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**The Mass Media and Health  
Practices Evaluations in  
Honduras and The Gambia:  
SUMMARY REPORT OF  
THE MAJOR FINDINGS**

A Report from  
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to the  
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prepared by

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## EXECUTIVE SUMMARY

This document summarizes the major findings of the evaluations of two projects on infant diarrhea, one undertaken by the Ministry of Public Health in Honduras, the other by the Department of Medical and Health, Ministry of Health, Labour, and Social Welfare in The Gambia. The projects and the evaluations were initiated under the Mass Media and Health Practices (MMHP) project of the Office of Education and the Office of Health of the Bureau for Science and Technology, U.S. Agency for International Development (AID); funding was provided by those offices, with additional contributions from the local AID Missions and the national governments.

The activity in Honduras started in January 1980 and that in The Gambia began in May 1981. The Academy for Educational Development (AED) in Washington, D.C. was selected to provide technical assistance in the design and implementation of the programs. The Institute for Communication Research at Stanford University was awarded the contract to evaluate them. Responsibility for the evaluation was subsequently transferred to the Food Research Institute of Stanford University and its subcontractor, Applied Communication Technology.

The purpose of the MMHP project was to introduce the correct mixing and administration of oral rehydration solution (ORS) and other practices related to the treatment and prevention of infant diarrhea. The project and the evaluation were also designed to develop and test a methodology for improved public health communication applying insights from development communication and social marketing for specific behavioral objectives. The interventions used extensive pre-program research, including behavioral analysis, to design messages and multiple channels (radio, health workers and print materials) to deliver these messages in an integrated way. A monitoring and evaluation component was also incorporated to provide feedback during the interventions.

The activity in Honduras was known as the Proyecto de Comunicacion Masiva Aplicada a la Salud Infantil (PROCOMSI). During the first year, the project operated in Health Region I in Honduras. It was later expanded to cover the entire country. The Honduran government chose to use locally produced packets of oral rehydration salts called "Litrosol." The project taught rural mothers and grandmothers how to obtain, mix and administer Litrosol, to seek help if diarrhea did not improve, to breastfeed young children instead of bottlefeeding, and to follow recommended practices in food preparation and hygiene.

The Gambian activity was called the Mass Media for Infant Health Project. The Gambian government chose to introduce an oral rehydration solution made from water, sugar and salt (WSS) found in the home. Other topics covered in the intervention were understanding dehydration, continuing breastfeeding during diarrhea, feeding solids during and after diarrhea, and keeping the compound clean.

The evaluation of the two projects was based on a "process model" designed by Stanford to monitor the process of change over time and to study the links between the projects' components and changes in the audience, Honduran and Gambian mothers. The process model followed a sequential series of steps that

were expected to take place in order for the campaign to have an effect on health status. These steps included determining: that the population had access to the channels of communication used by the campaign; that the messages actually reached the audience; that the content of the messages was learned and retained by the audience; that mothers actually changed their behavior, and that the health status of children was improved as a result of these changes in behavior.

The primary evaluation study was a longitudinal survey. The evaluation gathered information from a large sample of women in each country over time. In Honduras, a representative sample of roughly 750 mothers and, in The Gambia, a sample of approximately 1000 mothers were selected. In each country, a baseline survey collected pre-intervention data on access, knowledge, and practice. Mothers were then questioned every month or every other month using repeated administration of several different questionnaires measuring access and exposure to the intervention, learning, behavior during illness, nutrition, morbidity, and anthropometric characteristics of their children. Several other studies were also carried out, e.g., behavioral observation, ethnographic studies, mortality surveys, and interviews of health professionals.

This report summarizes the major findings of the evaluation related to access, exposure, learning, behavior change and changes in the health status of children. Overall we found that mothers had good access and exposure to the campaign, they learned much of the information in the campaign, and they adopted new behavior at high enough rates and with sufficient accuracy that an impact on health status could be expected.

**Access.** The major findings about access to the channels used in the intervention were:

- A majority of Honduran and Gambian mothers had access to working radios and to health workers.
- Most women in Honduras lived in a literate household where a member could read the print materials.
- Although only one-third of Gambian mothers lived in a literate compound, mothers were taught to "read" the pictorial flyers through the radio and interpersonal channels.

**Exposure.** The findings about mothers' exposure to the messages of the interventions can be summarized as follows:

- In Honduras, exposure to radio messages was very high (80 percent) and to posters was high (40 percent). In the Gambia, three-quarters of the mothers had a mixing flyer, over half had heard messages on the radio, half had heard about the lottery, and mothers reported health workers to be important sources of information. Mothers were found to rely on more than one channel of information, underscoring the importance of a multi-channel intervention.

**Knowledge.** The major findings about knowledge of the information of the campaign were:

- Mothers showed a steep rise in learning about Litrosol and WSS after the start of the interventions, and more gradual learning after this.
- Correct knowledge about how to mix Litrosol or WSS increased sharply and leveled off at high levels.
- Mothers in Honduras and The Gambia had problems understanding the concept of dehydration. There was, however, some learning about how to treat a child with signs of dehydration.
- Knowledge about breastfeeding and correct feeding during diarrhea generally increased during the interventions, although there was some variation.
- Overall there was more learning of the topics which received the greatest attention in the campaigns. Learning about Litrosol and WSS was very high, whereas learning about the other topics was not as high.
- A pattern was seen of learning, forgetting, and relearning in response to the cycles of intensity of messages. When the campaign focused on a particular topic, learning of this topic was high. When messages were reduced or stopped, knowledge started to drop. This suggests the need for sustained attention to a given topic, at least over the first two years of a health education effort.

**Behavior.** The primary results about behavior change were:

- Diarrhea was common in both countries and was more prevalent in the rainy seasons and for younger children.
- There was a high level of trial of Litrosol and WSS.
- Use of Litrosol and WSS continued to increase throughout the two years.
- At the end of the interventions, 36 percent of diarrhea cases occurring in the two weeks prior to the interview in Honduras were treated with Litrosol. Litrosol was slightly more likely to be given to younger children, children in more rural areas, and children with more serious cases of diarrhea.
- By the end of two years, 62 percent of recent cases in The Gambia had been treated with WSS. WSS use differed by geographic division, but not by the age of the child.
- Correct use of Litrosol and WSS increased dramatically. Most ORS users knew how to mix the solution correctly.

- Observational studies in both countries corroborated that mothers were using ORS for cases of diarrhea and were mixing it correctly.
- Changes in feeding during diarrhea were seen in both countries. Honduran mothers reported giving more liquids during diarrhea, but no consistent changes were seen in continued breastfeeding during diarrhea. After the start of the intervention, Gambian mothers were more likely to feed their child something during diarrhea instead of withholding foods.
- In Honduras, more mothers reported breastfeeding young babies (a preventive measure) and not bottlefeeding over the course of the intervention.

**Health Status.** The major findings about health status were:

- Anthropometric measurements indicated that children in Honduras and The Gambia showed declines in nutritional and growth status during the intervention. Gambian children showed increased wasting. These declines can be attributed to the worsening economic situation in both countries during this time and a severe drought in The Gambia in 1983.
- In Honduras, a drop in mortality related to diarrhea occurred immediately after the start of the intervention. The proportion of deaths associated in any way with diarrhea among children less than five years old dropped from 39.8 percent during the two years prior to the intervention to 24.4 percent in the two years after the start of the intervention. Mortality data were not collected in The Gambia.

One can conclude from the findings that the interventions met their goal of contributing significantly to the treatment of infant diarrhea in Honduras and The Gambia. Mothers learned about new treatments for diarrhea, adopted them, and used them correctly. In particular, the levels of learning about and use of oral rehydration solutions were impressively high.

One can also conclude from the findings presented here that the health communication methodology underlying both interventions was a success. Applications of the same approach in two different countries showed similar results and the same overall patterns of change. The magnitude of the changes achieved was large and demonstrated that the methodology can play a significant role in efforts to change behaviors in the health sector.

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## Chapter I

### INTRODUCTION

This document summarizes the findings of the evaluation of the Mass Media and Health Practices (MMHP) project on infant diarrhea in Honduras and The Gambia. This project was initiated and funded by the Office of Education and the Office of Health of the Bureau for Social Sciences and Technology, U.S. Agency for International Development (AID) in 1978. The project worked at two principal sites -- Honduras and The Gambia -- in collaboration with the local AID Missions and the Ministry of Public Health in Honduras and the Department of Medical and Health, Ministry of Health, Labour, and Social Welfare in The Gambia.

The activity in Honduras started in January 1980. That in The Gambia began in May 1981 and benefited from lessons learned in Honduras. The Academy for Educational Development (AED) in Washington, D.C. was competitively selected to work with the Honduran Ministry of Public Health and the Gambian Department of Medical and Health to design and implement the programs. The Institute for Communication Research at Stanford University was awarded the contract to evaluate them. Responsibility for the evaluation was subsequently transferred to the Food Research Institute of Stanford University and its subcontractor, Applied Communication Technology.

The purpose of the MMHP project was to introduce the correct mixing and administration of oral rehydration solution (ORS) and other practices related to the treatment and prevention of infant diarrhea. From a public health perspective, the question was how to get a significantly large number of mothers to adopt a new behavior, perform it repeatedly, accurately and effectively, and ultimately to reduce mortality from diarrheal dehydration. The project and the evaluation were also designed to develop and test a methodology for improved public health communication applying insights from

development communication and social marketing for specific behavioral objectives. The interventions used extensive pre-program research to design messages and multiple channels (radio, health workers and print materials) to deliver these messages in an integrated way.

This report presents the major findings of the evaluations in the two countries. The evaluations looked at three general areas of outcomes -- learning, behavior change, and change in health status. They examined the overall impact of the projects and also traced the process through which they achieved that impact.

The report has four chapters. The remaining pages of Chapter I will give a general description of the background of the project, the methodology used to implement the project, and the design of the evaluations. The second and third chapters will describe the specific interventions and the results for Honduras and for The Gambia. In the last chapter we will summarize and discuss the major findings for both countries.

#### A. Background

Infant diarrhea is a leading cause of infant and early childhood mortality in many developing countries. During a diarrheal episode, a child's body can rapidly lose fluids and electrolytes, leading to dehydration and, possibly, death. Fortunately, most mortality from dehydration can be avoided if the fluids and electrolytes are replaced. An effective and inexpensive way of replacing the losses is now available -- oral rehydration solution (ORS). It consists of giving water in which sugar and salts have been mixed in certain proportions. The World Health Organization has established a standard formula for packages of oral rehydration salts that includes glucose, sodium chloride, potassium chloride, and sodium bicarbonate. However, the WHO formula, while inexpensive, does cost money to package and distribute and requires a distribution system. A less complex formula containing ordinary household sugar and salt can also be used, and provides the minimum cost and maximum availability to families. Honduras chose to introduce packets of salts, called "Litrosol," for use in the home. The Gambia chose to introduce a water, sugar, salt (WSS) solution to prevent diarrheal dehydration.

Oral rehydration therapy (ORT) consists not only of using an oral rehydration solution (ORS), but also of continuing breastfeeding and giving nutritious solid foods during diarrhea. In addition to dehydration, the interaction between diarrhea and malnutrition is an important factor in deaths from diarrhea. Children with diarrhea have less appetite and are less able to absorb nutrients through their intestines, thus diarrhea can contribute to malnutrition. In turn, poorly nourished children have lower resistance to infection and may contract diarrhea more frequently. The projects in Honduras and The Gambia focused on teaching mothers about oral rehydration solution, but also covered feeding of children during diarrhea and selected preventive topics.

#### **B. Description of the Intervention Methodology<sup>1</sup>**

The Academy for Educational Development (AED) began working with the Government of Honduras in 1979 and with the Government of The Gambia in 1980 to implement the Mass Media and Health Practices Project. The Project had three goals:

- To develop and implement a communications methodology which would apply the latest methods of development communication and social marketing to teach mothers and to change behavior and health status,
- to strengthen the health education capacity of the cooperating countries through the systematic application of mass communication, and
- to contribute significantly to the prevention and treatment of acute infant diarrhea in isolated rural areas of both countries.

The success of a public communication approach depends upon its ability to provide a sufficiently large number of people with practical and important new information. It must make an impact on the consciousness of the intended audience by rising above the everyday clutter of advice and suggestions to

become an important new priority in their lives. It must change what people do as well as what they think and believe. This cannot be achieved by the mere repetition of simple slogans, the exhortation to do the right thing, or the indiscriminate use of mass media alone. It requires:

- A sensitive understanding of how people are affected by specific health problems,
- Articulate crafting of useful and practical educational messages, and
- A coordinated distribution network that reaches each individual through various channels simultaneously.

