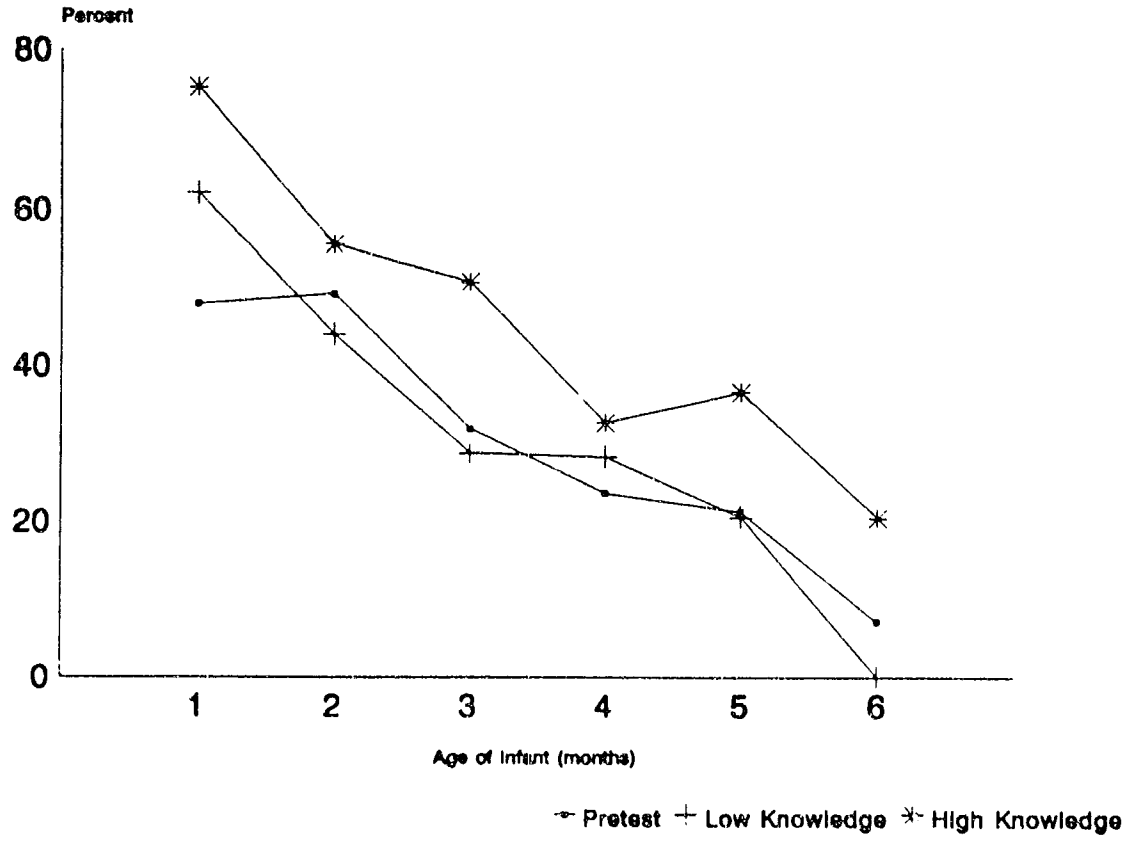
These findings are presented graphically in Figures 4 and 5. Figure 4 plots the percentage of mothers who reported to be exclusively breastfeeding in the 24-hour recall by age of the infant for three groups: all mothers in the baseline survey, low knowledge mothers at the post measurement, and high knowledge mothers at the post measurement. Figure 5 highlights the differences in prevalence of exclusive breastfeeding between the high and low knowledge groups at the post measurement.

Several trends may be observed in Figure 4. First, the lines for the baseline survey and low knowledge mothers overlap at several points and in general follow a similar trajectory. This suggests that the low knowledge women--those who either were not reached by the intervention or for whom exposure did not result in improved knowledge--exhibit exclusive breastfeeding practices similar to those of the women surveyed prior to the intervention, i.e., show little change from the baseline scenario.

Second, while there is a generalized tendency among all mothers to abandon exclusive breastfeeding as the child got older, the practice of exclusive breastfeeding is markedly higher among high knowledge women, and the magnitude of the difference is maintained across age groups. Among mothers of children between five and six months of age, exclusive breastfeeding was practiced by 7% of mothers at the baseline and by 21% of high knowledge mothers at the post measurement. This difference suggests that improved knowledge has the potential to improve practices across the first six months, and not simply raise the proportion of women who initiate exclusive breastfeeding.

The largest and most statistically significant difference between the baseline group and the high knowledge mothers at the post measurement is observed in the case of mothers with children up to one month of age. For that age group, the percentage of mothers surveyed who practiced exclusive breastfeeding increased from 48% to 75% between measurements. One explanation for this sharp increase may be that in Region V, breastfeeding radio spots were broadcast intensively over a two-week period a few days prior to the conduct of the post survey, and it is possible that mothers who had recently delivered were most influenced by these messages.

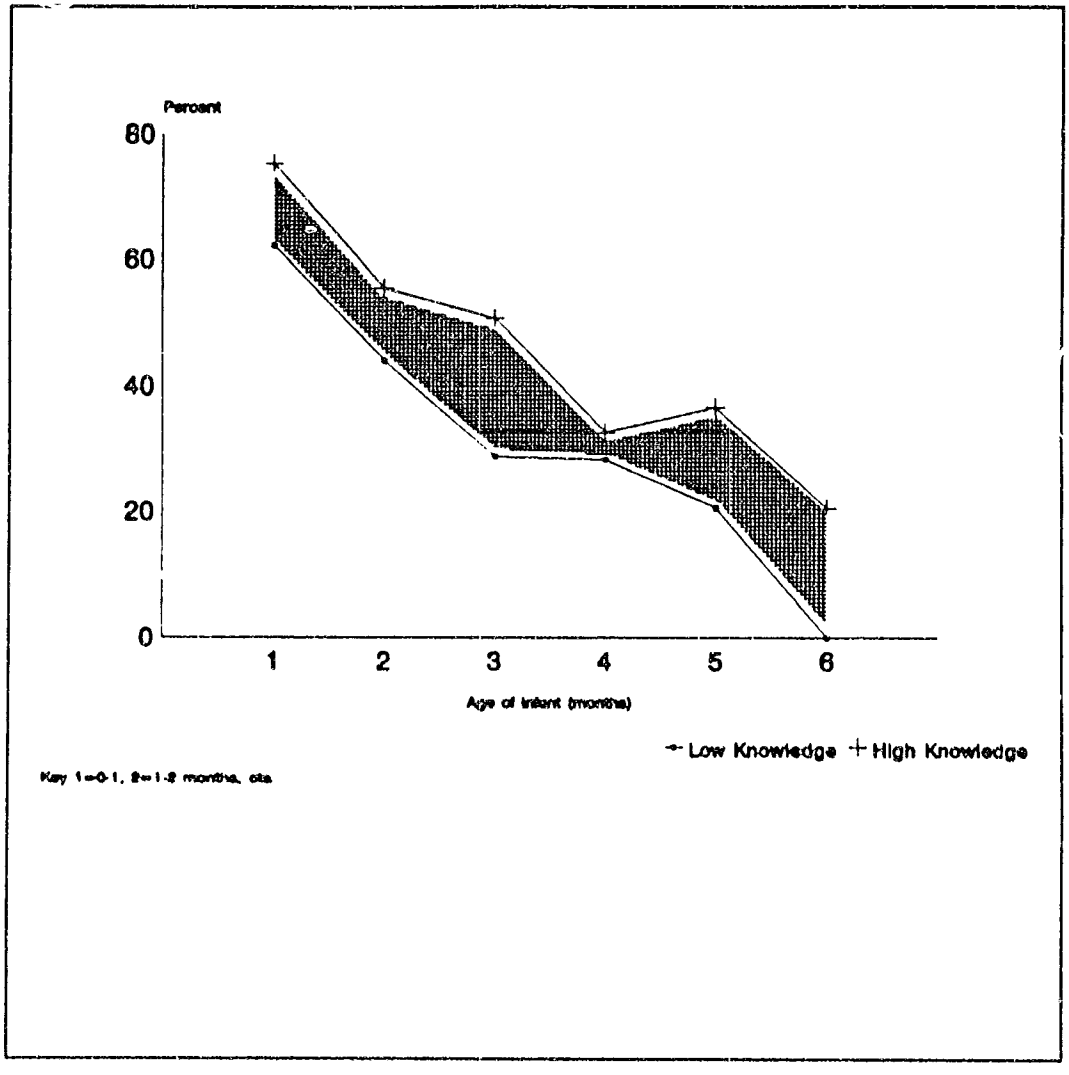
FIGURE 4
Exclusive Breastfeeding by Age of Child at Baseline and by Knowledge Level of Mother at Post Measurement



Key 1=0-1, 2=1-2 months, etc.

Figure 5, which depicts the difference in exclusive breastfeeding between high and low knowledge mothers as the shaded area, shows another interesting result among the high knowledge mothers which further strengthens the case for the positive impact on breastfeeding practices of interventions that improve mothers' knowledge. Between four and five months, the percentage of mothers practicing exclusive breastfeeding actually increases, in sharp contrast to the trend seen among low knowledge mothers. This rise in exclusive breastfeeding prevalence is noteworthy in that the upturn occurs precisely at the age most affected by the new MOH norm. This suggests that the intervention was successful in communicating to mothers the importance of extending exclusive breastfeeding beyond four months to six months.

FIGURE 5
Exclusive Breastfeeding by Age of Child and by Knowledge Level of Mother at Post Measurement



6. Exclusive Breastfeeding Practices, Pre-Post Comparisons

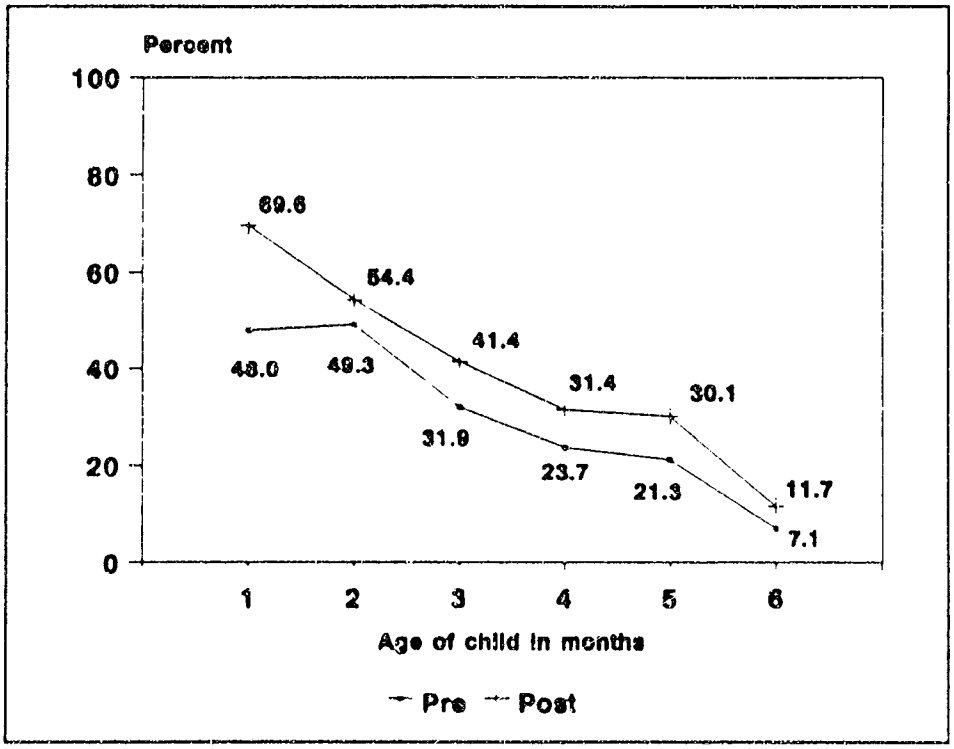
This section illustrates the gains reported in exclusive breastfeeding from the pre to the post, according to the age of the child. Respondents are grouped by age of the child in one-month intervals, with each age interval representing mothers of children up to that age (i.e., one month = up to one month, two months = over one month and up to two months, etc.). Figures 6, 7, and 8 compare the percentage of mothers practicing exclusive breastfeeding at the pre and post measurements for all cases, Region VII and Region V, respectively.

Figure 6 shows that at both measurements, there was a decrease in the prevalence of exclusive breastfeeding as the child got older.

At the pre-intervention measurement, exclusive breastfeeding was practiced by 48% of mothers whose child was up to one month of age at the time of the interview, decreasing to about 7% among mothers whose child was up to six months old.

A generalized improvement in the practice of exclusive breastfeeding was seen at the post measurement, where the drop in exclusive breastfeeding by age six months was less accelerated. As seen in Figure 6, at the post measurement about 70% of one-month olds were exclusively breastfed, decreasing to 12% at six months.