The particular health communications strategy developed by AED for the MMHP Project is part of a growing genre of health education activities referred to generally as social marketing or public health communications. This approach attempts, in a pre-defined period of time, to change a particular set of behaviors related to a specific problem in a large-scale target audience. During the past two decades dozens of campaigns on topics as varied as forest fires, mental retardation, energy conservation, smoking, alcoholism, littering, seat belts, venereal disease, malaria, breastfeeding, latrine construction, population control, and infant diarrhea have attempted to inform, motivate, and often change the behavior of a large audience in a short time. Experience has shown that the short-term campaign which relies too heavily on media alone has been little more effective than traditional programs which rely solely on direct patient education through health workers. The MMHP program used many of the lessons learned from short intensive campaigns but integrated them as part of a long-term, consistent health communication strategy designed to promote specific health priorities.

There were three key stages in the health communication strategy used by AED (see Figure 1). The planning and development stage focused on the collection of information needed to prepare an effective program design. This information answered important questions such as: (a) Who in the total population should be selected as the principal audience? (b) What communication channels are most appropriate for these people? (c) What behaviors should be advocated? (d) What resources are needed to conduct the

program? The final program plan, including budget and resource requirements, was based upon the results of this investigation.

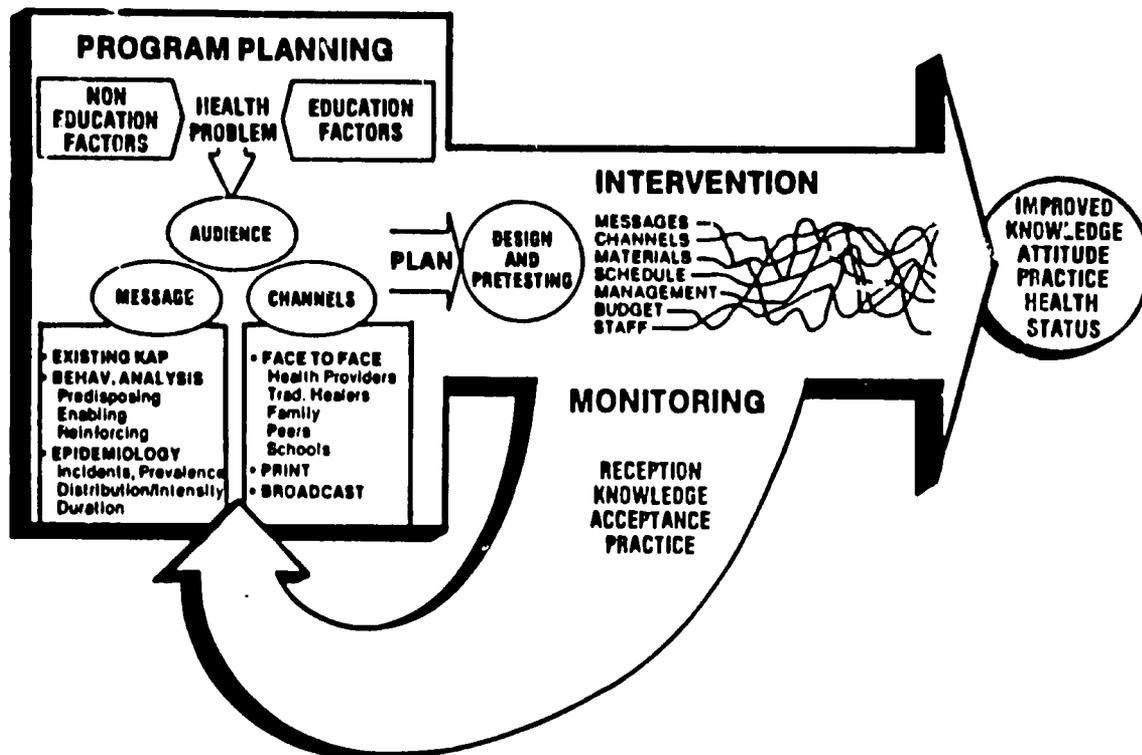


FIGURE 1: PUBLIC COMMUNICATIONS MODEL

In this process, behavioral analysis made an important contribution to the understanding of how to change behavior patterns, whether it was altering an existing pattern or creating a new one. The working premise in this project was the belief that lives can be saved by altering the way in which rural people now behave. Improvement does not necessarily require significant new investments in health infrastructures such as water systems, latrines, or new health centers. The task was to increase the likelihood of people doing things which were well within their capacities but which were currently unlikely. The emphasis was on behavior. Attitudes, even those which may contribute to what people do, were of secondary interest.

From a behavioral perspective, there were five circumstances which singly or in combination could account for absent behavior. First, necessary materials or implements like ORT packets might be unavailable. Second, prerequisite skills, discrimination, or knowledge might be lacking. For

example, rural mothers may know that boiling water is good but may not understand that it actually kills the parasites they fear. Third, there may be no incentives such as immediate improvement in their child's health for adopting the behavior. Fourth, there may be incentives to adopting inappropriate behavior like giving kaolin or purges. And fifth, there may be punishing consequences which discourage the desired pattern. A child may vomit when ORS is administered, for example, or his diarrhea may actually appear to increase. All these factors were considered and examined before designing the intervention in each country.

Stage two, the intervention, was divided into discrete cycles based on the seasons. Each cycle covered the same basic information with a slightly different approach and also introduced new topics relevant at that time of year. These cyclical changes reduced audience fatigue and permitted a continued renewal of audience involvement. From an administrative perspective, the cycle approach was important because it permitted work with fewer production facilities over a longer period of time. More importantly, results of the earlier phases could be incorporated into the planning of later phases.

In order to reach large numbers of people, the mass media played a central role. Integration of broadcast, print, and face-to-face support was essential to campaign success. Women hearing health messages on the radio also heard the same advice from a health worker, and saw related posters.

In general, radio was used to provide widespread coverage of key new skills and a regular reminder of critical mixing, administration, and feeding advice. Print materials were used to provide more detailed instructions that were intended to be available in a timely way -- when the mother needs to know how to mix ORS, how to give ORS, and how to monitor her child's progress. Interpersonal channels, physicians and health workers, provided overall credibility for the new health technology and constituted the primary distribution system for packets in Honduras and mixing advice in The Gambia.

The third stage, monitoring and evaluation, permitted the planners to detect problems and make important changes in educational strategy during the intervention. A monitoring system which permitted the regular sampling of

select segments of the audience was developed. These monitoring devices can point out important logistics problems such as a breakdown in delivery of printed matter or the use of inappropriate broadcast times for reaching target audiences. This type of on-going evaluation was essential for making corrective changes in subsequent cycles as well as for providing program administrators with a clear idea of their overall potential success.

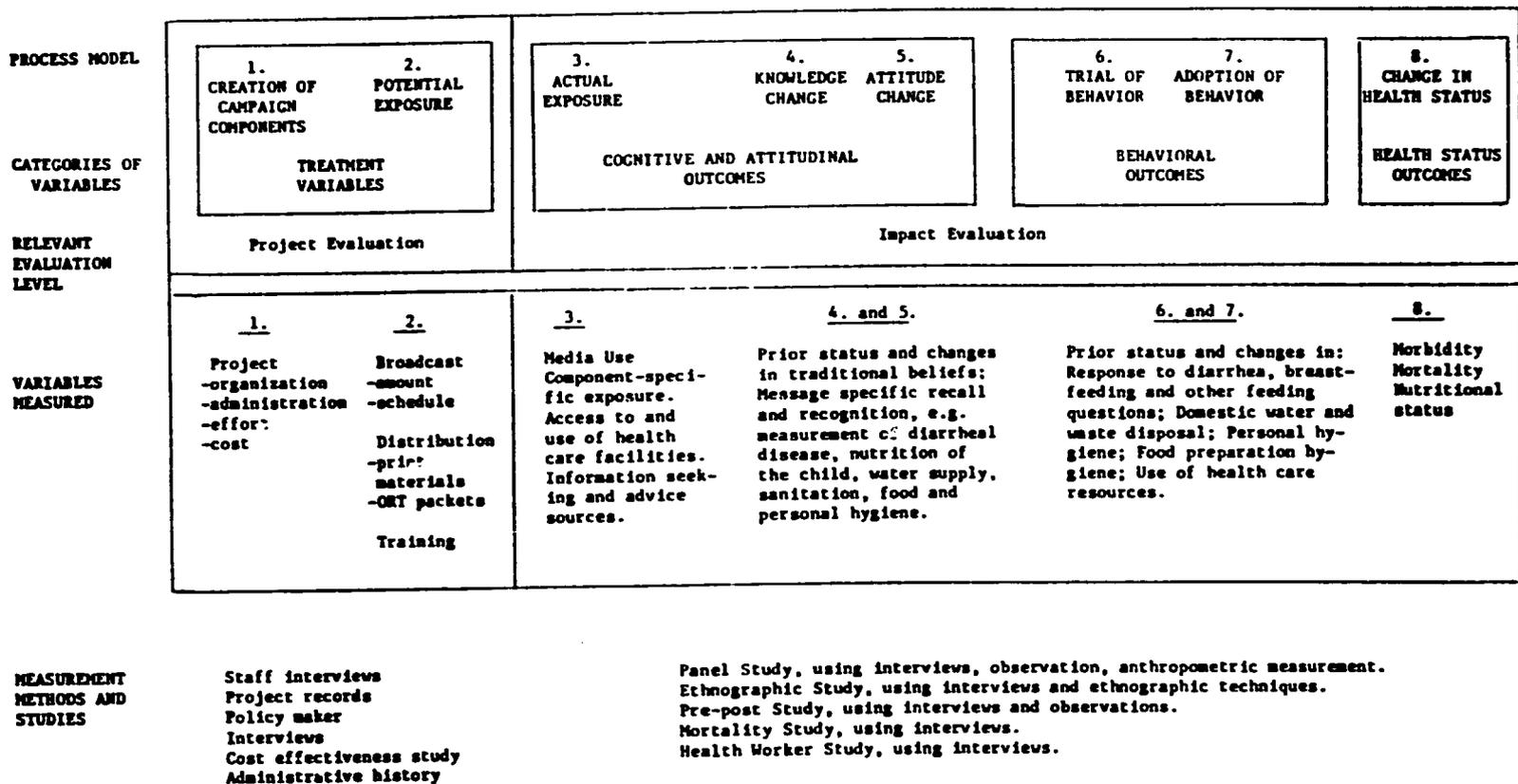
### C. Description of the Evaluation Methodology

The evaluation of the two projects was based on a "process model" designed by Stanford to monitor the process of change over time and to study the links between the project components and changes in the audience, Honduran and Gambian mothers.

The process model followed a sequential series of steps that were expected to take place in order for the campaign to have an effect on health status. The steps in the model, shown in the first row of Figure 2 are as follows:

- 1) Creation of campaign components. Were products and activities generated using the project's special approach?
- 2) Potential exposure. How much exposure to the campaign was possible? Where and to what extent were spots broadcast, flyers distributed, health workers trained?
- 3) Actual exposure. Which individuals actually had contact with the campaign, and in what amounts?
- 4) Knowledge change. Who learned what, and with what accuracy?
- 5) Attitude change. How did the audiences react to the information?
- 6) Trial of advocated behavior. Who tried the new behavior at least once, and with what accuracy?
- 7) Adoption of advocated behavior. To what extent did people keep doing the new behavior, and incorporate it into their habitual responses?
- 8) Change in health status. Were there any improvements in nutritional status, morbidity, or mortality?

**FIGURE 2: THE PROCESS MODEL AND THE ELABORATION OF ITS COMPONENTS**



The categories of variables in the model are shown in the second row of the table, while the third row shows the difference between project evaluation, which examines the execution of the intervention, and impact evaluation, which measures the effects of the intervention.

At each step in the process model, specific variables or issues were identified for investigation. The main groups of these variables are shown on row four in Figure 2. In the most general sense, they include: access and exposure to intervention components; knowledge and behavior related to management of diarrheal disease, feeding practices, and sanitation and personal hygiene; and health status (nutritional status, morbidity, and mortality).