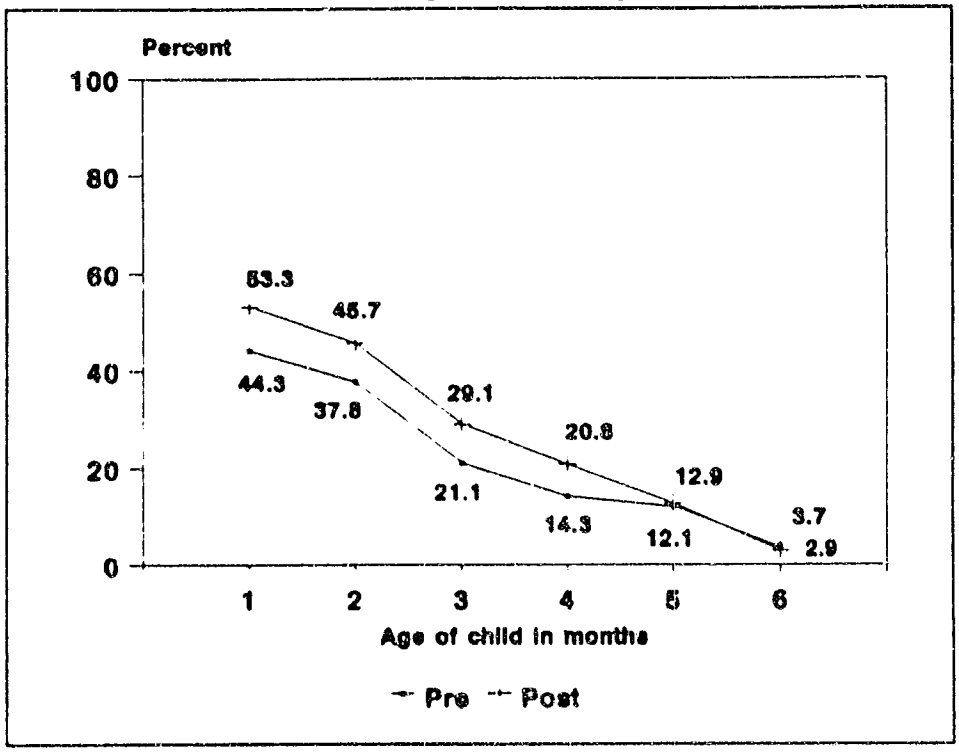
FIGURE 6
Exclusive Breastfeeding By Age of Child
Pre-Post Comparison, All Cases



The largest absolute difference between the pre and the post is observed in the first month of age. The percentage of mothers practicing exclusive breastfeeding at this age increased from 48% to 70% between measurements. This may possibly be due to the fact that in Region V radio spots were broadcast for a third time about two weeks prior to the conduct of the post survey. It is possible that mothers who had recently delivered were most influenced by messages about exclusive breastfeeding which reached them at that time.

Figure 7 shows that in Region VII, the lower intensity intervention site, there was also an improvement in exclusive breastfeeding among all age groups, with the largest gains occurring among the youngest children. The largest pre-post increase of 9 % occurred among children being exclusively breastfed in the first month of life. This improvement begins to taper off at four months, when it drops to 6.5%. At six months of age, the percentage of exclusively breastfed children are practically the same in both pre and post measurements in Region VII.

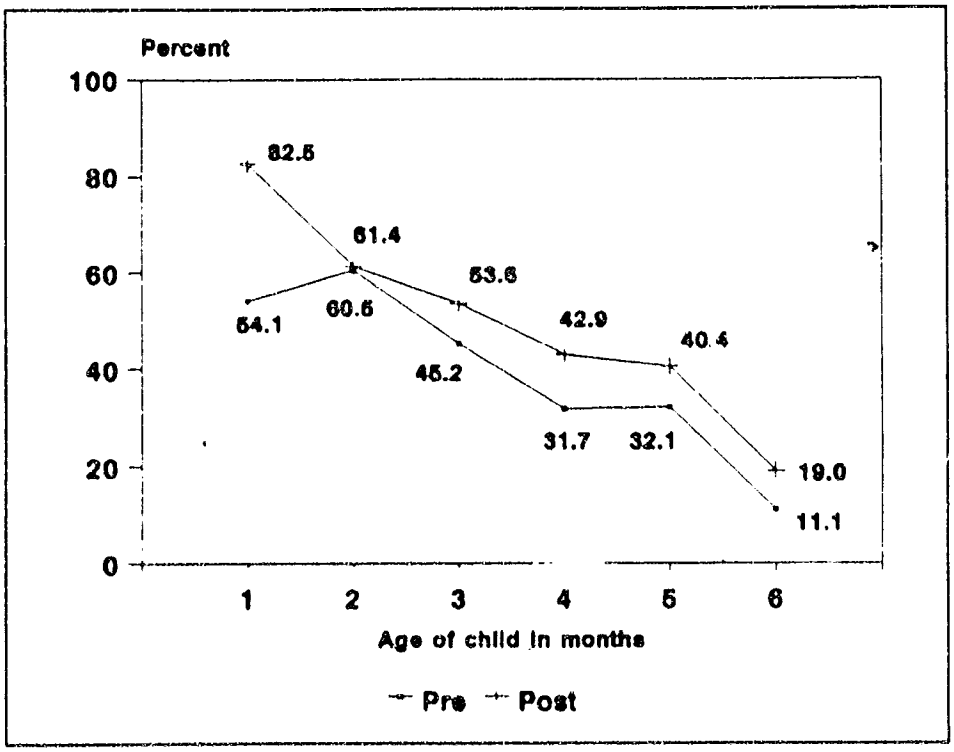
FIGURE 7
Exclusive Breastfeeding by Age of Child
Pre-Post Comparision, Region VII



A more sustained level of improvement in the practice of exclusive breastfeeding across age groups was seen from the pre to the post in Region V, the high intensity intervention area which received additional radio broadcasts shortly before the post survey. Figure 8 shows that the largest absolute difference between the pre and post measurements occurred at one month of age, with exclusive breastfeeding rising from 54% to almost 83% of children, an increase of more than 28%. As discussed earlier, it is hypothesized that this finding may be attributable to the radio spots broadcast in Region V a few weeks prior to the post measurement. Mothers with newborns who heard the spots promoting exclusive breastfeeding may have been particularly open to trying out a new feeding behavior.

An equally important improvement seen in Region V was the increase in the prevalence of exclusive breastfeeding among the later age groups, where pre-post differences of about 8% were maintained at five and six months, in contrast to the lack of difference found in Region VII at these two age groups. The regional differences found suggest a fairly broad range of potential for increasing the practice of exclusive breastfeeding in Honduras.

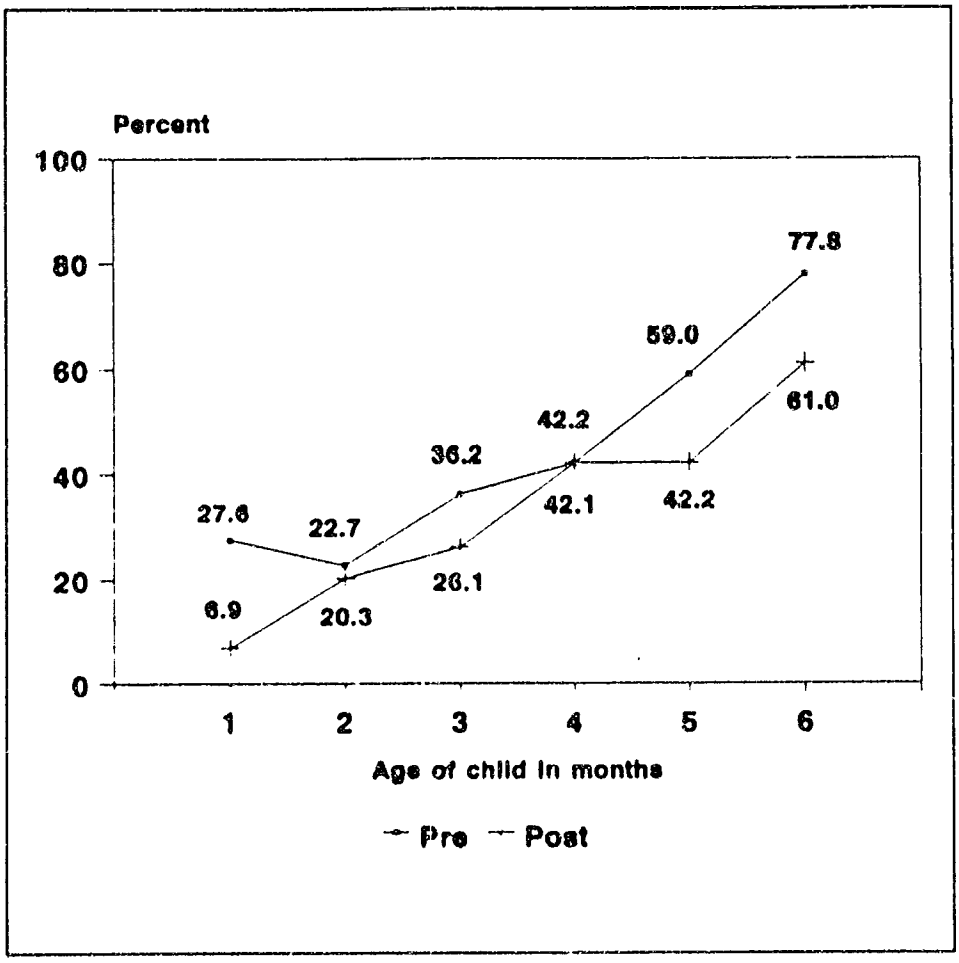
FIGURE 8
Exclusive Breastfeeding by Age of Child
Pre-Post Comparision, Region V



The changes in feeding behavior which underlie the pre-post differences in the prevalence of exclusive breastfeeding are examined in Figures 9 through 13, which compare the feeding of specific food items by all mothers at the pre and post measurements.

Figure 9 signals the persistent tendency of mothers to increasingly give infants water as the child ages. There was a noticeable decline in the prevalence of giving water from the pre to the post, with the largest absolute differences seen for infants up to one month of age (a decline of nearly 21%) and at five and six months of age (declines of nearly 17%).

FIGURE 9
Percentage of Mothers Who Fed Their Child Water in the Previous 24 Hours by Age of Child Pre-Post Comparison



As seen in Figure 10, the feeding of cow's milk or powdered milk showed some modest declines from the pre to the post among infants at ages one, five, and six months. There was not a strong increase in the prevalence of giving cow's milk or powdered milk with increasing age of the child, but rather the proportion of mothers giving breastmilk substitutes remained about the same after three months of age.

FIGURE 10
Percentage of Mothers Who Fed Their Child Cow's or Powdered Milk in the Previous 24 Hours by Age of Child Pre-Post Comparison