The primary evaluation study was a longitudinal survey. The evaluation gathered information from a large sample of women in each country over time, measuring access and exposure to the projects' campaigns, learning and acceptance of campaign content, change in behavior, and change in the actual health of children in the target audience. Background information on demographics, socio-economic status, literacy, and wealth was also collected. In each country, a baseline survey collected pre-intervention data on access, knowledge, and practice. Mothers were then questioned every month or every other month using repeated administration of several different questionnaires measuring learning, behavior during illness, nutrition, morbidity, and anthropometry. Several other studies were also carried out, e.g. behavioral observation, ethnographic studies, mortality surveys, and interviews of health professionals.

The samples of mothers from each country were selected based on a multi-stage design incorporating purposive, stratified, and random sampling at the various stages. In each country, 20 villages were purposively chosen to reflect the full range of characteristics in the rural environment, particularly availability of different levels of health care facilities, general accessibility and ethnic diversity. In Honduras, villages in Health Region I, where the intervention took place, were sampled. In The Gambia,

villages from the four rural administrative divisions with good radio access were sampled.

In Honduras, all the households in a village were enumerated, then households were randomly sampled. This resulted in a sample of 750 families from which the mother or caretaker was interviewed.

In The Gambia, people live in family compounds, which often include more than one nuclear family. One objective of the sample was to choose women from as many different compounds as possible. For this reason, the sampling process randomly selected a specified number of compounds, then, after enumerating all the eligible women, randomly selected women from each compound. This resulted in a sample of 1029 women in The Gambia. Approximately 800 women were interviewed in each sweep.

Because of repeated interviewing, there was a possibility that mothers' responses would be influenced by the measurement process itself. For this reason, quasi-equivalent control or comparison groups were chosen who were measured only once. In the Gambia a comparison group of 226 mothers was interviewed one year after the start of the broadcasts. A second group of 208 different mothers was interviewed near the end of the project. In Honduras, a comparison group of 244 mothers was interviewed at the end of the project. Also in Honduras, an additional control for the effect of repeated measures was incorporated in the interviews measuring exposure to and recall of the campaign. For these interviews only, the experimental group was randomly divided into two equal groups. The first group was interviewed about exposure and recall in waves 1 to 4, but the second was only measured once after this. This interview wave is called the "post" wave in this report.

The intervention and evaluation designs were similar in both countries. In the next two chapters we will describe in more detail the interventions in each country and the results of the evaluations.

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## Chapter II

### RESULTS OF THE EVALUATION IN HONDURAS

The activity in Honduras, beginning in January 1980, was known as the Proyecto de Comunicacion Masiva Aplicada a la Salud Infantil (PROCOMSI). During the first year, the project operated in Health Region 1 in Honduras. This region was selected after careful study and was determined to be representative of the Honduran population. In 1982, the Ministry of Health expanded the program to all regions. After extensive pre-program research, message design and pretesting, the PROCOMSI intervention began in March 1981 and continued through March 1983. The evaluation activity started in January 1981 and ended in June 1983.

In the next section, we will give a brief description of PROCOMSI. More detailed information on the intervention is available from the Academy for Educational Development.

#### A. Description of the Intervention in Honduras

The Honduran government chose to use locally produced packets of oral rehydration salts (ORS) following the World Health Organization formula. Each packet contained the recommended amounts of sodium, glucose, potassium, and bicarbonate. The contents were to be mixed in one liter of water, thus the ORS in Honduras was named "Litrosol".

The campaign used radio, health workers, and print materials to teach rural mothers and grandmothers how to obtain, mix, and administer Litrosol, to seek help if diarrhea gets worse, to breastfeed young children instead of bottle feeding, and to follow recommended practices in food preparation and hygiene.

Figure 3 shows the various project inputs and the cycles of messages over time. As illustrated, over 40,000 radio spot broadcasts and approximately 200,000 print materials plus over 300,000 packets of oral rehydration salts were produced and distributed.

The campaign took two years and was divided into five sequential phases timed to coincide with the peak seasons of diarrhea. Phase I, which preceded the first diarrheal peak, stressed face-to-face training of health workers and medical professionals in the proper application of oral rehydration therapy for mild, moderate, and severe cases. Phase II, during the first diarrheal peak, shifted from an intensive face-to-face effort to a media-based mass campaign directed at rural mothers and grandmothers. Messages during this period focused on diagnosis, procurement, mixing, and administration of ORT, and recovery. A few prevention concepts were also addressed during this phase. Phase III shifted to a prevention focus, but selected treatment messages were broadcast to reinforce use of Litrosol and feeding during diarrhea. This period preceded the next diarrheal peak season and prepared mothers to apply useful prevention techniques. Phase IV, during the second diarrheal peak time, re-emphasized ORT treatment. During this phase, the media were used to reinstate treatment behaviors elicited during Phase II and to provide continued reinforcement to selected prevention measures. Phase V consisted of an intensive campaign on breastfeeding infants using a radio course format and called "AMA-MAS." Also during Phase V, health professionals were trained to teach mothers about good breastfeeding practice, and breastfeeding posters were distributed.

Throughout the intervention, use of radio messages was emphasized due to radio's ability to reach many mothers. Radio formats included short spots and a weekly magazine program ("Voz de Salud"). Approximately 32,500 radio spots were broadcast in Honduras during Phase 1 through 4, those which emphasized treatment of diarrhea and Litrosol. Another 10,800 spots were broadcast during the breastfeeding campaign.

Professional and paraprofessional health workers based in rural areas were also an important part of the campaign. Litrosol packets were distributed to



mothers through rural health workers. When dispensing packets, health workers were instructed to give a short explanation of the Litrosol mixing and administration instructions on the packet.

Training sessions were held for health workers at the beginning of the intervention and after the first year. In April through July 1981, 317 physicians, regional nursing supervisors, nurses, and auxiliary nurses were given direct training in ORS, feeding and prevention, and in methods for training other health workers. They were also given posters about treatment of dehydration and ORS. From May through September 1981, these health workers trained 960 traditional midwives, primary health care workers, and local mayors or auxiliary mayors (used as distributors of packets in the first year) in ORS, feeding and prevention.

New health professionals (235) were trained from March - October 1982 and 900 auxiliary nurses and community health workers were retrained. During the breastfeeding campaign, rural nurses were trained to help implement and promote the radio course and in breastfeeding knowledge and skills.

Litrosol packets were distributed to auxiliary nurses, community health workers, and midwives throughout the campaign. During the two years, over 300,000 packets were distributed. Each distribution point was identifiable by a flag with a red heart, one of the symbols of the campaign.

The third channel of the campaign was print materials; which consisted of a manual and pictorial posters for health workers, calendars with Litrosol mixing and administration procedures, and the packets themselves. A poster with detailed information on diagnosing and treating all levels of dehydration, feeding, and ORT was distributed to physicians and nurses. A second, smaller poster showing signs of dehydration was widely distributed to community health workers.

The primary print materials on Litrosol for mothers were the instructions on the packet itself and on the envelope in which two Litrosol packets were distributed. On each packet was a label giving pictorial instructions on how

to mix Litrosol (pour water into a liter bottle, open the packet of salts, empty them into the bottle, shake the bottle). A reproduction of this label is shown as Figure 4. The flyer contained pictorial instructions on mixing and administration and also detailed the signs of dehydration. Because pretests indicated that mothers could not understand the pictorial instructions without training, health workers were instructed to teach them to "read" the pictures.



FIGURE 4: MIXING INSTRUCTION LABEL FROM A LITROSOL PACKET

For the AMA-MAS breastfeeding course, a 20-page guide to the course was printed and distributed, along with diplomas for participation in the course and a membership card.

#### B. Results of the Evaluation

In the following pages, we will present the major findings of the evaluation of PROCOMSI. More detail can be found in the final evaluation report for Honduras.<sup>2</sup>

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<sup>2</sup>Applied Communication Technology. The Mass Media and Health Practices Evaluation in Honduras: A Report of the Major Findings. Prepared for Stanford University and the U.S. Agency for International Development, August 1985.

For a mother to learn and change her behavior in response to PROCOSI, it was first necessary for her to have access to the channels used and to be exposed to the campaign. Therefore, we first examined the question, Did mothers have access to PROCOSI information and did they hear and see it?

### 1. Access and Exposure

We found that, overall, there was high access to PROCOSI channels and high exposure to the messages. The figures on access can be seen in Figure 5, which shows the percentage of mothers with access to a radio and a health worker, and the percentage of mothers who were literate.

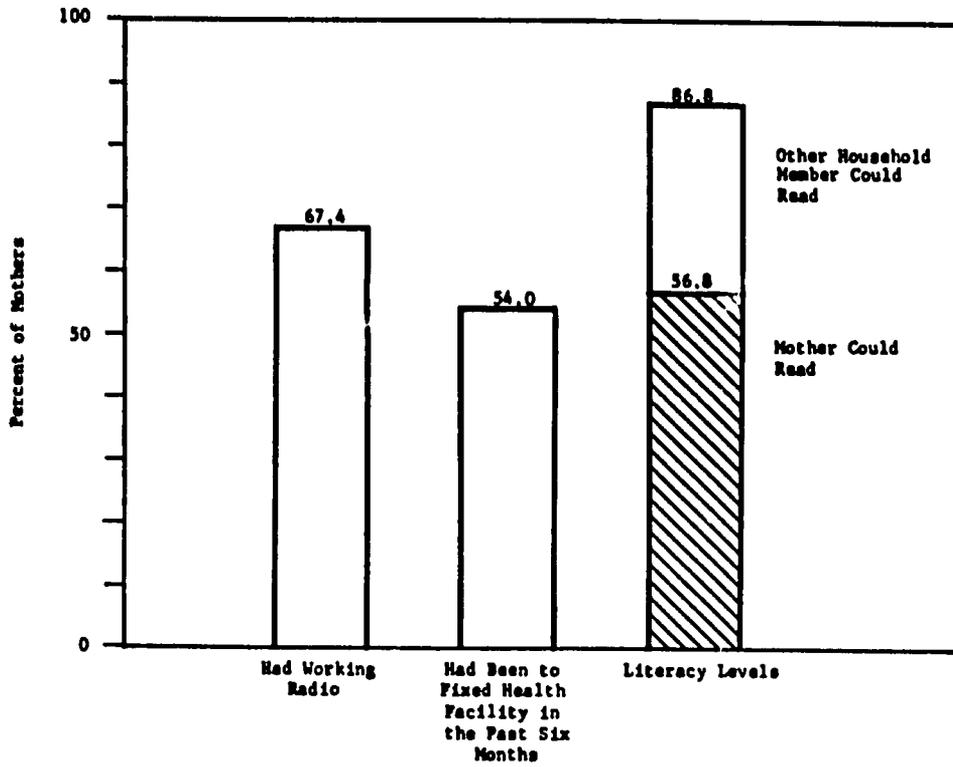
It was important that a large number of mothers have access to a radio because radio was the primary channel of communication throughout the project. We found that an average of two-thirds (67.5 percent) of the families had a working radio. Many mothers listened to the radio and thus had the opportunity to hear PROCOSI messages. An average of 60 percent of the mothers in our sample listened to the radio on any day.

Access to information from health workers was also high. Fifty-four percent of the mothers had seen a clinic health worker in the past six months and thus had the opportunity to learn PROCOSI messages from them.

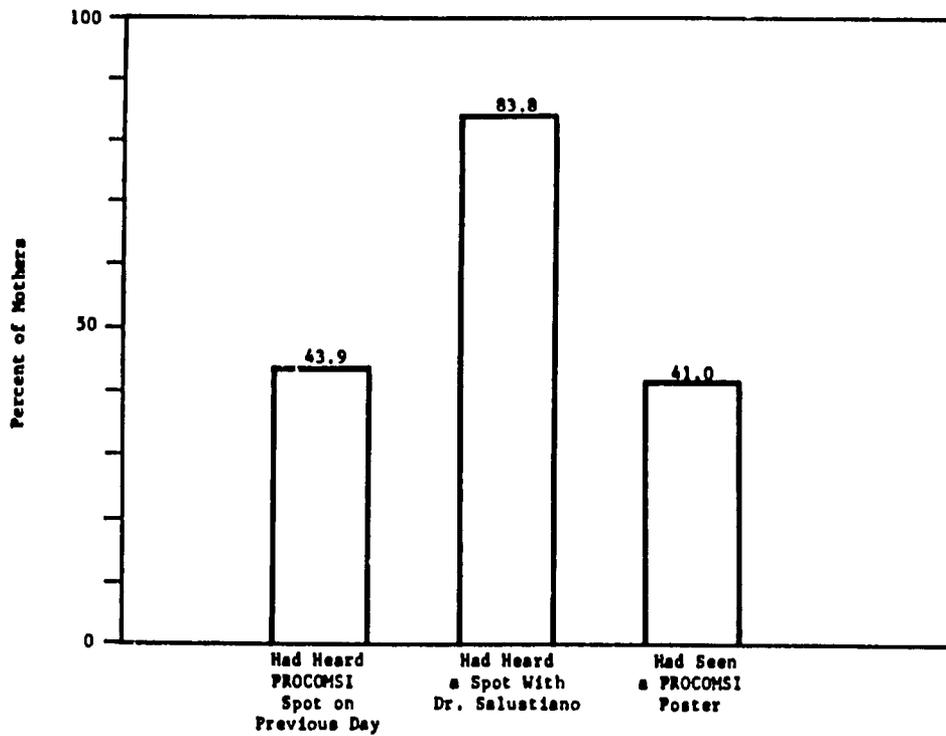
One form of access to print materials is whether the mother can read them or has a family member who can help her read them. We found that 57 percent of the mothers could read a simple sentence, and that 87 percent lived in a household where someone could read.

We next asked whether mothers in our sample had actually heard the PROCOSI message on the radio and seen PROCOSI posters. As can be seen in Figure 6, exposure to the radio and posters was high.

Radio exposure was measured in two ways; mothers were asked if they had heard PROCOSI spots on the radio the day before and if they had ever heard a radio spot featuring Dr. Salustiano, a fictitious radio character who delivered



**FIGURE 5: ACCESS TO PROCOSI CHANNELS IN HONDURAS**



**FIGURE 6: EXPOSURE TO THE PROCOSI CAMPAIGN MESSAGES**

most of the radio messages. As can be seen in the figure, approximately 44 percent of all mothers said they had heard a PROCOMSI spot on the day before the interview. We looked only at mothers who had been listening to the radio the day before, and found that a very high proportion (73 percent) had heard a spot on the previous day.

Our second measure of radio exposure showed that, over the course of the PROCOMSI intervention, the majority of mothers heard a spot by Dr. Salustiano. By the end of the two years of radio messages, over 80 percent of the mothers were aware of Dr. Salustiano.

The print materials used in the intervention were posters and the instructional flyers which accompanied the packets of Litrosol. Mothers in the sample were asked to describe any health posters they had seen. An average of over 40 percent of the mothers described a PROCOMSI poster, indicating that they had seen and remembered the poster.

One can see from the above that a large proportion of mothers were exposed to the channels used in the campaign. The next question we asked was, Did mothers learn from the messages?

## 2. Learning from Campaign Messages

The intervention focused particularly on giving Litrosol and other liquids during diarrhea, understanding dehydration, and performing some preventive behaviors, particularly breastfeeding. We will discuss each of these areas in turn.

### a. Knowledge about Litrosol

The evaluation asked mothers questions to measure their awareness of the existence of Litrosol and to measure their knowledge about correct mixing and administration. In general, we saw a steep rise in awareness and knowledge about Litrosol after the start of the campaign. Awareness and knowledge remained high throughout the rest of the intervention.

Awareness of Litrosol was measured by asking mothers what medicine Dr. Salustiano had talked about on the radio (see Figure 7 for the responses). Litrosol had not existed before the campaign. Therefore, awareness before the campaign was zero. Awareness of Litrosol rose dramatically to almost 50 percent of all mothers in the first few months of the campaign. By the end of the campaign, almost 80 percent of all mothers were aware that Dr. Salustiano talked about Litrosol.

Knowledge about Litrosol was measured by asking mothers questions about mixing and administration of Litrosol. An index was developed from the answers to the questions. The index, plotted in Figure 8 shows the proportion of correct answers out of the total number of responses.

We see that, one month after the start of the intervention (in August 1981), 52 percent of the mothers' responses to Litrosol questions were correct. Before the intervention, knowledge about Litrosol was zero because Litrosol did not exist before PROCOMSI. Knowledge continued to rise to 67 percent correct responses, then dropped slightly after the start of the breastfeeding campaign.

Overall we see that mothers learned about Litrosol early in the campaign, that awareness and knowledge continued to rise more slowly later in the project, and leveled off by the end. By the end of the project, mothers had high levels of awareness of Litrosol and knowledge about its preparation and administration.

#### b. Dehydration

A large number of radio messages focused on explaining the problem of dehydration to mothers, its relation to diarrhea, and the need to replace liquids lost during diarrhea with Litrosol or other liquids. It was expected that mothers would be more likely to learn about and use Litrosol if they understood how it worked.

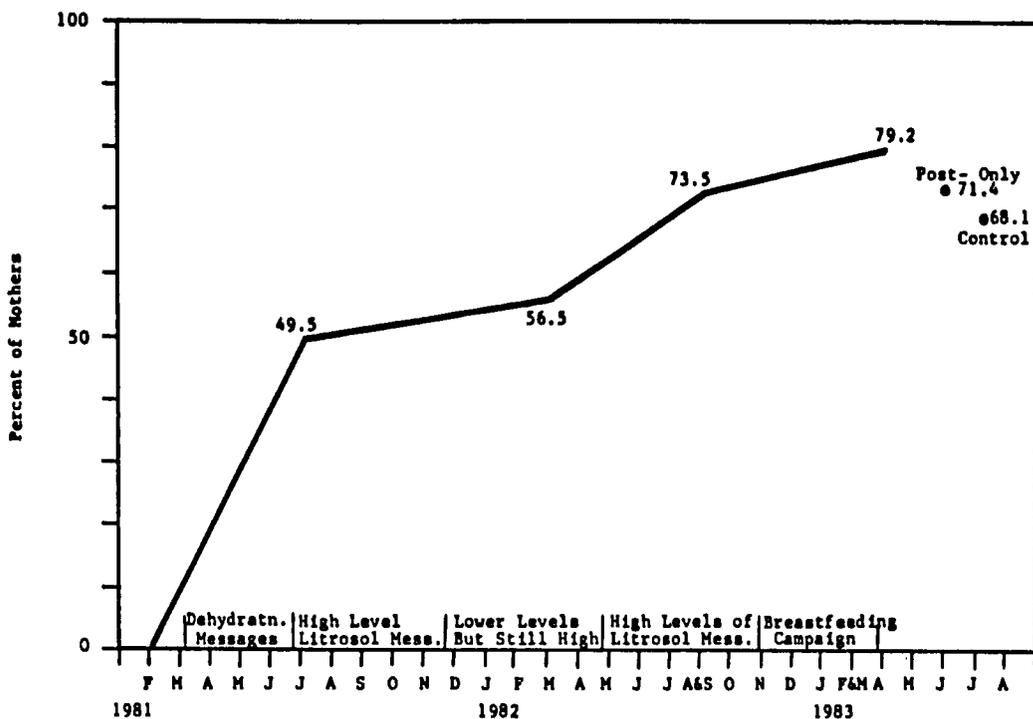


FIGURE 7: HONDURAN MOTHERS' AWARENESS THAT LITROSOL IS THE MEDICINE DISCUSSED BY DR. SALUSTIANO

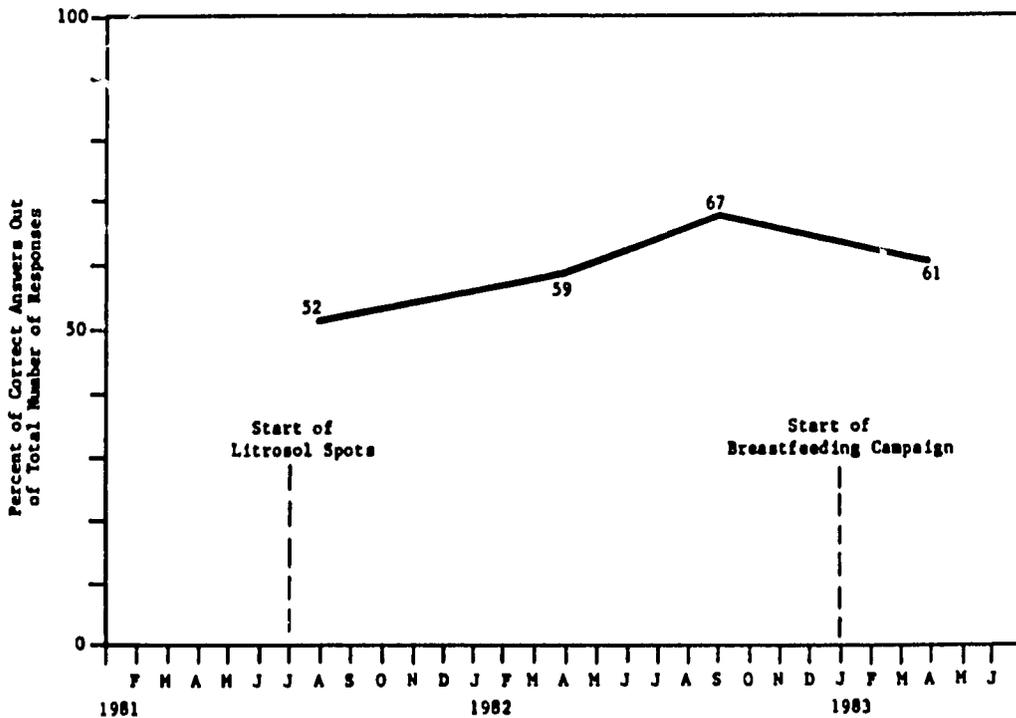


FIGURE 8: MOTHERS' KNOWLEDGE ABOUT LITROSOL

We found that mothers had a difficult time understanding the concept of dehydration. Before the campaign, few mothers knew about dehydration. After the start of the intervention, approximately one-third of the mothers learned to correctly define the term "dehydration." However, despite continued radio messages about dehydration, we saw little additional learning after the first increase.

However, although mothers had difficulty defining dehydration, they did generally know what to do to avoid dehydration (give liquids or Litrosol, or go to the health center). Figure 9 shows that mothers' knowledge that Litrosol should be given for dehydration rose gradually after the start of the campaign to 52 percent. This level decreased slightly after Litrosol messages were replaced by the breastfeeding radio course.

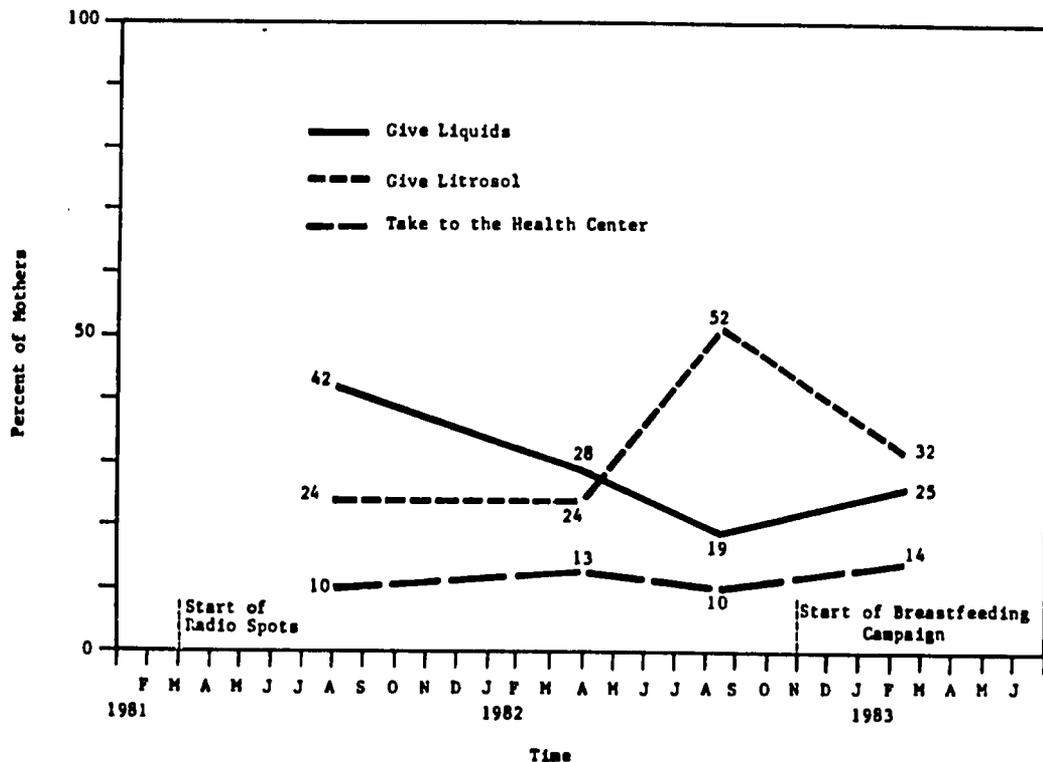


FIGURE 9: MOTHERS' RESPONSES TO QUESTION ABOUT WHAT ONE SHOULD DO TO AVOID DEHYDRATION

Thus it seems that mothers did have some understanding of the link between dehydration and the loss of fluids during diarrhea and the need for treatment even though they had difficulty in verbalizing the concept of dehydration.