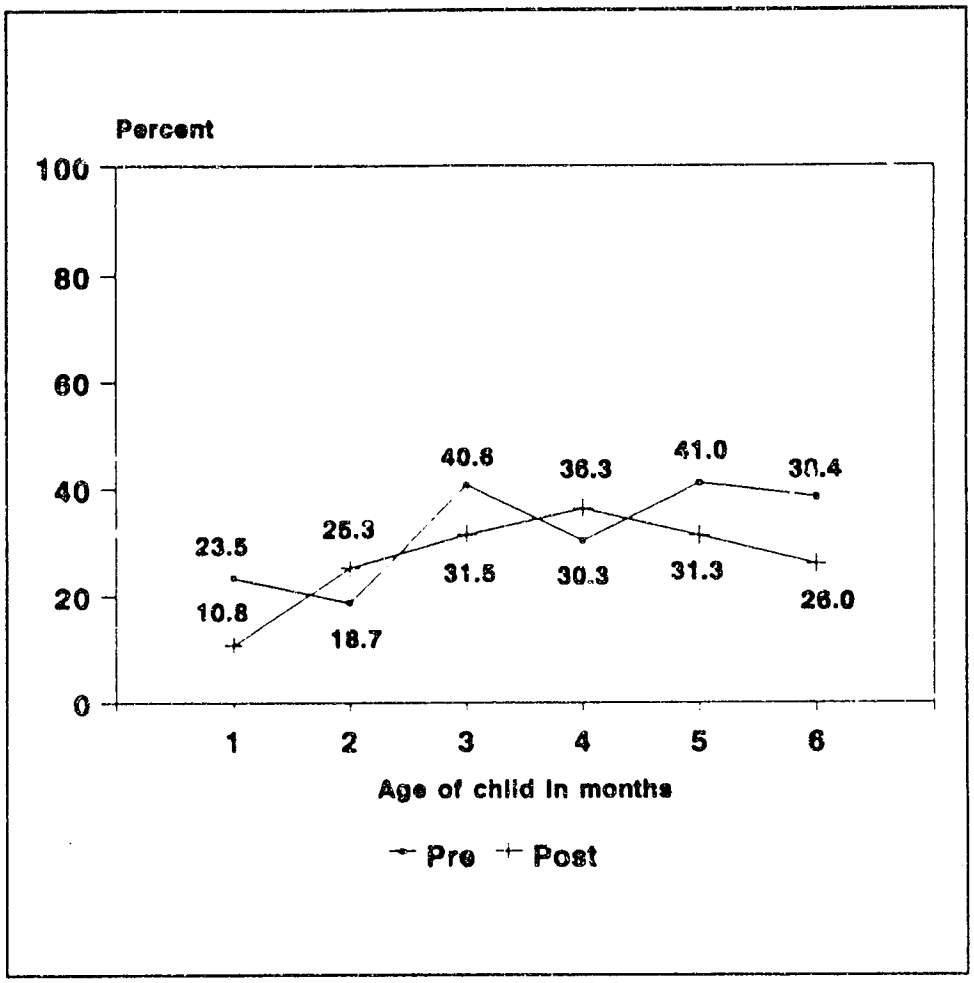
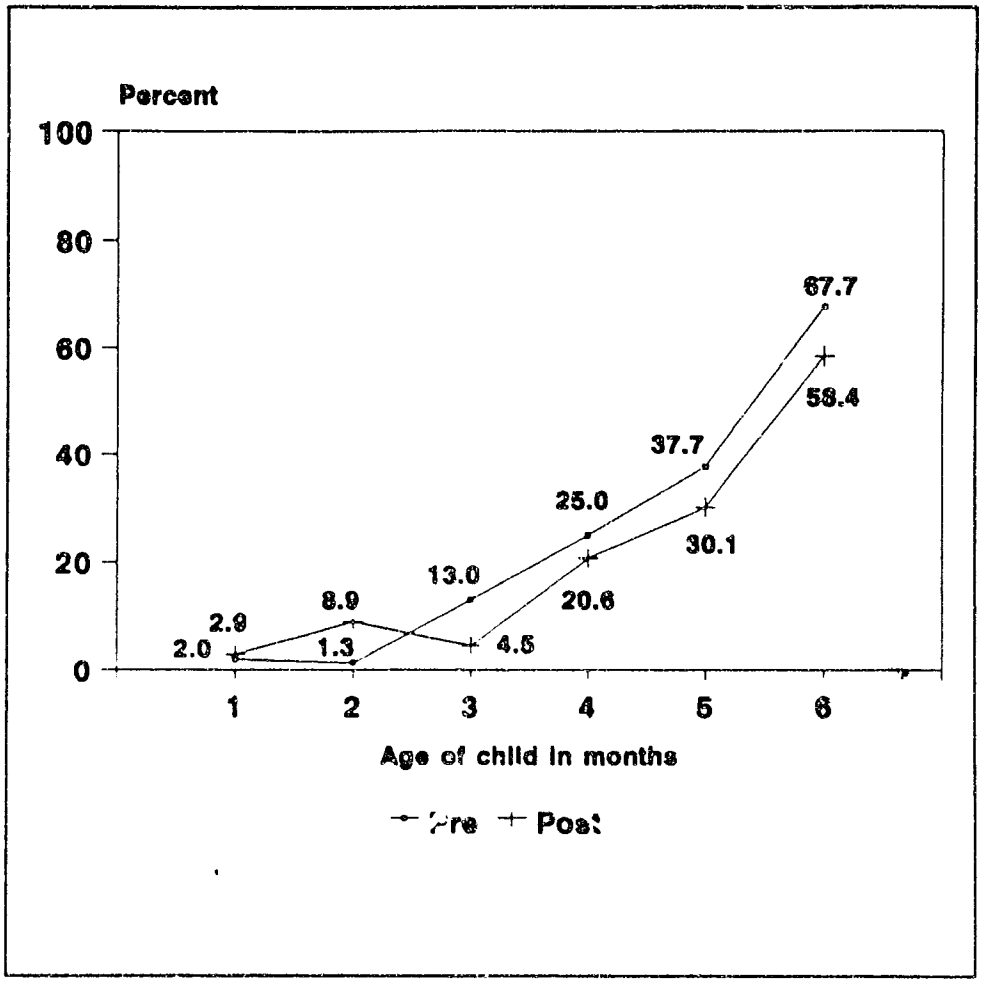


Figure 11 indicates that the feeding of solids follows a similar age-related trend as that seen for water, with the prevalence of feeding solids rising sharply among infants over four months of age. Modest improvements related to the feeding of solids were seen from the pre to the post, with the largest absolute decline (over 9%) occurring among infants up to six months of age, dropping from about 68% at the pre to 58% at the post measurement.

FIGURE 11
Percentage of Mothers Who Fed Their Child Solids in Previous 24 Hours by Age of Child Pre-Post Comparison



A more consistent decline was seen from the pre to the post in the feeding of other non-milk liquids. As seen in Figure 12, the magnitude of the pre-post differences ranged from 6% at four months to over 18% at six months of age.

FIGURE 12
Percentage of Mothers Who Fed Their Child Other Liquids in the Previous 24 Hours by Age of Child Pre-Post Comparison

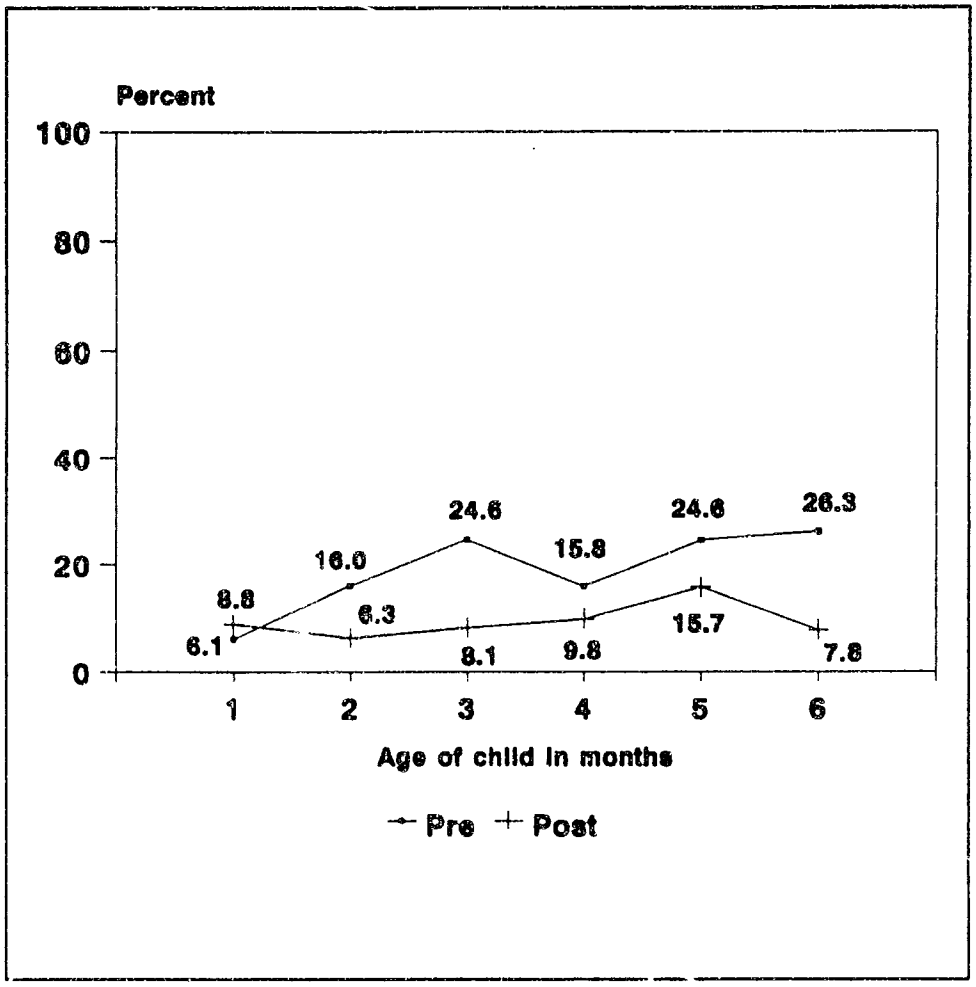
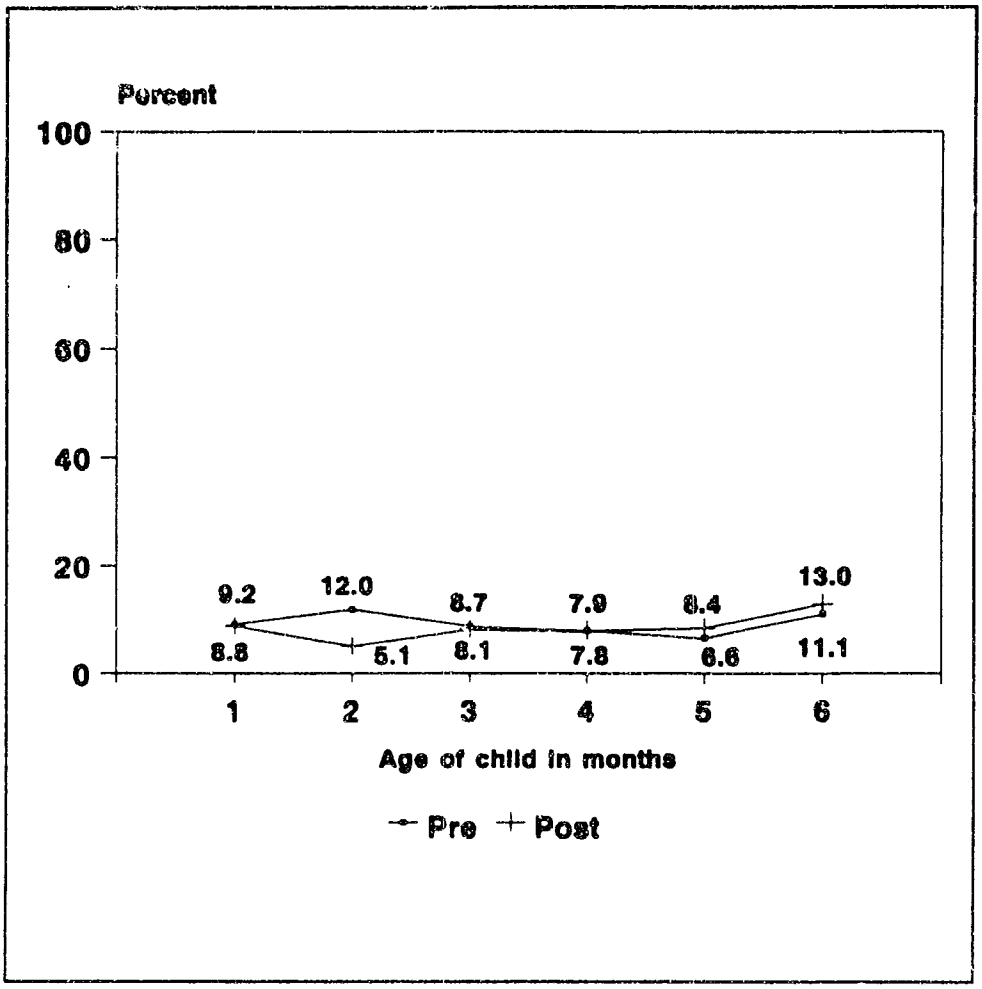


Figure 13 charts the prevalence of giving teas at the pre and post measurements. Virtually no differences were found between the pre and post, and overall the prevalence of giving teas was low. The lack of an age-related tendency in the giving of teas suggests that they may be given more for medicinal rather than nutritional purposes.

FIGURE 13
Percentage of Mothers Who Fed Their Child Teas in the Previous 24 Hours by Age of Child Pre-Post Comparison



To summarize the findings with respect to specific feeding behaviors, overall the increase in the practice of exclusive breastfeeding witnessed at the post measurement seems to be mainly the result of reductions in mothers giving water, other liquids, and other milk, particularly among infants at five and six months. By age six months, the prevalence of giving water and other liquids had declined by about 18 percentage points, respectively (from 78% to 61% for water and from 26% to 8% for other liquids). The decrease in use of cow's and powdered milk and solids at six months each declined by about 10 percentage points at the post (from 38% to 28% for other milk and from 68% to 58% for solids). The intervention thus seems to have reduced the substitution of other liquids for breastfeeding. The intervention appears to have had limited impact on the feeding of solids and teas.

The predominant tendency of mothers to give solids and water prior to six months of age remains the biggest challenge to optimal breastfeeding at age four to six months. The early introduction of cow's milk and powdered milk (given by 11% of mothers of newborns and 25-36% of mothers of older infants at the post survey) is another worrisome problem, given the poor digestibility of cow's milk by young infants.

VI. CONCLUSIONS AND RECOMMENDATIONS

A. Limitations of the Study Design and Implementation

In drawing conclusions from the results presented in the preceding sections, a few caveats are needed. First, there were large time lags between exposure to the intervention channels and measurement of effects. This time lag probably reduced the study's ability to detect some effects (especially for training and messages heard on the radio more than a year earlier). The time lag may also have diluted the sample universe due to the influx of new health workers (e.g., physicians performing their year of rural service) into the post-measurement pool who were not in the area at the time the intervention was conducted.

Second, limitations on sample size may have affected the study's ability to establish statistical significance for differences found. The study sample contains a limited number of physicians compared to the number of nurses, though this sample composition most likely reflects reality. However, when reduced sub-samples are used, statistical tests can detect significant differences only if such differences are large. In such cases, small differences are generally not identified as statistically significant. On the other hand, if statistical significance is found despite the reduced size of a given sub-sample, the finding is particularly revealing. Consequently, many knowledge gains that occurred may have not been considered statistically significant because there were too few respondents in the category of interest (e.g., physicians exposed to training). By the same token, those knowledge gains that reached significance levels are powerful evidence in support of the effectiveness of the intervention.