### c. Prevention of Diarrhea: Breastfeeding

One way to prevent diarrhea in young babies is to breastfeed them during their first months. During the intervention, two message phases particularly stressed the importance of breastfeeding and recommended that Honduran women breastfeed their babies. The first group of radio messages, broadcast with other messages on diarrhea and liquids from March through June 1981, described breastmilk as more nourishing and safer than formula and congratulated mothers who breastfed their babies. From the middle of December 1982 through March 1983, AMA-MAS ("Love More") an intensive breastfeeding radio course was broadcast and health workers were given special training about breastfeeding. The primary messages were that the mother should breastfeed the child exclusively for the first four months and then add supplemental feedings, that breastfeeding is a modern health-giving behavior, and that bottlefeeding leads to increased diarrhea and reduced breastmilk production.

Figure 10 shows mothers' responses to two questions measuring knowledge about breastfeeding: What is the best milk for a baby? and Do you agree or

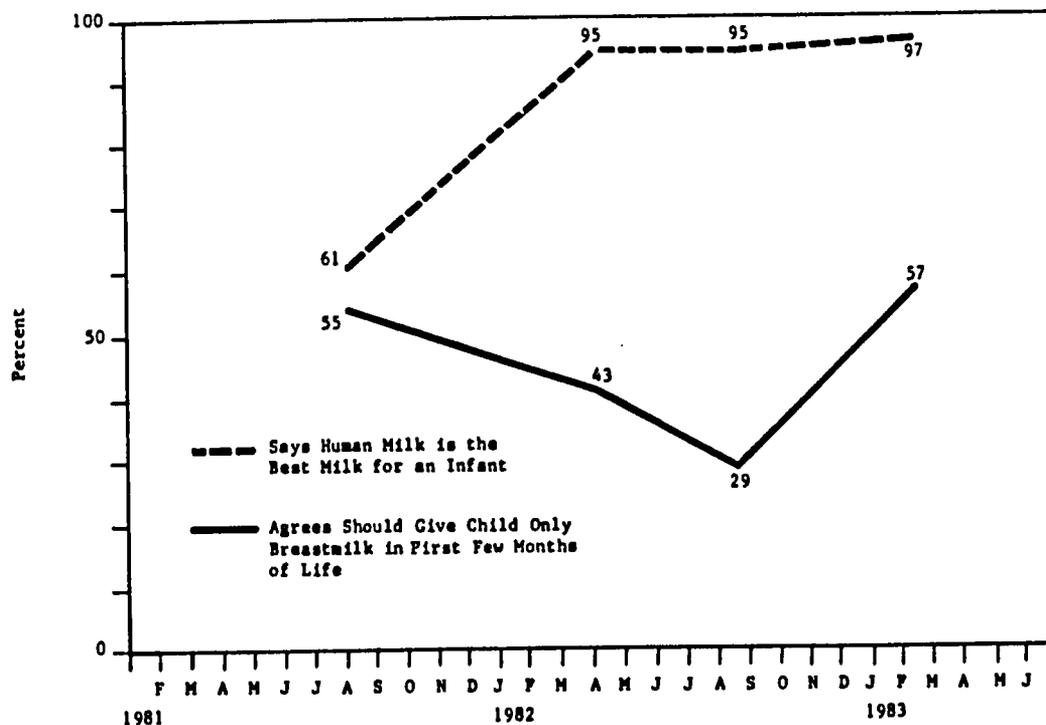


FIGURE 10: MOTHERS' KNOWLEDGE ABOUT BREASTFEEDING

disagree that, in the first three or four months of an infant's life, only breastmilk should be fed to the infant? We saw a large increase in mothers naming breastmilk as the best milk after the start of breastfeeding messages on the radio. After this, over 90 percent of the mothers continued to give the correct responses.

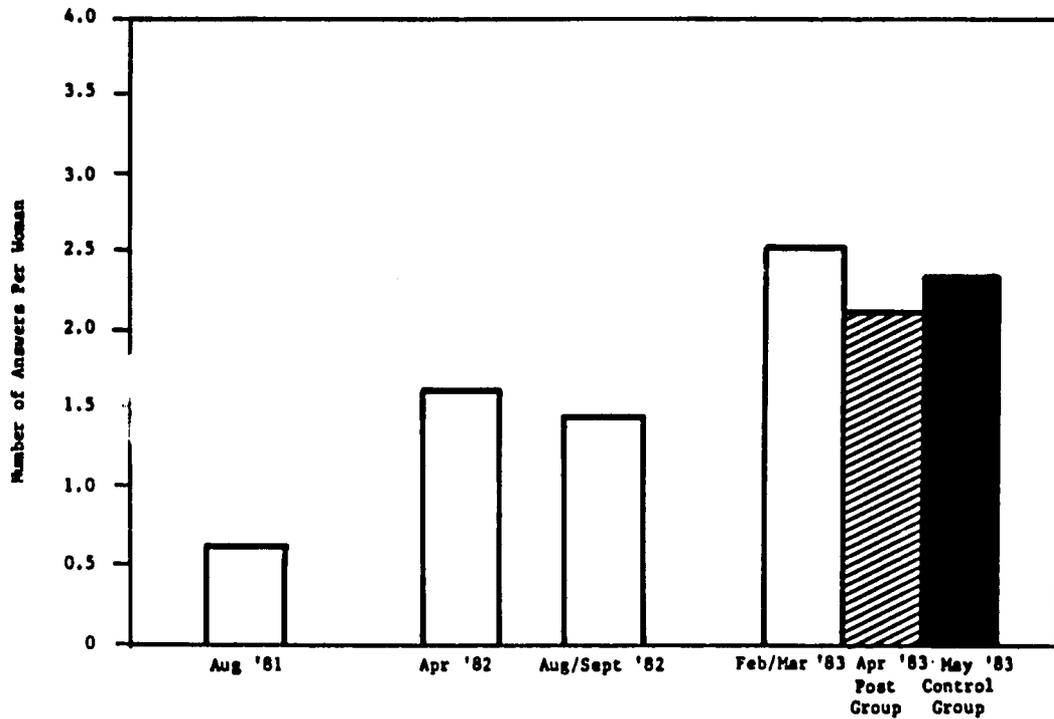
Mothers' responses to the second question showed a different pattern. After the start of breastfeeding messages, the percentage of mothers saying only breastmilk should be given in the first months declined. This may be due to the presence at this time of other messages about feeding soft foods and solids. After the start of the AMA-MAS campaign, correct knowledge rose rapidly and, at the end of the intervention, 57 percent of the mothers gave correct responses.

We also measured mothers' knowledge about breastfeeding by asking them to name the benefits of breastmilk. Figure 11 shows the average number of correct answers given by mothers over time. We see an increase in the number of correct responses after the first breastfeeding messages and another increase after the AMA-MAS campaign.

These findings indicate that the PROCOSI breastfeeding messages had a positive effect on mothers' knowledge about breastfeeding. As will be seen later, mothers' increases in knowledge were matched by changes in behavior. We see a clear pattern of knowledge gain during message phases about breastfeeding, with knowledge leveling off when messages ceased or were reduced.

#### d. Summary

Three main points can be drawn from the results presented above on mothers' knowledge of campaign information. One is that there was a very high level of awareness of the campaign. This varied somewhat across different topics and over time, but overall, mothers could name topics and radio characters used in the intervention and could correctly answer questions measuring their knowledge of the campaign topics.



**FIGURE 11: NUMBER OF CORRECT ANSWERS PER MOTHER GIVEN TO QUESTIONS ABOUT THE BENEFITS OF BREASTMILK**

Secondly, we see a fairly clear pattern of rapid initial gain from exposure to campaign messages, followed by smaller continued gains as the intervention continues. When messages were discontinued, we see a tendency for a gradual decline of knowledge levels. Reintroduction of messages about the same topics raised the knowledge levels quickly to a new level that appears to be somewhat higher than the previous peak.

A third point is that the knowledge levels were at a high enough level to consider the educational aspect of the campaign a strong success: Mothers learned. We next asked, Did their behavior change and in what ways?

### 3. Behavior: Treatment of Diarrhea

Our third major question in the evaluation of PROCOSI was, Did mothers change their behavior? In this section we will present the results of our findings on prevalence of diarrhea in our sample areas, use of Litrosol, and feeding behavior.

### a. Prevalence of Diarrhea

Before looking at changes in behavior, we wanted to know the extent of the diarrhea problem in our sample area. Figure 12 shows the prevalence of diarrhea at three times during the first year of the project. The figure only covers the first year because of problems in data collection and coding in the second year.

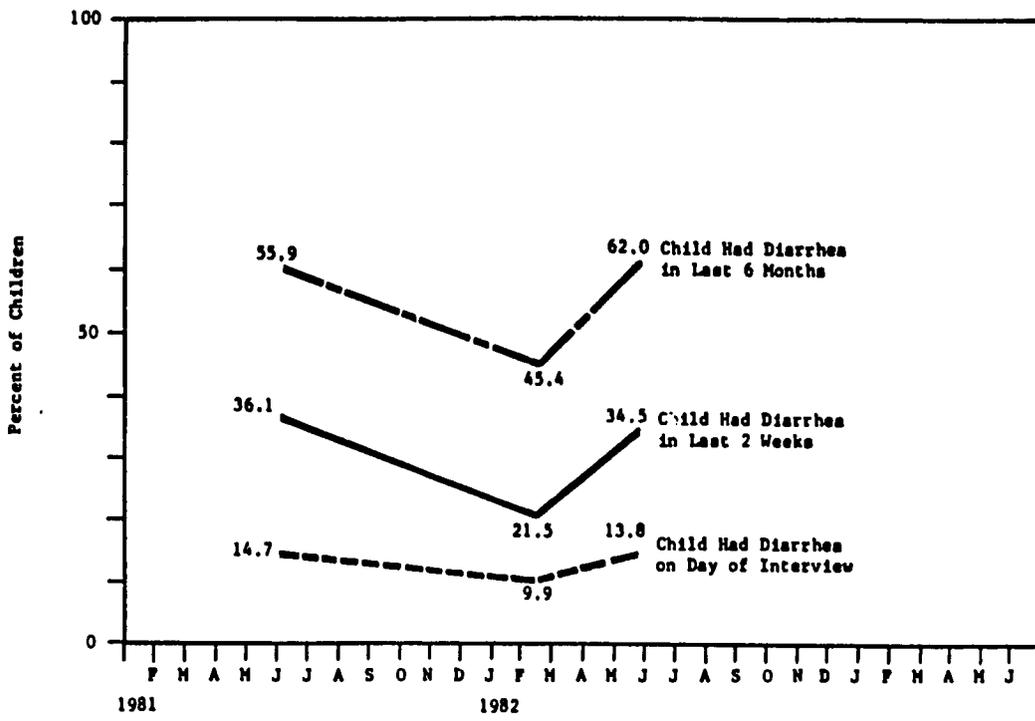
The figure show that prevalence of diarrhea was high among children five and under and that it fluctuated by season. During the rainy season, an average of 14.3 percent of sample children had diarrhea on the day of the interview and, during the dry season, almost 10 percent of the children did. During the rainy seasons, approximately 35 percent of the sample children had had diarrhea in the last two weeks, while in the dry season, 21.5 percent of the children had had diarrhea.

We also found that incidence of diarrhea was related to child's age. Younger children were more likely to have diarrhea than older children. An average of 24 percent of children two years and under were reported as having diarrhea in the last two weeks as compared to 15 percent of children from the three to five years old.