Finally, there were apparently some important variations in how the different components of the intervention were carried out at the local level which undoubtedly diluted the intervention's impact. This was particularly true for the training of health workers. Accordingly, the positive intervention effects documented in this study probably underestimate the potential impact that might have been attained had there been greater homogeneity in how the intervention was operationalized in each area.

B. Conclusions

The evaluation's conclusions are organized to address the principal research questions posed by the study.

Was the intervention carried out?

All components of the intervention were carried out, but not with equal coverage and completeness. For health workers, the coverage of training activities was lower than expected and the quality of the training seems to have varied by area. While the training intervention seems to have adhered to the model curriculum and cascade approach in Region V, it appears not to have been extended systematically below the area level in Region VII. The distribution of print materials attained high levels of coverage in both study regions, particularly the poster and the flip chart. The supply of reference manuals for health workers and the take-home materials for mothers (flyer and comic) was inadequate. Nevertheless, significant increases in access to key print materials were observed at the post measurement, compared with the levels found in the baseline survey.

For mothers, the coverage of radio and graphic print materials was good. The radio spots reached nearly half of all target mothers, and the poster was seen by some two-thirds of the mothers interviewed. Mothers reported very limited exposure to print materials other than the poster. The frequency of interpersonal contacts with health workers in which breastfeeding topics were discussed topics was also quite low.

What impact did the intervention components have on knowledge and practices?

Overall

In the aggregate, the intervention significantly increased the overall breastfeeding knowledge of health personnel and their knowledge of the appropriateness of exclusive breastfeeding in the first six months of life. The intervention seems to have been instrumental in making service providers more knowledgeable about the revised MOH norm which extended the recommended period for exclusive breastfeeding to six months.

For mothers, overall exposure to the intervention was associated with knowledge gains in several areas, and these effects were heightened when exposure was narrowed to the specific channel, radio. The more important result obtained for mothers, however, was the study's finding that increases in mothers' knowledge were strongly associated with increased practice of exclusive breastfeeding through the first six months and in particular, the sixth month. The prevalence of exclusive breastfeeding in the sixth month increased from 7% at the baseline to over 20% among high knowledge mothers at post measurement. The evaluation thus found that the intervention achieved its ultimate objective of increasing the prevalence of exclusive breastfeeding in the first six months of life. This is an impressive accomplishment indeed, given the difficulties inherent in modifying infant feeding practices.

Training

Training made either little or no difference at all in improving knowledge of health workers. Unfortunately, the study can provide little insight into the specific reasons why the training may

have had such neglible impact. It is likely, however, that the cascade approach used in the intervention resulted not only in wide variations in coverage by health area, but also in the quality and thoroughness of the training content received by health workers at the facility level. Further, the duration of the training may have been too short to deal with the main messages of the intervention with sufficient depth when six other topics were also covered. This was the first attempt by the MOH to provide an integrated training course covering a variety of child survival interventions, including breastfeeding. Finally, had the evaluation been carried out closer to the time of the intervention, different initial knowledge effects would have been detected.

Print

Print materials did demonstrate a positive effect on health worker knowledge. Access to posters and flip charts seems to have had a wider impact than did access to the brief reference guides. The impact of the reference guides seems to be limited to certain content areas, and they seem to have been more useful for physicians than for nurses.

Exposure to print materials was also associated with knowledge increases among mothers related to not giving water to newborns, exclusive breastfeeding up to six months, and introducing solids at six months. Aside from the impact of print exposure on knowledge of exclusive breastfeeding in the first six months (the single message of the poster, which was the primary print material seen by mothers), it is likely that the positive effects seen for print materials as a whole may actually be the result of mothers' simultaneous exposure to radio broadcasts, which contained a broader array of messages.

Radio

Exposure to the radio broadcasts proved to be strongly associated with higher scores on virtually all knowledge items. The most important increases found related to the appropriate feeding of newborns and the introduction of water and solids beginning at six months.

Interpersonal Communication with Health Workers

Counseling, either individually or in groups, appears not to have been carried out as anticipated by the MOH/AED project design team. Consequently, counseling seems to have had little substantive impact on mothers' knowledge. The most significant effect associated with exposure to interpersonal communication with health workers was a modest knowledge gain for feeding a newborn colostrum and nothing else.

What aspects of the intervention program were the most successful?

In conclusion, the flip chart and the promotional poster were the most effective intervention channels for health workers, and the radio broadcasts were the most effective channel for mothers, probably because they had the highest coverage and because their content was fixed and not left to the discretion of local health teams.

C. Recommendations for Future Programs

The final research objective of this evaluation was to identify what lessons can be learned from the study that translate into recommendations for improving the effectiveness of similar intervention programs in the future. Recommendations are organized by major component of the intervention.

Behavioral Objectives

- Future interventions should continue to set specific behavioral objectives. The focus on eliminating the practice of giving water and other liquids during the first six months should be maintained and reinforced. The project achieved encouraging results in terms of modifying practices that pose a threat to exclusive breastfeeding. Continued effort will be required to shift community norms about the optimal way to feed infants.

Training

- The way in which training activities are organized and conducted should be re-examined and alternatives considered that would adapt the training approach to the resources available at the local level. First, trainings which integrate a broad range of topics may require well-planned follow-up in order to have impact, especially if new topics and content are being introduced. Second, greater flexibility in the format for presenting the breastfeeding content at the facility level is needed. The use of self-teaching approaches (in the context of professional continuing education) may be an appropriate alternative for physicians and licensed nurses.

- Given their importance as providers of pregnancy and post-partum care, midwives need to be the focus of a concerted training effort to improve the persistent breastfeeding knowledge gaps identified in the pre- and post-measurement surveys.

Print Materials

- It may be more appropriate to view physicians, nurses and community-based health workers as different target audiences for certain print materials (e.g., reference guide) to ensure that the level of detail and language are appropriate to the respective health worker's training and job description. In particular, there is a need for the development and widespread dissemination of print materials to support midwives and community-based workers in their activities to promote breastfeeding.

- In view of the results of this evaluation, consideration should be given to producing fewer types of materials but ensuring that sufficient quantities of those produced are available at the local level to enable their intended use.

- A great many educational and promotional materials related to breastfeeding have been developed in Honduras in the past five years with support of various international organizations. There is a need for a systematic review of these materials to ensure that there is consistency about key messages. Future interventions should seek to make the best use of appropriate existing products.

Radio

- Because popular national radio stations seem to have a greater reach than regional stations, the cost/benefit trade-offs of broadcasting more messages on fewer, mainly national stations, versus fewer messages on more radio stations should be carefully analyzed to determine the most efficient approach.

- The use of radio programming other than short message spots (e.g., the breastfeeding series presented on the weekly radio call-in show) should continue to be supported. The effectiveness of radio programming targeted at health workers should also be evaluated.

Interpersonal Communication by Health Workers

- In view of the important opportunity posed by routine consultations for counseling to promote optimal breastfeeding, future interventions should include a more structured intervention component to facilitate and support interpersonal communication by facility- and community-based health workers. More intensive training in interpersonal communication as well as improved supervision and support systems are required.

- Tools to support interpersonal communication on optimal breastfeeding practices--such as check lists and flip charts--should be more widely disseminated to all health workers who deal with mothers.

Monitoring/Evaluation Activities

- Process indicators that are collected from the intervention's start-up and that permit program managers to monitor the degree to which the intervention is being carried out as planned, should be incorporated into the evaluation plan for future interventions.

- The monitoring of effects of breastfeeding promotion interventions should be linked, as much as is feasible, to routine supervision activities. For example, supervisors could apply brief observation check lists to determine whether pertinent aspects of the intervention are in place.

- The costs of implementing each intervention component should be measured and related to impact data, to inform policy decisions about how best to invest scarce resources.

- Training interventions should preferably be evaluated soon after the training has occurred. Ideally, training should be evaluated using both immediate and delayed measurements to document the short-term and lasting effects of training activities.

- Evaluations of future mass media interventions should explicitly examine the impact of radio broadcasts on health worker knowledge to determine if and how radio can be a useful channel for reaching health workers.

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ANNEXES

ANNEX 1

Findings on Traditional Midwives from Pre and Post Surveys

1. Introduction

This annex to the main report presents the findings of the pre- and post-intervention interviews with traditional midwives in Regions V and VII (176 midwives interviewed in the pre-intervention survey and 116 in the post measurement). As was noted in the methodology section of the report, midwives were excluded from the impact analysis because no separate training was conducted for them, as had been initially planned. It was felt that few midwives were covered by the NCP-supported training intervention as it was actually implemented and that midwives did not have access to the detailed print materials. Results for midwives are presented here for the purpose of highlighting persistent knowledge gaps among midwives that should be addressed in the future through training and other interventions.

The results presented below exclude the data on midwives in Region IV that were collected in the baseline survey. For this reason, figures reported for the pre-intervention measurement may differ from those reported in the 1991 baseline survey report by Baume *et al.*

2. Exposure to the Intervention

The only exposure variable included in the post-intervention interview with midwives was participation in MOH training on breastfeeding in 1992. Of the 116 midwives interviewed, 49 (42%) reported to have received such training. This proportion was essentially the same in both regions.

In an attempt to explore what effects, if any, this training may have had on midwives, the training status of midwives interviewed (i.e., trained or not trained) was cross-tabulated with recall of the main messages of the intervention. These results are shown in Table A-1.

The only statistically significant relationship found for midwives between training and unprompted message recall occurred for the message, "Feed colostrum immediately after birth." The lack of significant relationships between training and message recall may be due to the size of the sample and/or may also be a function of the fact that the post measurement took place as much as a year after the intervention activities probably occurred. However, overall, recall of the breastfeeding promotion campaign's main messages was low for both those exposed to the intervention's training activities and for those midwives not exposed to training.

TABLE A-1
Relationship between Midwives' Exposure to Training and Recall of Main Intervention Messages at the Post Measurement

Message	No Exposure	Exposure	p
Feed colostrum immediately after birth	13.4%	28.6%	.04*
Breastfeed exclusively up to 6 months	4.5%	12.2%	.12
Introduce other foods after 6 months	4.5%	2.0%	.47
Breastfeed up to 2 years	0%	0%	na
Correct completion of slogan	19.4%	26.5%	.36

* significant, $p \leq .05$

It is interesting that recall of the main message of "Breastfeed exclusively up to six months" and the poster slogan ("In the first six months, breastmilk and nothing else") was also markedly lower among midwives than was recall of these messages by nurses and physicians (seen in Tables 21, 22 and 24 in the main text) and than recall of the exclusive breastfeeding message by all mothers (24% of whom recalled hearing this message by radio). This may reflect limited access by midwives to the breastfeeding promotion intervention.

3. Breastfeeding-related Knowledge

Table A-2 compares the pre and post measurement results for the principal breastfeeding-related knowledge items examined in the surveys. Statistically significant but modest improvements were seen for most of the knowledge items concerning exclusive breastfeeding. The largest increases were seen for knowledge that a newborn needs colostrum and nothing else (57% to 85%) and that 5-month olds should not be given water (4% to 22%).

TABLE A-2
Midwives' Knowledge of Appropriate Breastfeeding Practices
Pre-Post Comparison
(% responding correctly)

KNOWLEDGE ITEM	PRE	POST	p
Exclusive Breastfeeding of Newborn			
A newborn does not need water to quench his thirst	31.8	38.8	.18
A newborn needs colostrum and nothing else	56.8	84.5	.001***
Exclusive Breastfeeding in the First Six Months			
5-month olds should be breastfed	13.6	19.8	.16
5-month olds should not be given other liquids	3.4	19.0	.001***
5-month olds should not be given (sugar) water	4.0	21.6	.001***
5-month olds should not be fed (other) foods	4.5	14.7	.003**
5-month olds should not be fed solids	4.5	15.5	.002**
Water should be introduced at 6 months	na	19.8	
Other liquids should be introduced at 6 months	na	39.7	
Solids should be introduced at 6 months	na	35.3	

*** very highly significant, $p \leq .001$
** highly significant, $p \leq .01$
~ data for pre-test were calculated in terms of mean age of introduction of water, liquids, and solids, such that figures are not directly comparable with % who said these should be introduced at six months

In addition to the questions reported above, midwives were also asked directly, "Do you think that an infant should receive only breastmilk and no other liquid or food until he reaches six months of age?." Interestingly, a larger proportion of midwives said "yes" to that statement than did answer appropriately to the questions concerning breastfeeding of a five-month old infant. This apparent discrepancy suggests that some of the variation in response is due to how the question was asked.

	Pre	Post	p
Do you think that an infant should receive only breastmilk and no other liquid or food until he reaches six months of age?	23.3%	40.5%	.002**

11

Table A-3 compares the pre and post results for midwives' awareness of the benefits of breastfeeding and of how to overcome problems affecting successful breastfeeding. Here, no differences are seen between the pre and post measurements for awareness of breastfeeding's benefits. Statistically significant differences were found with respect to knowledge of the link between breastfeeding position and cracked nipples (2% to 9%) and to awareness that introduction of other foods leads to breastmilk drying up (46% to 72%).

TABLE A-3
Midwives' Knowledge of Breastfeeding Benefits and Skills to Overcome Problems
Pre-Post Comparison
(% responding correctly)

KNOWLEDGE ITEM	PRE	POST	p
Benefits of Breastfeeding			
Protection against disease	51.1	44.8	.29
Hygienic	11.9	10.3	.67
Fosters closer relationship-mother-child	6.8	6.0	.79
Convenient	11.4	9.5	.61
Skills			
A mother that does not produce sufficient breastmilk must breastfeed more frequently	90.9	95.7	.27
Nipples split due to position child held	1.7	8.6	.001***
When you give other foods, breastmilk dries up	46.0	71.6	.001***

*** very highly significant, $p \leq .001$

4. Discussion

Midwives showed modest but statistically significant knowledge gains from the pre to the post measurement. The weak relationship found between training and message recall suggests that there is little likelihood of finding a statistically significant positive relationship between training and improved breastfeeding knowledge among midwives. The differences in knowledge levels found between the pre and post samples thus cannot be attributed to the training intervention. Since data were not collected concerning midwives' exposure to print materials or radio messages, it is not possible to determine whether midwives' knowledge gains from the pre to the post measurement are attributable to any aspect of the breastfeeding promotion intervention.

Despite the modest knowledge improvements which occurred, the results of the pre and post surveys indicate that only a minority of midwives are aware of the appropriateness of exclusive breastfeeding in the first six months. The knowledge level of midwives at the post measurement regarding exclusive breastfeeding is comparable to that of mothers and much lower than that of nurses and physicians.

Concerning knowledge of techniques for overcoming barriers to successful breastfeeding, at the post measurement, midwives demonstrate roughly the same results as those of nurses and physicians.

The most critical knowledge gaps found among midwives at the post measurement are those relating to the introduction of water, other liquids and solids prior to six months of age. The majority of midwives continue to recommend introduction of other foods at earlier ages.

The importance of addressing these knowledge gaps in future interventions is underscored by the predominant role of midwives in providing prenatal, delivery and postnatal care in Honduras. Of mothers interviewed in the post survey, 64% saw a midwife for prenatal care, 54% delivered at home with a midwife, and 22% saw a midwife in the postpartum period. Given midwives' persistent knowledge deficits with respect to exclusive breastfeeding, future breastfeeding promotion interventions in Honduras should specifically target midwives.

ANNEX 2

Pre- and Post-Intervention Measurement Instruments for Health Workers and Mothers

Pre-Intervention Questionnaire for Health Workers

Post-Intervention Questionnaire for Health Workers

Pre-Intervention Questionnaire for Mothers

Post-Intervention Questionnaire for Mothers

ENCUESTA DE CONOCIMIENTO Y ACTITUDES DE PERSONAL DE SALUD
INVESTIGACION DE LINEA BASE DEL
PROYECTO COMUNICACION EN NUTRICION
1991

FORMULARIO ____ ____ ____

ENCUESTADOR _____ ____ ____

FECHA __ __ /__ __ /__ __
DIA / MES / ANO

REGION SANITARIA # 4 5 7

ESTABLECIMIENTO:
1. CESAMO URBANO (STA. ROSA, JUTICALPA, CHOLUTECA)
2. CESAMO
3. CESAR

NOMBRE DEL CENTRO DE SALUD/HOSPITAL:

_____ ____ ____

CARGO:
1. PARTERA
2. ENFERMERA AUXILIAR
3. ENFERMERA PROFESIONAL
4. VOLUNTARIO:_____
5. MEDICO:_____

EN CESAMO URBANO: EN CUAL CONSULTA TRABAJA?:

_____ ____ ____

==========

1. ¿Cuándo recomendaría usted que una madre sana de la primera amamantada (de pecho por primera vez) a su recien nacido normal? MARQUE SOLO UNA, Y NO LEA LAS RESPUESTAS

1. INMEDIATAMENTE AL NACER (EN LOS PRIMEROS 10 MINUTOS)
2. LA PRIMERA HORA DESPUES DEL PARTO
3. ANTES DE LAS 8 HORAS DESPUES DEL PARTO
4. 8-24 HORAS DESPUES DEL PARTO
5. MAS DE 24 HORAS DESPUES DEL PARTO

2. ¿Cree usted que un recién nacido SANO debe recibir agua, agua azucarada o suero durante los primeros días después del parto?
1. SI 2. NO

3. a. ¿Cuáles LIQUIDOS piensa usted que le debería dar a un niño de TRES (3) MESES de edad? NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?

1. LECHE MATERNA
2. OTROS LIQUIDOS COMO LECHE DE VACA, JUGO, SOPA, ETC.
1. SI 2. NO
1. SI 2. NO

b. ¿Le debería dar agua o agua azucarada a un niño de TRES MESES de edad?
1. SI 2. NO

c. ¿Cuáles COMIDAS piensa usted que le debería dar a un niño de TRES (3) MESES de edad? NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?

1. NINGUNA COMIDA
2. COMIDA COMO ATOLES, FRUTAS, U OTRA COMIDA
1. SI 2. NO

4. a. ¿Cuáles LIQUIDOS piensa usted que le debería dar a un niño de CINCO (5) MESES de edad? NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?

1.	LECHE MATERNA	1. SI	2. NO
2.	OTRO LIQUIDO COMO LECHE DE VACA, JUGO, SOPA, ETC.	1. SI	2. NO

b. ¿Le debería dar agua o agua azucarada a un niño de CINCO MESES de edad? 1. SI 2. NO

c. ¿Cuáles COMIDAS piensa usted que le debería dar a un niño de CINCO (5) MESES de edad? NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?

1.	NINGUNA COMIDA	1. SI	2. NO
2.	COMIDA COMO ATOLES, FRUTAS, U OTRA COMIDA	1. SI	2. NO

5. ¿A qué edad recomendaría usted la introducción de AGUA O AGUA AZUCARADA? # MESES ___ ___

6. ¿A qué edad recomendaría usted la introducción de OTROS LIQUIDOS como jugos, leche de vaca o de lata, sopas, etc.? # MESES ___ ___

7. ¿A qué edad recomendaría usted la introducción de la PRIMERA COMIDA como atoles y frutas? # MESES ___ ___

8. ¿A qué edad recomendaría usted el DESTETE (que le quite el pecho)? # MESES ___ ___

HASTA QUE LO DEJE=96
HASTA EMPEZAR A TRABAJAR=97
HASTA QUE TENGA LECHE LA MADRE=98

AHORA LE VOY A LEER UNAS COSAS Y QUIERO QUE ME DIGA SI ESTA DE ACUERDO, EN DESACUERDO O SI NO SABE.

9. La madre que no produce leche suficiente, debe poner el niño al pecho con más frecuencia (más seguido). 1. SI 2. NO 3. NO SABE

10. Durante los primeros dias de vida, el niño solo necesita el calostro (la leche amarilla) para llenarse, y NO NECESITA NADA MAS. 1. SI 2. NO 3. NO SABE

11. La leche de vaca o de lata es tan buena como la leche materna. 1. SI 2. NO 3. NO SABE

12. Una madre pobre o desnutrida puede alimentar a su tierno solo con su pecho, sin otro alimento. 1. SI 2. NO 3. NO SABE

13. Un recién nacido necesita agua además que leche materna para calmar la sed. 1. SI 2. NO 3. NO SABE

14. Un niño que toma pecho, necesita tomar la leche más veces en el dia, que un niño que toma leche de vaca o de lata. 1. SI 2. NO 3. NO SABE

15. Una madre con pezones invertidos no podrá dar de mamar a su niño. 1. SI 2. NO 3. NO SABE

16. La leche de vaca o de lata engorda más que la leche materna. 1. SI 2. NO 3. NO SABE

17. Cuando se empieza a dar otros alimentos al niño, además de la leche materna, SE SECA la leche de una madre.

1. SI 2. NO 3. NO SABE

18. ¿Cuáles son los beneficios de la lactancia materna (dar pecho)? NO LEA LAS RESPUESTAS, SIGA DESPACIO Y PREGUNTE: QUE MAS?

1.	PROTECCION CONTRA ENFERMEDADES/LA PRIMERA VACUNA	1.SI 2.NO
2.	NUTRICIONAL	1.SI 2.NO
3.	MEJOR CRECIMIENTO/DESARROLLO	1.SI 2.NO
4.	HIGIENICO	1.SI 2.NO
5.	ECONOMICO (TIEMPO, DINERO, ENERGIA)	1.SI 2.NO
6.	CONVENIENCIA (MAS FACIL)	1.SI 2.NO
7.	FISIOLOGICO (MENOR SANGRADO POSTPARTO, ETC.)	1.SI 2.NO
8.	ESPACIMIENTO DE EMBARAZOS (AMENOREA)	1.SI 2.NO
9.	ACERCAMIENTO MADRE-HIJO	1.SI 2.NO
10.	OTRO_____	1.SI 2.NO

19. ¿Porque cree usted que se pueda agrietar (lastimar/dañar) los pezones de una madre?

1. POR LA POSICION DEL NINO AMAMANTANDO
2. OTRA COSA:_____

20. ¿Cree usted que un niño debe recibir SOLAMENTE leche materna y ningún otro liquido o alimento hasta seis (6) meses de edad?

1. SI 2. NO

21. a. ¿Ha recibido usted un curso o una charla sobre la lactancia materna (como dar pecho)? 1. SI 2. NO (NO:PASE A #22)

b. ¿Por quién fue impartido?

1. MSP O PROALMA (ALACMA)	1. SI	2. NO
2. OTRO _____	1. SI	2. NO

c. ¿Cuándo recibio el curso?

1. DURANTE EL ULTIMO ANO
2. HACE DOS ANOS
3. HACE MAS DE DOS ANOS

22. a. ¿Cuáles materiales educativos sobre la alimentación de los niños, tienen aqui en el centro de salud?

1. ROTAFOLIO:_____	1. SI	2. NO
2. FOLLETOS:_____	1. SI	2. NO
3. AFICHES:_____	1. SI	2. NO
4. OTRO:_____	1. SI	2. NO

b. ¿Cuáles de ellos utiliza más usted?

1. ROTAFOLIO:_____	1. SI	2. NO
2. FOLLETOS:_____	1. SI	2. NO
3. AFICHES:_____	1. SI	2. NO
4. OTRO:_____	1. SI	2. NO

MINISTERIO DE SALUD PUBLICA
PROYECTO DE COMUNICACION EN NUTRICION (PCN)
ENCUESTA SOBRE LACTANCIA MATERNA CON PERSONAL DE SALUD
SEGUNDA TOMA DE DATOS
1993

FORMULARIO NUMERO: ___ ___ ___

ENCUESTADORA: _____ ___ ___

FECHA: ___/___/ 93
DIA / MES / AÑO

REGION SANITARIA: #5 #7

ESTABLECIMIENTO:
1. CESAMO Santa Rosa, CESAMO Juticalpa
2. Otros CESAMO
3. CESAR

NOMBRE DEL CENTRO DE SALUD:

_____ ___ ___

NOMBRE DE LA PERSONA ENTREVISTADA: _____

CARGO:
1. Partera ----------> **PASE A LA # 1**
2. Enfermera Auxiliar
3. Enfermera Profesional
4. Médico General/Especialista
5. Médico en Servicio Social

RESULTADO DE LA ENTREVISTA:

1. Entrevista realizada
2. Persona ausente
3. Rechazo
8. Otro _____

¿DESDE CUANDO TRABAJA USTED EN ESTA REGION? ___/___/___
DIA MES AÑO

_____

1. ¿Cuándo recomendaría usted que una madre sana dé la primera amamantada a su recién nacido normal?
MARQUE SOLO UNA, Y NO LEA LAS RESPUESTAS

1. Inmediatamente al nacer (en los primeros 10 minutos)
2. De 11 a 59 minutos después del parto
3. De una a menos de ocho horas después del parto
4. De 8 a 24 horas después del parto
5. Más de 24 horas después del parto

2. ¿Cree usted que un recién nacido SANO debe recibir agua, agua azucarada o suero, durante los primeros días después del parto?

1. Si
2. No

3. ¿Cuáles LIQUIDOS piensa usted que le debería dar a un niño de TRES (3) MESES de edad? **NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?**

	Mencionó	No Mencionó
- Leche Materna	1	2
- Otros líquidos, como leche de vaca, jugo, sopa, etc.	1	2

4. ¿Le debería dar agua o agua azucarada a un niño de TRES MESES de edad?

1. Si
2. No

5. ¿Cuáles COMIDAS piensa usted que le debería dar a un niño de TRES (3) MESES de edad? **NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?**

	Mencionó	No Mencionó
- Ninguna Comida	1	2
- Comida, como atoles, frutas, u otra comida	1	2

6. ¿Cuáles LIQUIDOS piensa usted que le debería dar a un niño de CINCO (5) MESES de edad? **NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?**

	Mencionó	No Mencionó
- Leche Materna	1	2
- Otros líquidos, como leche de vaca, jugo, sopa, etc.	1	2

7. ¿Le debería dar agua o agua azucarada a un niño de CINCO MESES de edad?

1. Si
2. No

8. ¿Cuáles COMIDAS piensa usted que le debería dar a un niño de CINCO (5) MESES de edad? NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?

	Mencionó	No Mencionó
- Ninguna Comida	1	2
- Comida, como atoles, frutas, u otra comida	1	2

9. ¿A qué edad recomendaría usted la introducción de AGUA O AGUA AZUCARADA?