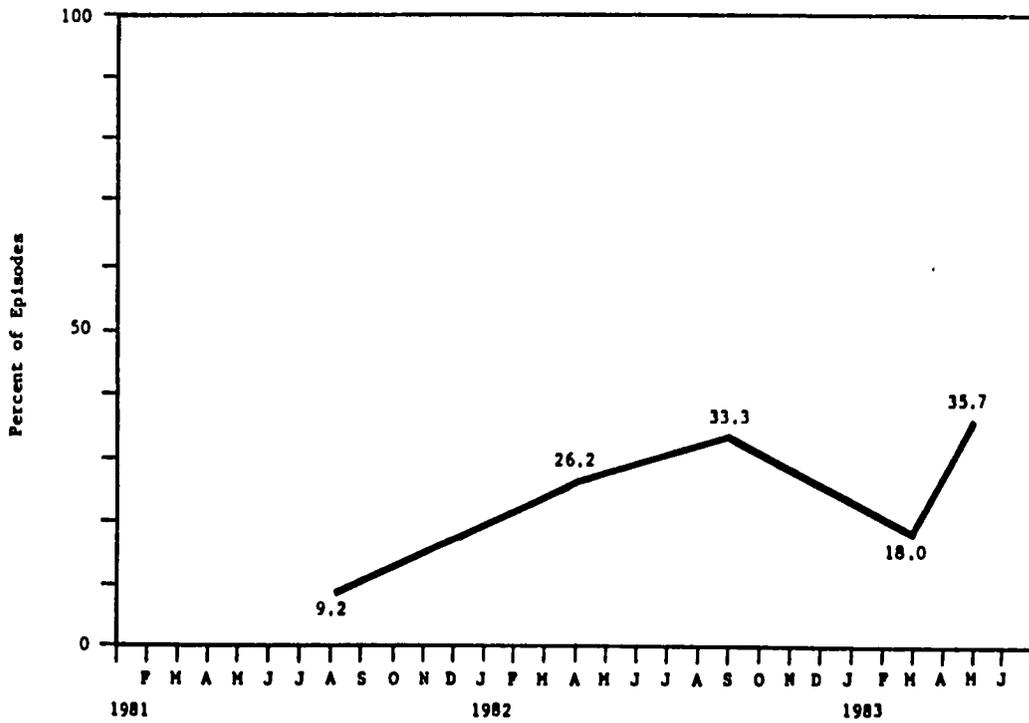
### b. Litrosol Use

We examined Litrosol use in two ways: asking mothers if they had ever used Litrosol and asking them about the treatment of individual cases of diarrhea in their children. Our results showed a high rate of trial of Litrosol. Within six months of the start of broadcasting, over a third of the mothers (36.7 percent) said they had tried Litrosol. This percentage rose to 62.4 percent by the end of the intervention. This is a very high level of trial usage by any standards.

We next looked at whether mothers used Litrosol consistently over time for cases of diarrhea. The results for treatment of cases reported in the last two weeks are presented in Figure 13.



**FIGURE 12: PREVALENCE OF DIARRHEAL DISEASE IN HONDURAS IN THE FIRST YEAR OF THE STUDY**



**FIGURE 13: PERCENTAGE OF EPISODES OF DIARRHEA IN LAST TWO WEEKS TREATED WITH LITROSOL**

Over time we saw an increase in use of Litrosol for cases of diarrhea. The proportion of episodes treated with Litrosol rose from none before the start of the project to a maximum of 35.7 percent, with an average of roughly 20 percent of episodes over the final 18 months of the campaign.

Younger children were more likely to be given Litrosol than older ones: 33.6 percent of episodes in children under 12 months were treated with Litrosol, while only 23 percent of episodes for children older than 48 months received Litrosol (see Figure 14). There were no consistent difference by sex of the child.

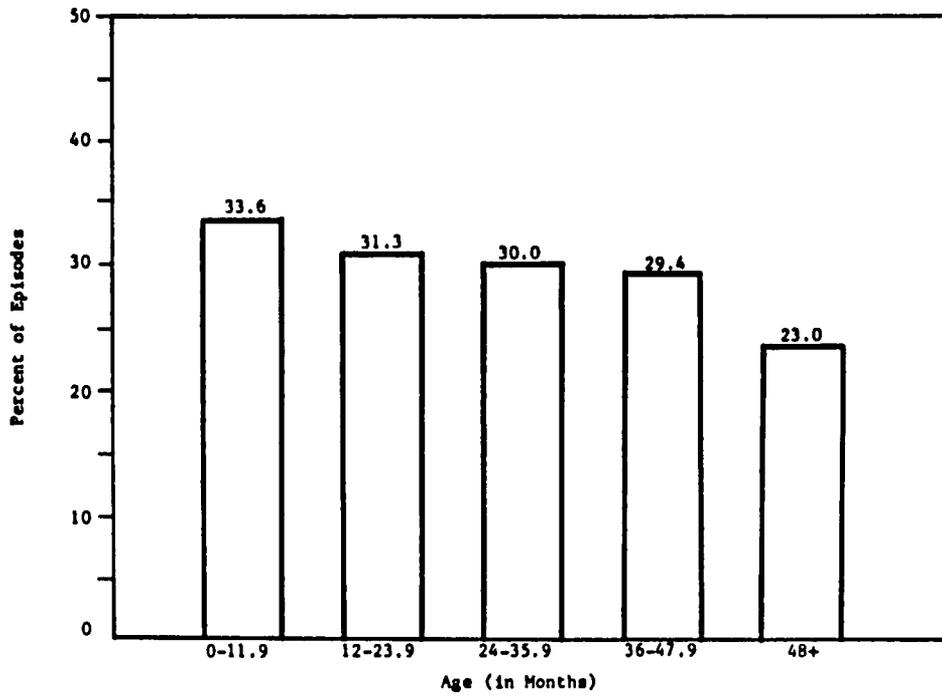
We also found that Litrosol use was more common in the more rural areas than in the county seats, where there are more medical facilities. Thirty-two percent of episodes of diarrhea in the last six months in rural villages were treated with Litrosol as compared to 16 percent of such cases in the county seats. This suggests that Litrosol is an important remedy in areas with fewer medical facilities.

We examined mothers' use of Litrosol and the severity of the case treated. The findings showed that mothers were slightly more likely to give Litrosol to children with more serious cases of diarrhea (with fever, mucus or blood in the stools, more frequent bowel movements, vomiting, and longer duration).

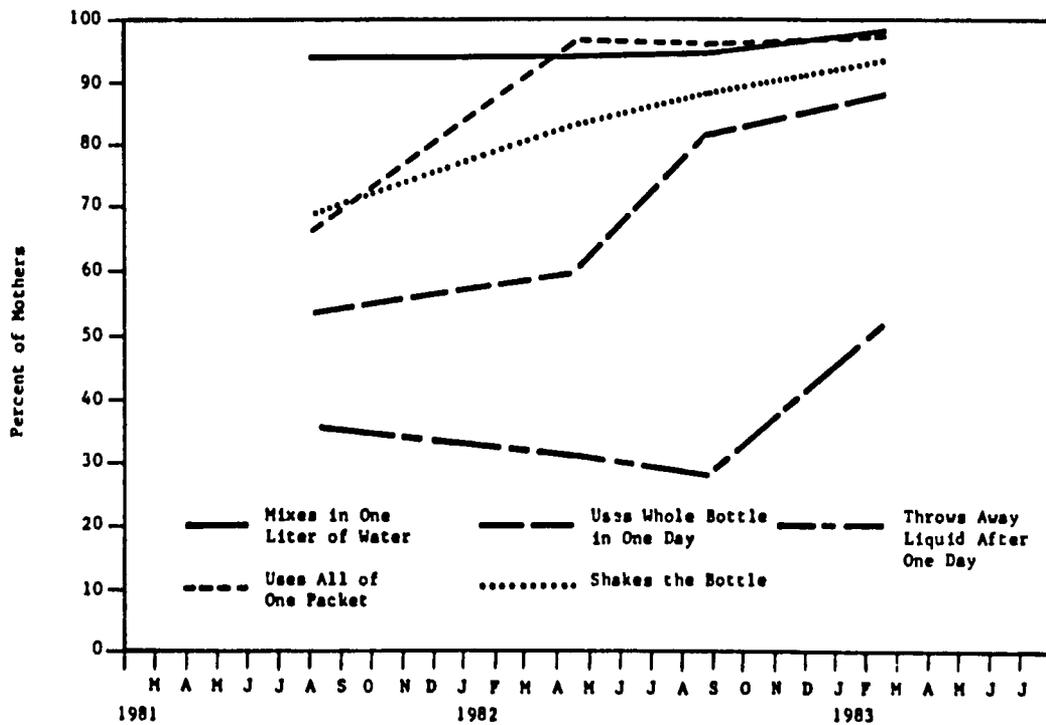
In summary, we found that Litrosol trial and use increased over time. Use of Litrosol was more likely for younger children, children living in more rural areas, and children with more serious cases.

#### (i) Correct Use of Litrosol

It is important that mothers not only use Litrosol, but that they mix it and use it correctly. To examine this, we asked mothers who had used Litrosol about how they had prepared it. Figure 15 shows the responses to this question. The percentage of mothers reporting correct mixing and use increased



**FIGURE 14: LITROSOL USE BY AGE OF CHILD IN WAVES 2 THROUGH 5 FOR DIARRHEAL EPISODES IN THE LAST TWO WEEKS**



**FIGURE 15: CORRECT LITROSOL PREPARATION BY LITROSOL USERS**

throughout the study period. Mothers learned very early to mix Litrosol in one liter of water. Other Litrosol instructions (to use the entire packet, shake the bottle, and use the whole bottle in one day) were learned more slowly, but also reached high levels. Mothers were less likely to report that they discarded the Litrosol mixture after one day and made a fresh mixture.

#### (ii) Observational Study of Behavior

An observational study was conducted with thirty-six mothers to examine actual behavior. The mothers were selected when they brought their children with diarrhea to clinics and were observed afterwards in their homes. This study was done with the help of the Instituto de Nutricion de Centro America y Panama (INCAP), which provided trained field workers.

A total of 50 percent of the cases observed were treated with Litrosol, either before coming to the clinic or during the observation period at home. Mothers who treated during the observation gave Litrosol at a rate that would, if sustained, result in the consumption of a liter in 10 to 15 hours. Mothers were tested on their mixing skills after the observation period and performed quite well. The mean values of the amount of water used to mix the solution were generally very good, even though only one mother in five had a bottle of exactly a liter volume. We did find several mothers who made a formula with too high a salt concentration. Mothers used the whole packet of salts (94 percent) and surprisingly, used boiled water (97 percent) even though the instructions did not require it. Thus, mothers were observed to mix accurately and to administer in amounts that would be clinically effective, if they gave Litrosol at all.

#### (iii) Sources of Information About Litrosol and Sources of Packets

Litrosol packets were distributed primarily through local health care workers (guardianes) and through health centers. Overall, we found the local guardianes to be the most frequent source of packets: over the course of the intervention 20 to 64 percent of Litrosol users said they obtained their

packets from the guardian. Clinics were also an important source; from 9 to 31 percent of mothers obtained packets at a clinic. However, mothers also used a number of other sources, the auxiliary mayors, hospitals, and "other."

Users were also asked about the most useful source of information about Litrosol preparation. The most common source was the packet itself (reported by 40 to 58 percent of mothers), followed by doctor or nurse (14 to 39 percent), guardian (16 to 29 percent), and radio (11 to 23 percent). One reason explaining the importance of the packet itself as a source of information is that the radio messages emphasized that directions could be found on the packet.

#### (iv) Use of Other Medicines with Litrosol

Mothers frequently used other medicines along with Litrosol: an average of 43 percent of Litrosol-treated cases were also treated with other medicines. We thought that Litrosol use might be considered a "modern" practice and that mothers who used Litrosol might be less likely to use traditional treatments for diarrhea. When this was tested we found that this was not the case. If anything, there was a tendency for traditional treatments and Litrosol use to be positively related.

Other analyses also tested associations between use of Litrosol and "curers." We expected Litrosol use to be associated with visits to the clinic and to visits to the village health worker. Litrosol use, as expected, was strongly associated with visits to the clinic and with contacts with the village health worker.

#### c. Summary

We found that infant diarrhea was prevalent in rural Honduras, particularly during the rainy season. Children 2 years and under had a higher incidence of diarrhea than children of other ages.