Meses ___ ___

00 = Menos de un mes
99 = No sabe

10. ¿A qué edad recomendaría usted la introducción de OTROS LIQUIDOS como jugos, leche de vaca o de lata, sopas, etc.?

Meses ___ ___

00 = Menos de un mes
99 = No sabe

11. ¿A qué edad recomendaría usted la introducción de la PRIMERA COMIDA como atoles y frutas?

Meses ___ ___

00 = Menos de un mes
99 = No sabe

12. ¿A qué edad recomendaría usted el DESTETE (o sea que le quite el pecho)?

Meses ___ ___

96 = Hasta que lo deje
97 = Hasta empezar a trabajar
98 = Hasta que tenga leche la madre
99 = No sabe

AHORA LE VOY A LEER UNAS FRASES Y QUIERO QUE ME DIGA SI ESTA DE ACUERDO, EN DESACUERDO O SI NO SABE.

13. La madre que no produce leche suficiente, debe poner el niño al pecho con más frecuencia (o sea más seguido).

    1. Si
    2. No
    9. No sabe

14. Durante los primeros días de vida, el niño sólo necesita el calostro (la leche amarilla) para llenarse, y NO NECESITA NADA MAS.

    1. Si
    2. No
    9. No sabe

15. La leche de vaca o de lata es tan buena como la leche materna.

    1. Si
    2. No
    9. No sabe

16. Una madre pobre o desnutrida puede alimentar a su tierno sólo con su pecho, sin otro alimento.

    1. Si
    2. No
    9. No sabe

17. Un recién nacido necesita agua, además de leche materna, para calmar la sed.

    1. Si
    2. No
    9. No sabe

18. Un niño que toma pecho, necesita tomar la leche más veces en el día, que un niño que toma leche de vaca o de lata.

    1. Si
    2. No
    9. No sabe

19. Una madre con pezones invertidos no podrá dar de mamar a su niño.

    1. Si
    2. No
    9. No sabe

20. La leche de vaca o de lata engorda más que la leche materna.

1. Si
2. No
9. No sabe

21. Cuando se empieza a dar otros alimentos al niño, además de la leche materna, SE SECA la leche de una madre.

1. Si
2. No
9. No sabe

22. ¿Cuáles son los beneficios de la lactancia materna (dar pecho)? NO LEA LAS RESPUESTAS, SIGA DESPACIO Y PREGUNTE: QUE MAS?

	Mencionó	No Mencionó
- Protección contra enfermedades/ la primera vacuna	1	2
- Nutricional	1	2
- Mejor crecimiento/desarrollo	1	2
- Higiénico	1	2
- Económico (tiempo, dinero, energía)	1	2
- Conveniencia (más fácil)	1	2
- Fisiológico (menor sangrado postparto, etc.)	1	2
- Espaciamiento de embarazos (amenorrea)	1	2
- Acercamiento madre-hijo	1	2
- Otro _____ ___	1	2

23. ¿Por qué cree usted que se pueden agrietar (lastimar/dañar) los pezones de una madre (que está dando de mamar)?

1. Por la posición del niño amamantado
2. Falta de higiene
3. Fuego en la boca del niño
4. Otra cosa: _____
9. No sabe

24. ¿Cree usted que un niño debe recibir SOLAMENTE leche materna y ningún otro líquido o alimento hasta los seis (6) meses de edad?

1. Si
2. No
9. No sabe

25 **Durante 1992 ¿recibió usted capacitación (curso, charla o sesión) sobre la lactancia materna?**

1. Si
2. No ----------> **Pase a la # 28**

26. ¿Cuántas capacitaciones recibió en ese año?

_____

8 = 8 o más
9 = No recuerda

27. ¿Qué institución(es) dio (dieron) esa capacitación? **(INDAGUE Y ANOTE LOS NOMBRES DE TODAS LAS INSTITUCIONES QUE LE DIERON CAPACITACION)**

	Mencionó	No Mencionó
- Ministerio de Salud Pública	1	2
- Otros:		
_____	1	2
_____	1	2
_____	1	2

28. ¿Cuáles son los principales mensajes del Plan de Comunicaciones (de la capacitación y materiales educativos) de Lactancia Materna? **NO LEA LAS RESPUESTAS**

	Mencionó	No Mencionó
- Poner al niño al pecho tan pronto nace	1	2
- En los primeros seis meses, sólo pecho y nada más	1	2
- Lactancia Materna hasta los dos años	1	2
- Introducción de alimentos a partir de los seis meses	1	2
- Otro _____	1	2

ENCUESTADORA: SI LA PERSONA ENTREVISTADA ES PARTERA, PASE A LA # 33

29. A partir de enero de 1992, usted ha tenido disponibles, en este centro de salud (hospital): **LEA TODAS LAS OPCIONES**

- Rotafolio de cartón sobre Lactancia Materna	1. Si	2. No
- Rotafolio de tela sobre Lactancia Materna	1. Si	2. No
- Folleto sobre Lactancia Materna	1. Si	2. No
- Guía breve sobre Lactancia Materna	1. Si	2. No
- Manual para uso del Rotafolio de Lactancia Materna	1. Si	2. No
- Afiche promocional sobre Lactancia Materna	1. Si	2. No
- Afiche educativo sobre Lactancia Materna	1. Si	2. No
- Otro material sobre Lactancia Materna	1. Si	2. No

30. ¿Durante 1992 ha capacitado parteras sobre Lactancia Materna?

1. Si
2. No ----------> **Pase a la # 32**

31. ¿Cuál de los materiales mencionados anteriormente, le ha sido más útil para la capacitación de parteras? **ANOTE UNA SOLA RESPUESTA.**

1. Rotafolio de cartón sobre Lactancia Materna
2. Rotafolio de tela sobre Lactancia Materna
3. Folleto sobre Lactancia Materna
4. Guía breve sobre Lactancia Materna
5. Manual para uso del rotafolio de Lactancia Materna
6. Afiche promocional sobre Lactancia Materna
7. Afiche educativo sobre Lactancia Materna
8. Otro material sobre Lactancia Materna

32. ¿Cuál de los materiales mencionados anteriormente, le ha sido más útil para la educación de madres? **ANOTE UNA SOLA RESPUESTA.**

1. Rotafolio de cartón sobre Lactancia Materna
2. Rotafolio de tela sobre Lactancia Materna
3. Folleto sobre Lactancia Materna
4. Guía breve sobre Lactancia Materna
5. Manual para uso del rotafolio de Lactancia Materna
6. Afiche promocional sobre Lactancia Materna
7. Afiche educativo sobre Lactancia Materna
8. Otro material sobre Lactancia Materna

33. Por favor, complete la siguiente frase:

"En los primeros _____ _____ , sólo leche materna y nada más."

Completó el slogan 1. Si 2. No

MUCHAS GRACIAS POR SU COLABORACION

FORMULARIO ____ ____ ____

ENCUESTADOR _____ _____

FECHA __ __ /__ __ /__ __
DIA / MES / ANO

REGION SANITARIA 4 5 7

NOMBRE DEL CENTRO DE SALUD DE AREA DE INFLUENCIA:

_____ ____ ____

ESTABLECIMIENTO 1. CESAMO URBANO (STA. ROSA, JUTICALPA, CHOLUTECA)
2. CESAMO
3. CESAR

COMUNIDAD _____ ____ ____

CASA ____

1. Sexo del niño: 1. VARON 2. MUJER

2. Fecha de nacimiento: __ __ /__ __ /__ __
DIA MES ANO

3. ¿Donde nacio este/a niño/a? NO LEA LAS RESPUESTAS, MARQUE SOLO UNA

1. EN CASA CON PARTERA
2. EN CASA SIN PARTERA
3. EN HOSPITAL REGIONAL/PUBLICO
4. CON MEDICO PARTICULAR
5. OTRO LUGAR: _____

COMPORTAMIENTO ALIMENTICIO

4.a. Estuvo usted con su niño durante los primeros TRES dias?
1. SI 2. NO
NO: ¿Porque? _____
(NO: PASE A #5)

b. Dieron en los primeros TRES (3) DIAS de vida del niño: LEA CADA RESPUESTA, UNA POR UNA

1. LE DIO UN CHUPON EN LOS PRIMEROS TRES DIAS? 1. SI 2. NO
2. LE DIO AGUA AZUCARADA/SIMPLE EN LOS PRIMEROS TRES DIAS? 1. SI 2. NO
3. LE DIO ALGUN TE U OTRO LIQUIDO EN LOS PRIMEROS TRES DIAS? 1. SI 2. NO
4. LE DIO LECHE DE VACA O DE LATA EN LOS PRIMEROS TRES DIAS? 1. SI 2. NO
5. LE DIO OTRA COSA EN LOS PRIMEROS TRES DIAS? 1. SI 2. NO
¿QUE? _____
6. LE DIO EL PECHO EN LOS PRIMEROS TRES DIAS? 1. SI 2. NO
(SI: PASE A #7)

5. ¿Le dió pecho alguna vez a este niño/a?

6. ¿Porqué decidió NO darle pecho a éste niño/a?
MARQUE SOLO UNA RESPUESTA

1. NO LE BAJO LA LECHE/SE LA SECO LA LECHE
2. PROBLEMAS DE LA LACTANCIA (PEZONES AGRIETADOS, PLETORA, MASTITIS, ETC.)
3. ENFERMEDAD/MEDICAMENTO (ELLA)
4. TRABAJA/ESTUDIA FUERA DE LA CASA
5. EL NINO NO QUERIA
6. ALIMENTAR EL NINO MEJOR (CON OTRA LECHE)
7. OTRA_____
(PASE A #13)

7. Después del parto, ¿cuándo le puso el niño al pecho por primera vez? NO LEA LAS RESPUESTAS, MARQUE SOLO UNA RESPUESTA

1. INMEDIATAMENTE AL NACER (EN LOS PRIMEROS 10 MINUTOS)
2. LA PRIMERA HORA DESPUES DEL PARTO
3. ANTES DE LAS 8 HORAS DESPUES DEL PARTO
4. 8-24 HORAS DESPUES DEL PARTO
5. MAS DE 24 HORAS DESPUES DEL PARTO

8. ¿Le esta dando pecho todavia? 1. SI 2. NO
(SI: PASE A #11)

9. ¿Porqué le quito el pecho? NO LEA LAS RESPUESTAS, MARQUE SOLO UNA

1. YA PUEDE COMER
2. EL NINO NO QUERIA
3. NO SE LLENABA EL NINO
4. PARA TRABAJAR/ESTUDIAR
5. PROBLEMAS DE LA LACTANCIA
6. SE ENFERMO ELLA
7. SE LE SECO LA LECHE/NO LE BAJO LA LECHE
8. OTRA_____

10. ¿Cuántos meses tenia el niño/a cuando le quitó el pecho?
MESES ___ ___
(PASE A #13)

11. ¿Cuantos meses espera darle pecho? # MESES ___ ___

HASTA QUE LO DEJE=96
HASTA EMPEZAR A TRABAJAR=97
HASTA QUE TENGA LECHE LA MADRE=98

AHORA PIENSE EN LAS ULTIMAS 24 HORAS:

12. a. ¿Cuántas veces le dio pecho al niño AYER DURANTE EL DIA # VECES ___ ___

b. ¿Cuántas veces le dio pecho al niño ANOCHE?
VECES ___ ___

13. a. ¿Le dió leche de lata o de vaca AYER O ANOCHE? 1. SI 2. NO

b. ¿Le dió algun te AYER O ANOCHE? 1. SI 2. NO
(NO: PASE A #D)

c. Si le dio te, ¿lo dio como remedio? 1. SI 2. NO

d. ¿Le dió agua AYER O ANOCHE? 1 SI 2. NO

e. ¿Le dió otro liquido AYER O ANOCHE? 1. SI 2. NO

¿Cuántas semanas tenía el niño/a cuando le dió por primera vez algun LIQUIDO, además de la leche materna? #SEMANAS ___ ___

a. ¿Le dió ayer o anoche EN PEPE algunos de esos liquidos que mencionó? 1. SI 2. NO

b. ¿Cuántas semanas de edad tenia el niño/a cuando le dió UN PEPE por primera vez? # SEMANAS ___ ___
NUNCA HA DADO=32

c. ¿Se acuerda usted si alguien le dijo en algun momento que NO DEBERIA USAR UN PEPE para darle cualquier liquido al niño? 1. SI 2. NO

Durante el dia de AYER, ¿le dió al niño alguna COMIDA como atoles, frutas, frijoles, arroz, o tortilla?
1. SI 2. NO
(NO:PASE A #18a)

¿Cuántas semanas tenia el niño/a cuando le dió por primera vez ALGUNA COMIDA, además que la leche materna (la leche suya)?
SEMANAS __ ___

OCIMIENTO

a. ¿Cuáles LIQUIDOS piensa usted que le deberia dar a un niño de TRES (3) MESES de edad? NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?

1. LECHE MATERNA 1. SI 2. NO
2. OTROS LIQUIDOS COMO LECHE DE VACA, JUGO, SOPA, ETC. 1. SI 2. NO

b. ¿Le deberia dar AGUA O AGUA AZUCARADA a un niño de TRES MESES de edad? 1. SI 2. NO

c. ¿Cuáles COMIDAS piensa usted que le deberia dar a un niño de TRES (3) MESES de edad? NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?

1. NINGUNA COMIDA 1. SI 2. NO
2. COMIDA COMO ATOLES, FRUTAS, U OTRA COMIDA 1. SI 2. NO

a. ¿Cuáles LIQUIDOS piensa usted que le deberia dar a un niño de CINCO (5) MESES de edad? NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?

1. LECHE MATERNA 1. SI 2. NO
2. OTRO LIQUIDO COMO LECHE DE VACA, JUGO, SOPA, ETC. 1. SI 2. NO

b. ¿Le deberia dar AGUA O AGUA AZUCARADA a un niño de CINCO MESES de edad? 1. SI 2. NO

c. ¿Cuáles COMIDAS piensa usted que le deberia dar a un niño de CINCO (5) MESES de edad? NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?

1. NINGUNA COMIDA 1. SI 2. NO
2. COMIDA COMO ATOLES, FRUTAS, U OTRA COMIDA 1. SI 2. NO

¿A los cuántos meses cree usted que se deberia dar por primera vez AGUA O AGUA AZUCARADA a un niño?

21. ¿A los cuántos meses cree usted que se debería dar por primera vez, ALGUNA COMIDA a un niño? # MESES ___ ___

AHORA LE VOY A LEER UNAS COSAS Y QUIERO QUE ME DIGA SI ESTA DE ACUERDO, EN DESACUERDO O SI NO SABE.

22. La madre que no produce leche suficiente, debe poner el niño al pecho más seguido. 1. SI 2. NO 3. NO SABE

23. Durante los primeros dias de vida, el niño solo necesita la primera leche (leche amarilla/calostro) para llenarse, y NO NECESITA NADA MAS. 1. SI 2. NO 3. NO SABE

24. La leche de vaca o de lata es tan buena y alimenticia como la leche materna. 1. SI 2. NO 3. NO SABE

25. Una madre pobre o desnutrida puede alimentar a su tierno solo con su pecho, sin otro alimento. 1. SI 2. NO 3. NO SABE

26. Un recién nacido necesita agua además que leche materna para calmar la sed. 1. SI 2. NO 3. NO SABE

27. Un niño que toma pecho, necesita tomar la leche más veces en el dia, que un niño que toma leche de vaca o de lata. 1. SI 2. NO 3. NO SABE

28. La leche de vaca o de lata engorda más que la leche materna. 1. SI 2. NO 3. NO SABE

29. Cuando se empieza a dar otros alimentos al niño, además de la leche materna, SE SECA la leche materna de una madre. 1. SI 2. NO 3. NO SABE

MORBILIDAD

30. ¿Estuvo con diarrea AYER este niño? 1. SI 2. NO

31. ¿Estuvo con la nariz tapada AYER? 1. SI 2. NO

ACCESO

32. ¿En cuánto tiempo llega usted al centro de salud donde va más frecuente? # MINUTOS ___ ___
HORAS ___ ___

33. a. ¿Tiene un televisor en su casa? 1. SI 2. NO (NO:PASE A #34)

b. ¿Funciona actualmente? 1. SI 2. NO (NO:PASE A #34)

c. ¿Cuantas horas vio television ayer? # HORAS ___ ___

34. a. ¿Tiene un radio en su casa? 1. SI 2. NO (NO:PASE A #35)

b. ¿Funciona actualmente? 1. SI 2. NO (NO:PASE A #35)

c. ¿Cuantas horas escucho al radio ayer? # HORAS ___ ___

d. ¿Alguna vez ha oido en el radio algo sobre como alimentar a un niño? 1. SI 2. NO

35. a. ¿Estuvo en control durante el último embarazo?
1. SI 2. NO
(NO:PASE A #36)

b. ¿Cuántas veces fue a control? # VECES ___ ___

c. ¿Dónde estuvo en control?
1. CESAMO
2. CESAR
3. HOSPITAL
4. PRACTICA PRIVADA

(d. ENCUESTADOR: ¿Si fue a un CESAR O CESAMO, está en la area de influencia de la comunidad? 1. SI 2. NO)

36. a. ¿Vió una partera durante el último embarazo para chequearse?
1. SI 2. NO
(NO:PASE A #36c)

b. ¿Cuántas veces la vió? # VECES ___

c. ¿Ha visto una partera después de su último PARTO?
1. SI 2. NO

37. a. ¿Ha recibido usted unos consejos o una charla sobre como alimentar a su niño? 1. SI 2. NO
(NO:PASE A #38)

b. ¿Quién le dió estos consejos o la charla?

1. ENFERMERA/MEDICO DEL CENTRO DE SALUD 1. SI 2. NO
2. UNA PARTERA 1. SI 2. NO
3. OTRO_____ 1. SI 2. NO

DEMOGRAFICO

38. a. ¿Trabaja afuera de la casa? 1. SI 2. NO
(NO:PASE A #39)

b. ¿Cuantas horas por semana trabaja afuera de la casa?
HORAS ___ ___

39. a. ¿Puede leer usted? 1. SI 2. NO

b. ¿Cuantos años de educacion com[illegible]?
ANOS ___ ___

40. ¿Cuantos hijos vivos tiene ust[illegible] VIVOS ___ ___

41. ¿Cuantos años tiene usted? S ___ ___

42. Piso: [illegible] 2. OTRO

43. Agua:
1. SE TRAE DEL RIO, POZO O QUEBRADA
2. SE TRAE DE LA LLAVE
3. TIENE LLAVE EN LA CASA

44. Servicio sanitario:
1. TIENE INODORO
2. TIENE LETRINA
3. VAN AL MONTE

MINISTERIO DE SALUD PUBICA
ENCUESTA COMUNITARIA CON MADRES
SEGUNDA TOMA DE DATOS
PROYECTO DE COMUNICACION EN NUTRICION
1993

 # FORMULARIO: ____ ____ ____

ENCUESTADORA: _____ ____ ____

FECHA DE LA ENTREVISTA: ____ / ____ /93
DIA / MES / AÑO

REGION SANITARIA: #5 #7

ESTABLECIMIENTO:
1 CESAMO Santa Rosa, CESAMO Juticalpa
2 Otros CESAMOS
3 CESAR

NOMBRE DEL ESTABLECIMIENTO EN CUYA AREA DE INFLUENCIA SE ENCUENTRA:

_____ ____ ____

NOMBRE DE LA COMUNIDAD _____ ____ ____

NOMBRE DE LA MADRE _____

NOMBRE DEL NIÑO _____

1. Sexo del niño: 1. Varón 2. Mujer

2. Fecha de nacimiento del niño: ____ / ____ / ____
DIA MES AÑO

3. ¿Dónde nació _____ ?
(nombre del niño)

1. En casa con partera
2. En casa sin partera/médico/enfermera
3. En hospital/clínica del Ministerio de Salud
4. En hospital/clínica/médico particular
8. Otro lugar: _____

ENCUESTADORA: SI EL NIÑO TIENE MENOS DE TRES DIAS DE NACIDO, PASE A LA PREGUNTA # 12.

4. ¿Estuvo usted con _____ durante los primeros tres días de nacido? (nombre del niño)

1. Si
2. No ----------> Pase a la # 12

5. ¿Le dio un chupón en los primeros tres días?

1. Si
2. No
9. No recuerda/no sabe

6. ¿Le dio agua azucarada/simple en los primeros tres días?

1. Si
2. No
9. No recuerda/no sabe

7. Le dio algún té u otro líquido en los primeros tres días?

1. Si
2. No
9. No recuerda/no sabe

8. Le dio leche de vaca o de lata (6a) los primeros tres días?

1. Si
2. No
9. No recuerda/no sabe

9. Le dio otra cosa en los primeros tres días?

1. Si
2. No ----------> Pase a la
9. No recuerda/no sabe ----------> # 11

10. Que otra cosa le dio?

_____
_____
_____

11 Le dio pecho en los primeros tres días?

1. Si ----------> Pase a la # 14
2. No
9. No recuerda/no sabe

12. ¿Le dio pecho alguna vez a _____ ?
(nombre del niño)

1. Si ----------> Pase a la # 14
2. No

13. ¿Por qué NO le dio pecho? **MARQUE SOLO UNA RESPUESTA, LA MAS IMPORTANTE.**

1. No le bajó la leche/se le secó la leche
2. Problemas de la lactancia (pezones agrietados, pletora, mastitis, etc.)
3. Enfermedad/medicamento (ella)
4. Trabaja/estudia fuera de la casa
5. El niño no quería
6. Alimentar el niño mejor (con otra leche)
8. Otra_____

ENCUESTADORA: PASE A LA # 21

14. Después del parto, ¿cuándo puso a _____ al pecho por primera vez? (nombre del niño)

1. Inmediatamente al nacer (en los primeros 10 minutos)
2 De 11 a 59 minutos después del parto
3. De una a ocho horas después del parto
4. De 8 a 24 horas después del parto
5. Más de 24 horas después del parto

15. ¿Le está dando pecho todavía?

1. Si ----------> **PASE A LA # 18**
2. No

16. ¿Por qué le quitó el pecho? **(NO LEA LAS RESPUESTAS Y MARQUE SOLO UNA)**

1. Ya puede comer
2. El niño no quería
3. El niño no se llenaba
4. Para trabajar/estudiar
5. Problemas de la lactancia
6. Ella se enfermó
7. Se le seco la leche/no le bajó la leche
8. Otra_____

17. ¿Cuántos meses tenía _____ cuando le quitó el pecho? (nombre del niño)

Meses ___ ___

00 = Menos de un mes

ENCUESTADORA: PASE A LA # 21

18. ¿Hasta qué edad piensa darle pecho?

Meses ___ __

96 = Hasta que lo deje
97 = Hasta empezar a trabajar
98 = Hasta que tenga leche la madre
99 = No sabe

AHORA, SEÑORA, PIENSE EN LAS ULTIMAS 24 HORAS:

19. ¿Cuántas veces le dio pecho a _____ ayer durante el día?
(nombre del niño)

# Veces ___ ___
99 = No sabe
00 = No le dio

20. ¿Cuántas veces le dió pecho a _____ Anoche?
(nombre del niño)

# Veces ___ ___
99 = No sabe
00 = No le dio

21. ¿Le dio leche de lata o de vaca AYER O ANOCHE?

1. Si
2. No

22. ¿Le dio té AYER O ANOCHE?

1. Si
2. No ----------> Pase a # 24

23. ¿Le dio el té como remedio?

1. Si
2. No

24. ¿Le dio agua AYER O ANOCHE?

1. Si
2. No

25. ¿Le dió otro líquido AYER O ANOCHE?

1. Si
2. No

26. ¿Cuántas semanas tenía el niño/a cuando le dió por primera vez algun LIQUIDO, además de la leche materna?

Semanas ___ ___

00 = Menos de una semana
77 = No le ha introducido líquidos todavía ---> Pase a la # 29
99 = No sabe, no recuerda

27. ¿Le dió ayer o anoche EN PEPE algunos de esos líquidos que mencionó?

1. Si
2. No

28. ¿Cuántas semanas de edad tenía el niño/a cuando le dió UN PEPE por primera vez?

Semanas ___ ___

00 = Menos de una semana
77 = Nunca le ha dado
99 = No sabe, no recuerda

29. ¿Alguien le dijo en algun momento que NO DEBERIA USAR UN PEPE para darle cualquier líquido al niño?

1. Si
2. No

30. Durante el día de AYER, ¿le dió al niño alguna COMIDA como atoles, frutas, frijoles, arroz, o tortilla?

1. Si
2. No ----------> **PASE A LA # 32**

31. ¿Cuántas semanas tenía el niño/a cuando le dió por primera vez ALGUNA COMIDA, además que la leche materna (la leche suya)?

# Semanas ___ ___
00 = No sabe, no recuerda

CONOCIMIENTO

32. **¿Cuáles LIQUIDOS piensa usted que le debería dar a un niño de TRES (3) MESES de edad? (NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?)**

	Mencionó	No Mencionó
- Leche materna	1	2
- Otros líquidos como leche de vaca, jugo, sopa, etc.	1	2

33. **¿Le debería dar AGUA O AGUA AZUCARADA a un niño de TRES (3) MESES de edad?**

1. Si
2. No

34. **¿Cuáles COMIDAS piensa usted que le debería dar a un niño de TRES (3) MESES de edad? (NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?)**

	Mencionó	No Mencionó
- Ninguna comida	1	2
- Comida como atoles, frutas, u otra comida	1	2

35. **¿Cuáles LIQUIDOS piensa usted que le debería dar a un niño de CINCO (5) MESES de edad? (NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?)**

	Mencionó	No Mencionó
- Leche materna	1	2
- Otros líquidos como leche de vaca, jugo, sopa, etc.	1	2

36. **¿Le debería dar AGUA O AGUA AZUCARADA a un niño de CINCO (5) MESES de edad?**

1. Si
2. No

37. **¿Cuáles COMIDAS piensa usted que le debería dar a un niño de CINCO (5) MESES de edad? (NO LEA LAS RESPUESTAS, PREGUNTE: ¿ALGO MAS?)**

	Mencionó	No Mencionó
- Ninguna comida	1	2
- Comida como atoles, frutas, u otra comida	1	2

38. ¿A los cuántos meses cree usted que se debería dar por primera vez, AGUA O AGUA AZUCARADA a un niño?