Litrosol was tried by a large number of mothers; by the end of the campaign almost two-thirds had used Litrosol. Adoption rates were also quite

high -- use of Litrosol for a case in the last two weeks rose from zero percent before the campaign to 36 percent of cases treated with Litrosol at the end. Younger children were more likely to be given Litrosol as were more serious cases of diarrhea. Mothers in rural villages were more likely to use Litrosol than mothers living in the county seats. Most mothers who had used Litrosol reported correct mixing and administration. An observational study showed half the mothers using Litrosol. These mothers mixed Litrosol correctly and administered an effective volume of the solution.

Community sources of packets, particularly the village health workers, were important. Mothers also went to clinics for Litrosol packets. We found a strong relationship between clinic or health worker contact and Litrosol use. The most important source of information about Litrosol mixing was the packet itself, but health workers and radio were also mentioned frequently.

#### 4. Behavior: Feeding

Two feeding topics were covered during the project: the importance of breastfeeding rather than bottlefeeding babies and continued breastfeeding and giving liquids during diarrhea. Three phases of messages were broadcast: from March to June 1981, radio messages stressed that "breast is best" and that liquids should be given; from November 1981 to March 1982 the radio told mothers to continue breastfeeding during diarrhea; and in October 1982, the AMA-MAS course started broadcasting messages to convince mothers to breastfeed children exclusively for the first four months, then to introduce supplemental feedings, and to avoid bottlefeeding.

##### a. Breastfeeding Young Children

Almost all children in the Honduras sample were breastfed at some time (90.6 percent). However, bottlefeeding of young children was also common. Approximately 40 percent of the children in each interview wave were both bottle and breastfed. Figure 16 shows the change over time in reported breast and bottlefeeding of children 18 months and younger. Over the course of the campaign, we saw a steady increase in reported breastfeeding and a decrease in bottlefeeding. At the start of measurement, 65 percent of children 18 months

or younger were reportedly breastfed and, at the end of the campaign, 81 percent of the children were breastfed. At the time of the first interview, 64 percent of the mothers reported bottlefeeding of young children, whereas 50 percent did so at the end of the campaign.

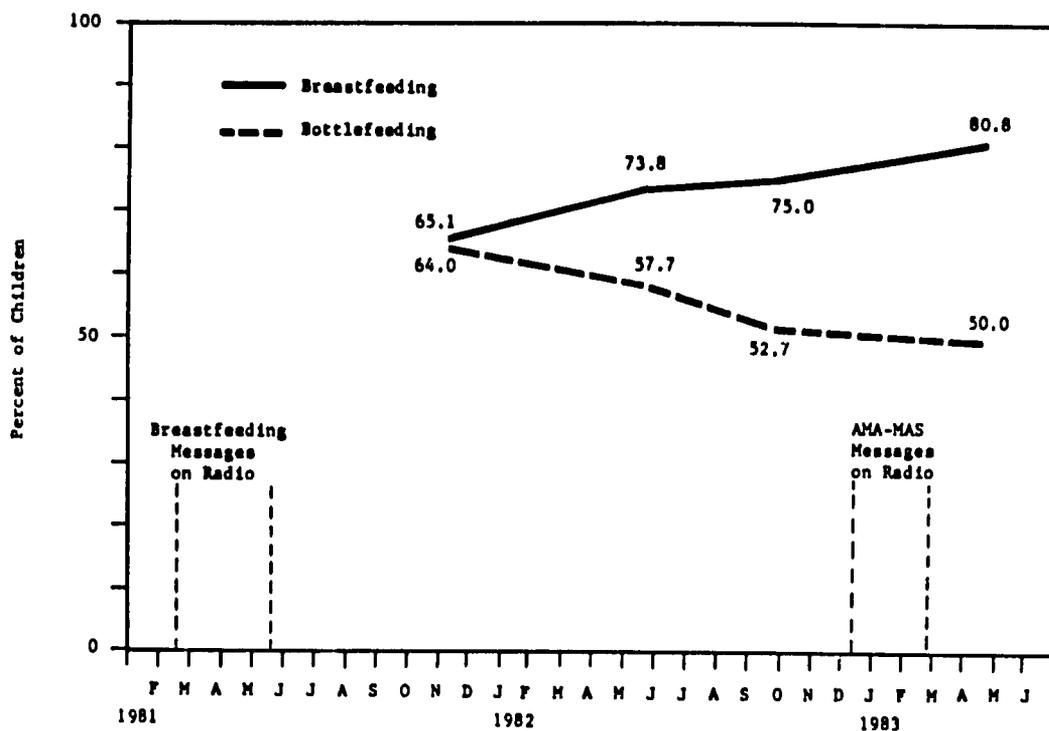


FIGURE 16: PERCENT OF CHILDREN 18 MONTHS OF AGE OR YOUNGER WHO WERE BREASTFED OR BOTTLEFED

#### b. Breastfeeding During Diarrhea

Mothers with a child who had had diarrhea in the last two weeks were asked if they continued breastfeeding the child during the episode and if they continued bottlefeeding. Figure 17 below presents the results for children 18 months and younger.

We can see that there was little change in breast or bottlefeeding behavior until after the start of the AMA-MAS campaign on breastfeeding, when both breast and bottlefeeding during diarrhea increased. By the end of the intervention, both types of feeding had dropped again.

These results are difficult to understand. One explanation for this can be seen in Figure 18 which looks at giving liquids during diarrhea. The bottom line represents percentage of children 12 months or younger, who were given more liquids. In the last two interviews, we see that giving liquids to young children dropped, then rose steeply, the opposite of the changes seen for breast and bottlefeeding. It may be, that during this time, because of the intensive campaign discussing breast and bottle feeding, mothers replaced other liquids with milk.

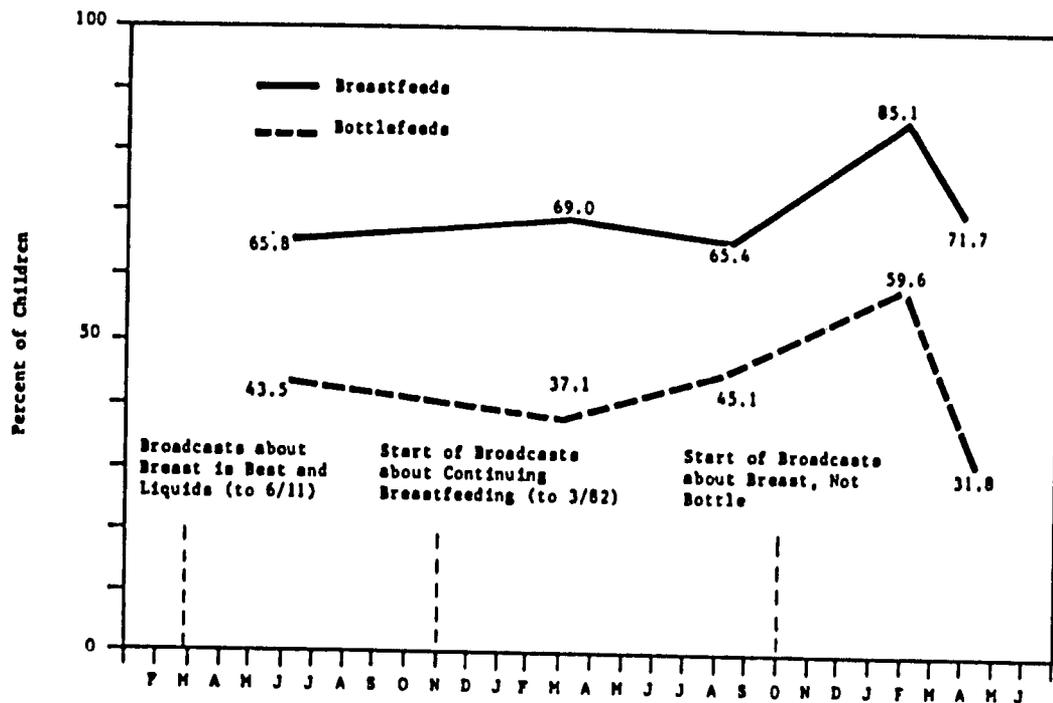


FIGURE 17: BREASTFEEDING AND BOTTLFEEDING OF CHILDREN 18 MONTHS AND UNDER DURING THE LAST BOUT OF DIARRHEA (PERCENT OF CHILDREN WITH DIARRHEA IN THE LAST TWO WEEKS)

Overall, however, mothers do not seem to have responded very strongly to PROCOMSI messages to continue breastfeeding during diarrhea.

### c. Giving Liquids During Diarrhea

The third type of feeding behavior we examined was mothers' response to messages to give liquids during diarrhea. Almost all mothers (over 90 percent)

reported giving some liquids during diarrhea even before the intervention. Of more importance was whether the mother gave more than usual.

Figure 19 shows that giving more liquids did increase during the course of the intervention. The top line in the figure shows the percent of children who were given more of any type of liquid. We see that giving liquids increased sharply after the radio messages on liquids and stayed at a high level.

We thought that mothers might be less likely to give more liquids to younger children (who were receiving breastmilk or other milk) than to older children. Figure 18 discussed in the previous section, separates children one year old from those over one year. We found that mothers were less likely to give liquids to younger children, however we did see a general increase in giving more liquids to both age groups.

#### d. Summary

Over the course of the intervention we saw an increase in breastfeeding of children 18 months and under. This was matched by a decrease in bottlefeeding babies. Continued breastfeeding during diarrhea was essentially unchanged. Overall, more children were breastfed during diarrhea than were bottlefed.

The second major feeding message told mothers to give more liquids during diarrhea. We saw a steady rise in mothers reporting giving more liquids to sick children.

### 5. Changes in Health Status

The ultimate objective of the intervention was improvement in children's health status and a lowering of mortality. We have seen that, overall, there was exposure, learning, and behavior change associated with PROCOMSI. Our final evaluation question was, did children's health status improve? This was measured with a variety of physical measurements of children and with a study of mortality rates.

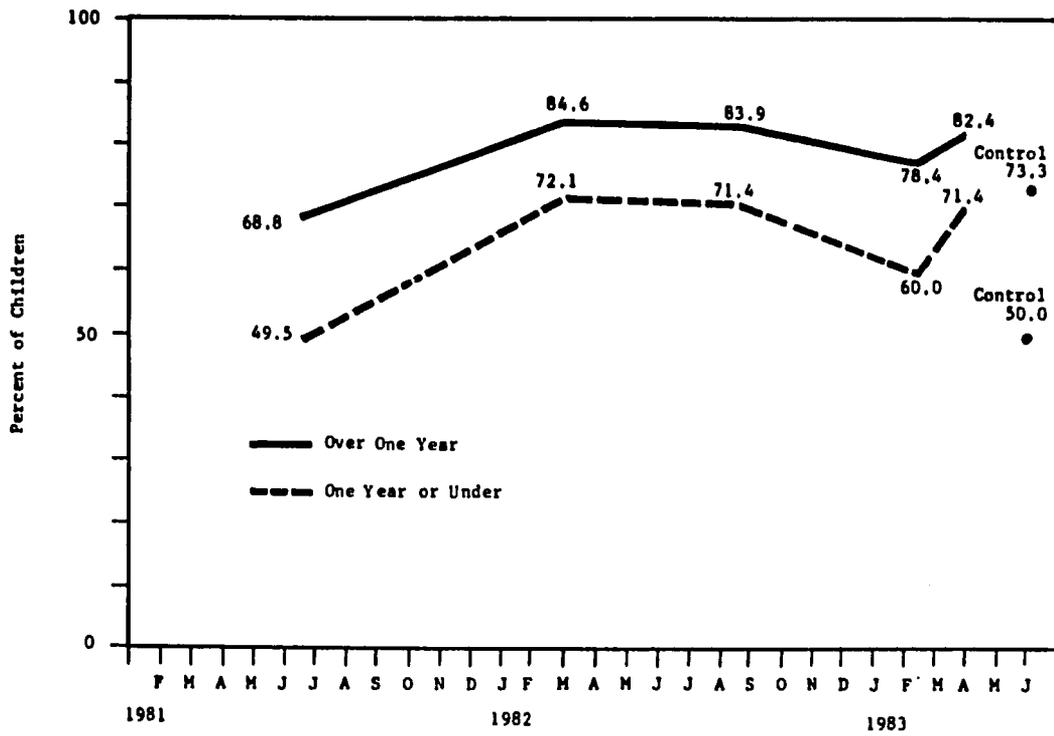


FIGURE 18: PERCENT OF CHILDREN GIVEN MORE LIQUIDS BY AGE (CASES OF DIARRHEA IN LAST TWO WEEKS)