Meses ___ ___

00 = Menos de un mes
99 = No sabe, no recuerda

39. ¿A los cuántos meses cree usted que se debería dar por primera vez, ALGUNA COMIDA a un niño?

Meses ___ ___

00 = Menos de un mes
99 = No sabe, no recuerda

AHORA LE VOY A LEER UNAS COSAS Y QUIERO QUE ME DIGA SI ESTA DE ACUERDO, EN DESACUERDO O SI NO SABE.

40 La madre que no produce leche suficiente, debe poner el niño al pecho más seguido.

1. Sí
2. No
3. No sabe

41. Durante los primeros días de vida, el niño solo necesita la primera leche (leche amarilla/calostro) para llenarse, y NO NECESITA NADA MAS.

Sí
2. No
3. No sabe

42. La leche de vaca o de lata es tan buena y alimenticia como la leche materna.

1. Sí
2. No
3. No sabe

43 Una madre pobre o desnutrida puede alimentar a su tierno solo con su pecho, sin otro alimento.

1. Si
2. No
3. No sabe

44. Un recién nacido necesita agua además que leche materna para calmar la sed.

1. Si
2. No
3. No sabe

45. Un niño que toma pecho, necesita tomar la leche más veces en el día, que un niño que toma leche de vaca o de lata.

1. Si
2. No
3. No sabe

46. La leche de vaca o de lata engorda más que la leche materna.

1. Si
2. No
3. No sabe

47. Cuando se empieza a dar otros alimentos al niño, además de la leche materna, SE SECA la leche materna de una madre.

1. Si
2. No
3. No sabe

MORBILIDAD

48. ¿Estuvo con diarrea AYER _____ (nombre del niño)?

1. Si
2. No

49. ¿Estuvo con la nariz tapada AYER _____ (nombre del niño)?

1. Si
2. No

ACCESO

50. ¿En cuánto tiempo llega usted al centro de salud donde va más frecuentemente?

1. Menos de 1 hora
2. 1 a menos de 2 horas
3. 2 a menos de 3 horas
4. 3 o mas horas
5. No visita centro de salud
8. Otro _____

51. Desde enero de 1992, ha visto algún mensaje sobre lactancia materna por la televisión?

1. Si
2. No

52. ¿Desde enero de 1992, ha escuchado por la radio algún mensaje sobre lactancia materna?

1. Si
2. No ----------> Pase a la # 54

53. Esos mensajes por la radio, los escuchó durante el año pasado?

1. Si
2. No

54. Ha escuchado esos mensajes durante el presente año (1993)?

1. Si
2. No

55. ¿Qué mensajes sobre Lactancia Materna ha escuchado por la radio? (NO LEA LAS RESPUESTAS. PREGUNTE, ALGO MAS?)

	Mencionó	No mencionó
- En los primeros seis meses, sólo leche materna y nada más	1	2
- En los primeros seis meses, no dar otros alimentos	1	2
- Importancia de la primera leche (calostro)	1	2
- Entre más mama el niño, más leche produce la madre	1	2
- Dar sólo leche materna protege al niño de las diarreas	1	2
- Toda mujer embarazada o que está esté dando el pecho, debe comer más	1	2
- Introducción de alimentos a partir de los seis meses	1	2
- Dar pecho hasta los dos años	1	2
- Otro _____	1	2

56. **Por cuales emisoras ha escuchado esos mensajes? (NO LEA LAS RESPUESTAS. PREGUNTE, ALGUNA MAS?)**

	Mencionó	No mencionó
- La Voz de Occidente	1	2
- Radio Sultana	1	2
- Ecos de Celaque	1	2
- Radio Juticalpa	1	2
- Radio Constelación	1	2
- Radio Diana	1	2
- Radio Excelsior	1	2
- Radio Kristell	1	2
- Radio Majestad	1	2
- Radio Stereo One	1	2
- Radio Catacamas	1	2
- La Voz de Olancho	1	2
- La Voz del Patuca	1	2
- Radio América	1	2
- HRN	1	2
- Otra _____	1	2

57. ¿Fue a control a algún establecimiento de salud durante su último embarazo?

1. Si
2. No ----------> Pase a la # 58

58. Cuantas veces fue a control prenatal?

_____ veces

8 = 8 o mas
9 = No recuerda

59. ¿A dónde fue a control? (Si fue a más de un establecimiento, indique al que fue un mayor número de veces)

1. CESAR
2. CESAMO
3. Hospital del MSP
4. Hospital del IHSS
5. Hospital/clínica/médico privado
6. Otro_____

60. ¿Qué consejos sobre Lactancia Materna recibió en esas visitas de control de embarazo? **(NO LEA LAS RESPUESTAS. PREGUNTE, ALGO MAS?)**

	Mencionó	No Mencionó
- En los primeros seis meses, sólo leche materna y nada más	1	2
- En los primeros seis meses, no dar otros alimentos	1	2
- Importancia de la primera leche (calostro)		
- Entre más mama el niño, más leche produce la madre	1	2
- Dar sólo leche materna protege al niño de las diarreas	1	2
- Toda mujer embarazada o que está dando el pecho, debe comer más	1	2
- Introducción de alimentos a partir de los seis meses	1	2
- Dar pecho hasta los dos años	1	2
- Otro _____	1	2

61 ¿Visitó a alguna partera para hacerse un control durante su último embarazo?

1. Si
2. No ----------> Pase a la # 60

62. ¿Qué consejos sobre Lactancia Materna recibió de la partera durante esos controles? **(NO LEA LAS RESPUESTAS. PREGUNTE, ALGO MAS?)**

		Mencionó	No Mencionó
- En los primeros seis meses, sólo leche materna y nada más	62	1	2
- En los primeros seis meses, no dar otros alimentos	62A	1	2
- Importancia de la primera leche (calostro)	62B	1	2
- Entre más mama el niño, más leche produce la madre	62C	1	2
- Dar sólo leche materna protege al niño de las diarreas	62D	1	2
- Toda mujer embarazada o que está dando el pecho, debe comer más	62E	1	2
- Introducción de alimentos a partir de los seis meses	62F	1	2
- Dar pecho hasta los dos años	62G	1	2
- Otro _____	62H	1	2

63. ¿Visitó algún establecimiento de salud para control (de la mamá o el niño) después de su último parto?

1. Si
2. No ----------> Pase a la # 63

64. ¿A dónde fue a control después del parto? (Si visitó más de un establecimiento, señale aquel que visitó mayor número de veces)

1. CESAR
2. CESAMO
3. Hospital del MSP
4. Hospital del IHSS
5. Hospital/clínica/médico privado
8. Otro _____

65. ¿Que consejos sobre lactancia materna recibió en esas visitas de control después del parto? (NO LEA LAS RESPUESTAS. PREGUNTE, ALGO MAS?)

	Mencionó	No Mencionó
- En los primeros seis meses, sólo leche materna y nada más	1	2
- En los primeros seis meses, no dar otros alimentos	1	2
- Importancia de la primera leche (calostro)		
- Entre más mama el niño, más leche produce la madre	1	2
- Dar sólo leche materna protege al niño de las diarreas	1	2
- Toda mujer embarazada o que está dando el pecho, debe comer má	1	2
- Introducción de alimentos a partir de los seis meses	1	2
- Dar pecho hasta los dos años	1	2
- Otro _____	1	2

66. ¿Visitó alguna partera para control (de la mamá o el niño) después de su último parto?

1. Si
2. No ----------> Pase a la # 65

67. ¿Que consejos sobre lactancia materna recibió de la partera en esas visitas de control después del parto? (NO LEA LAS RESPUESTAS. PREGUNTE, ALGO MAS?)

	Mencionó	No Mencionó
- En los primeros seis meses, sólo leche materna y nada más	1	2
- En los primeros seis meses, no dar otros alimentos	1	2
- Importancia de la primera leche (calostro)		
- Entre más mame el niño, más leche produce la madre	1	2
- Dar sólo leche materna protege al niño de las diarreas	1	2
- Toda mujer embarazada o que está dando el pecho, debe comer más	1	2
- Introducción de alimentos a partir de los seis meses	1	2
Dar pecho hasta los dos años	1	2
Otro _____	1	2

68. Aparte del control prenatal y postparto, desde enero de 1992, ha recibido Ud. alguna charla en grupo sobre Lactancia Materna?

1. Si
2. No ----------> Pase a # 69

69. Cuantas charlas de este tipo recibió?

_____ # de charlas

9 = No recuerda

70. Quien le dio esta (o la última) charla? SI HAY MAS DE UNA RESPUESTA, ANOTE EL PERSONAJE DE MAYOR RANGO

1. Médico
2. Enfermera
3. Promotor
4. Partera
8. Otro _____
9. No recuerda

71. La persona que le dio esa charla, era del Ministerio de Salud Pública o de otra institución?

1. Ministerio de Salud Pública
2. Otra institución
9. No recuerda

72. Desde enero de 1992, le han dado algún folleto sobre lactancia materna?

1. Sí
2. No ----------> Pase a la # 71

73. Ese folleto lo daba el Ministerio de Salud Pública u otra institución?

1. Ministerio de Salud Pública
2. Otra institución
9. No recuerda

74. Desde enero de 1992, ha visto algún afiche sobre lactancia materna?

1. Sí
2. No ----------> Pase a la # 73

75. En donde ha visto el afiche? **NO LEA LAS RESPUESTA. PREGUNTE, EN QUE OTRO LUGAR?**

	Mencionó	No mencionó
- Centro de Salud/hospital público	1	2
- Casa de personal comunitario (partera, guardián, colaborador, distribuidor de LITROSOL, etc.)	1	2
- Otro _____	1	2

76. Desde enero de 1992, ~~se ha~~ hablado sobre la lactancia materna algún vecino, amigo o familiar?

1. Si
2. No

77. Por favor, señora, complete la siguiente frase:

" En los primeros _____ _____ , solo leche materna y nada mas."

Completó el slogan

1. Sí
2. No

DEMOGRAFICO

78. ¿Trabaja afuera de la casa?

1. Si
2. No ----------> Pase a la # 77

79. ¿Cuántas horas por semana trabaja afuera de la casa?

# Horas ___ ___
99 = No recuerda

80 ¿Puede leer usted?

1. Si
2. No

81. ¿Cuántos años de educación completó usted?

# Años ___ ___
00 = Ningún año

82. ¿Cuántos hijos vivos tiene usted?

Hijos vivos ___ ___

83. ¿Cuántos años tiene usted?

Años ___ ___

84. Tipo del Piso:

1. Tierra
2. Otro

85. Fuente de abastecimiento de agua:

1. Se trae del rio, pozo o quebrada
2. Se trae de la llave
3. Tiene llave en la casa

86. Servicio sanitario:

1. Tiene inodoro
2. Tiene letrina
3. Van al monte

MUCHAS GRACIAS POR SU COLABORACION

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ANNEX 3

Content of Knowledge Scales Used in Analysis of Health Worker Surveys

SCALE 1: EXCLUSIVE BREASTFEEDING FOR NEWBORN

	Variables
1.	First breastfeeding should take place 10 minutes after birth.
2.	A healthy newborn does not need (sugar) water or serum.
3.	A newborn does not need water to quench his thirst.
4.	A newborn needs colostrum and nothing else.

SCALE 2: EXCLUSIVE BREASTFEEDING IN THE FIRST SIX MONTHS

	Variables
1.	Five-month olds should be breastfed.
2.	Five-month olds should not be given other liquids.
3.	Five-month olds should not be given (sugar) water.
4.	Five-month olds should not be fed (other) foods.
5	Five-month olds should not be fed solids.
6.	Water can be introduced at six months.
7.	Liquids can be introduced at six months.
8.	Solids can be introduced at six months.
9	Exclusive breastfeeding up to six months

ANNEX 3, Continued

Content of Knowledge Scales Used in Analysis of Health Worker Surveys

SCALE 3: OVERALL

	Variables
1.	First breastfeeding should take place 10 minutes after birth.
2.	A healthy newborn does not need (sugar) water or serum.
3.	A newborn does not need water to quench his thirst.
4.	A newborn needs colostrum and nothing else.
5.	Five-month olds should be breastfed.
6.	Five-month olds should not be given other liquids.
7.	Five-month olds should not be given (sugar) water.
8.	Five-month olds should not be fed (other) foods.
9.	Five-month olds should not be fed solids.
10.	Water can be introduced at six months.
11.	Liquids can be introduced at six months.
12.	Solids can be introduced at six months.
13.	Exclusive breastfeeding up to six months.
14.	Breastmilk is better than cow's milk or powder milk.
15.	Breastmilk fattens the child more than cow's milk or powder milk.
16	Breastmilk protects against disease.
17.	Breastmilk is hygienic.
18.	Breastmilk helps to foster a closer relationship between the mother an child.
19.	Breastfeeding is more economical.
20.	Breastfeeding is convenient.
21.	Breastfeeding represents physiological advantages for the mother.
22.	Breastfeeding permits child spacing.
23.	A mother who does not produce sufficient breastmilk must breastfeed more frequently.
24.	Malnourished mothers can breastfeed children.
25.	Mothers with inverted nipples can breastfeed.
26	Nipples split due to the position the child is held when breastfeeding.