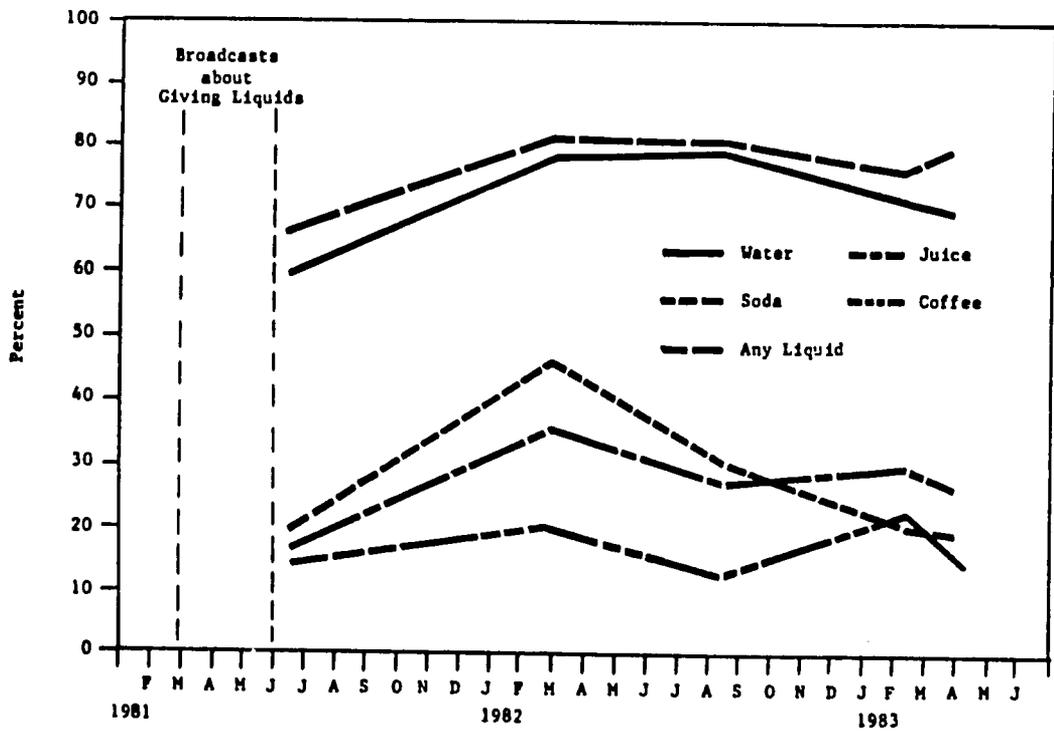


FIGURE 19: PERCENT OF CHILDREN GIVEN MORE LIQUIDS DURING THE LAST BOUT OF DIARRHEA (IN THE LAST TWO WEEKS)

#### a. Results of Anthropometric Studies

During the intervention, measurement of children's height, weight and arm circumference were taken four times. We then examined the results for indications of stunting (low height for age) and wasting (low weight for height) among the children.

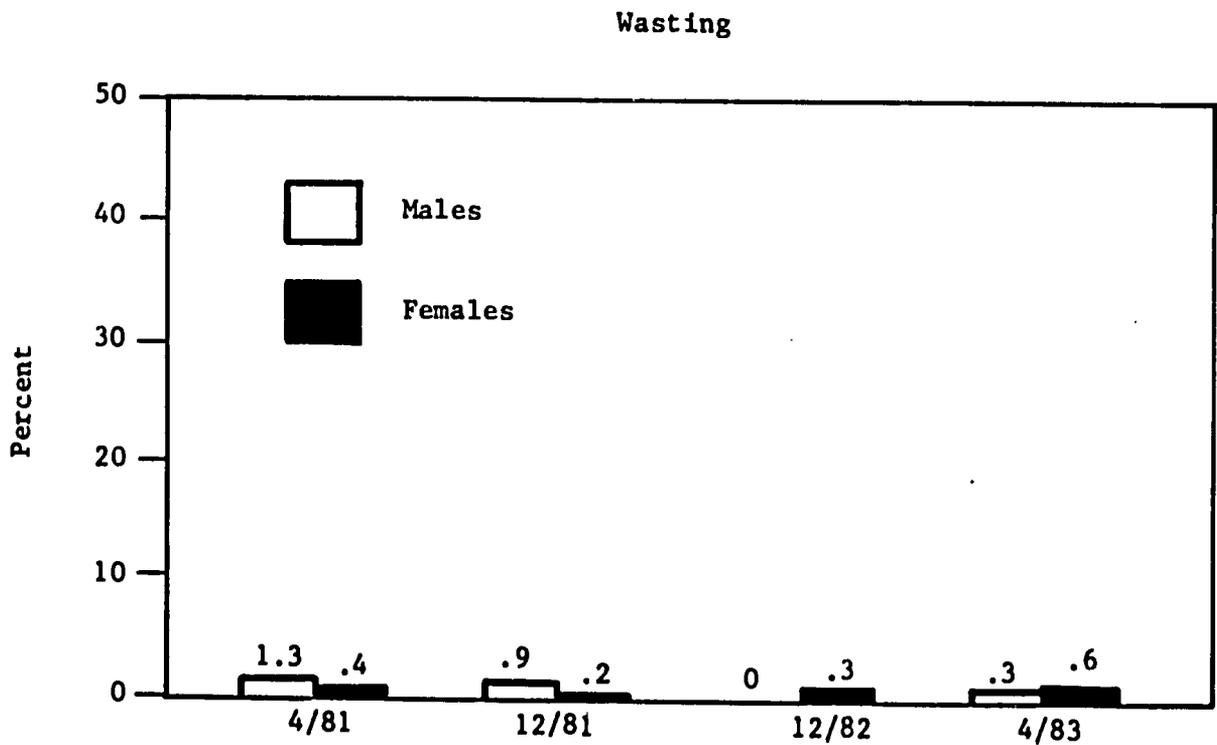
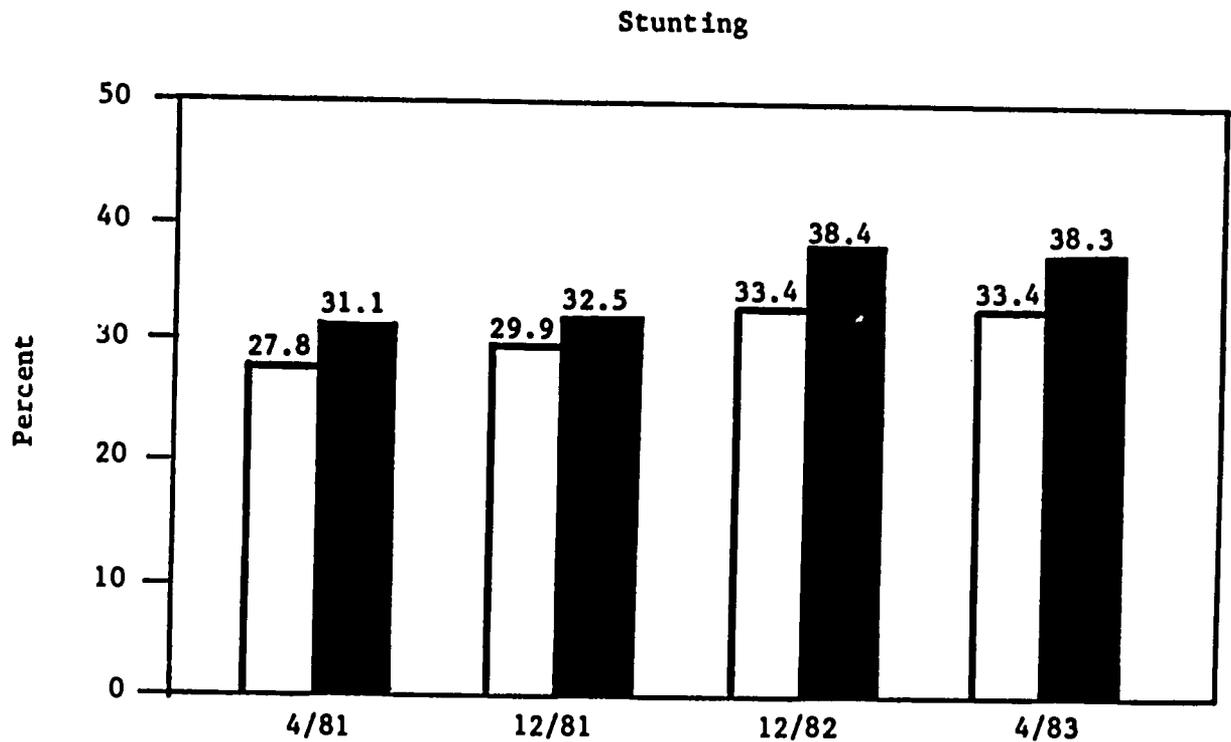
These studies showed that, overall, nutritional and growth status declined during the two years of the intervention. The percent of children classified as "normal" in the nutritional level fell from 43.4 percent to 36.7 percent for boys and from 40.9 percent to 33.3 percent for girls.

The declines in nutritional status were in stunting. The percent of stunted male children (with low height for age) increased from 27.8 percent to 33.4 percent (see Figure 20 for details). There was a slightly greater degree of stunting in girls than in boys. Wasting is a very dangerous state, indicating serious malnutrition. We can see in the table that wasting was essentially zero throughout the intervention.

This decline in nutritional or growth status was seen across sex of the child, age, municipio, and type of village, indicating the decline was general and systematic. We do not believe these findings show that the oral rehydration program caused growth to be poorer. Rather, we believe these findings reflect the increasingly difficult economic situation in Honduras at that time which would result in decreased purchasing power and poor diets and, hence, poorer nutritional status.

#### b. Effects on Mortality

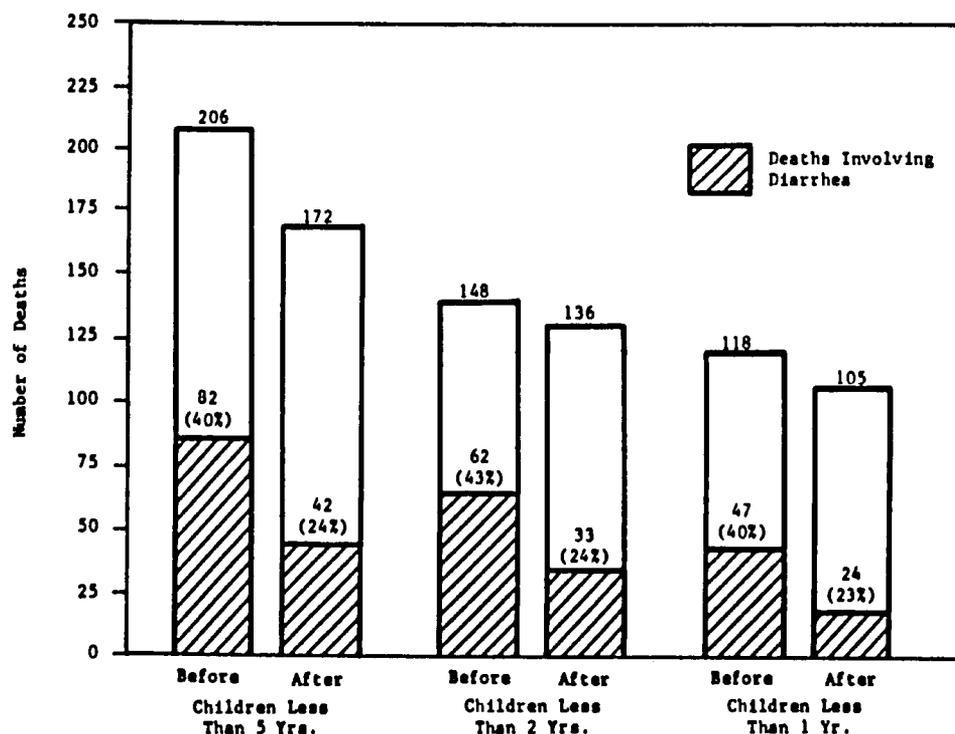
We collected mortality data from the official Death Registries kept in the county seats, noting the cause of death reported by the family. An analysis of mortality for children less than five years old showed marked declines in deaths involving diarrhea in any way during the course of the intervention. Although we found a drop in overall mortality during this time, this drop was not as great as that for diarrheal mortality.



**FIGURE 20: PREVALENCE OF STUNTING AND WASTING AMONG CHILDREN IN THE SAMPLE**

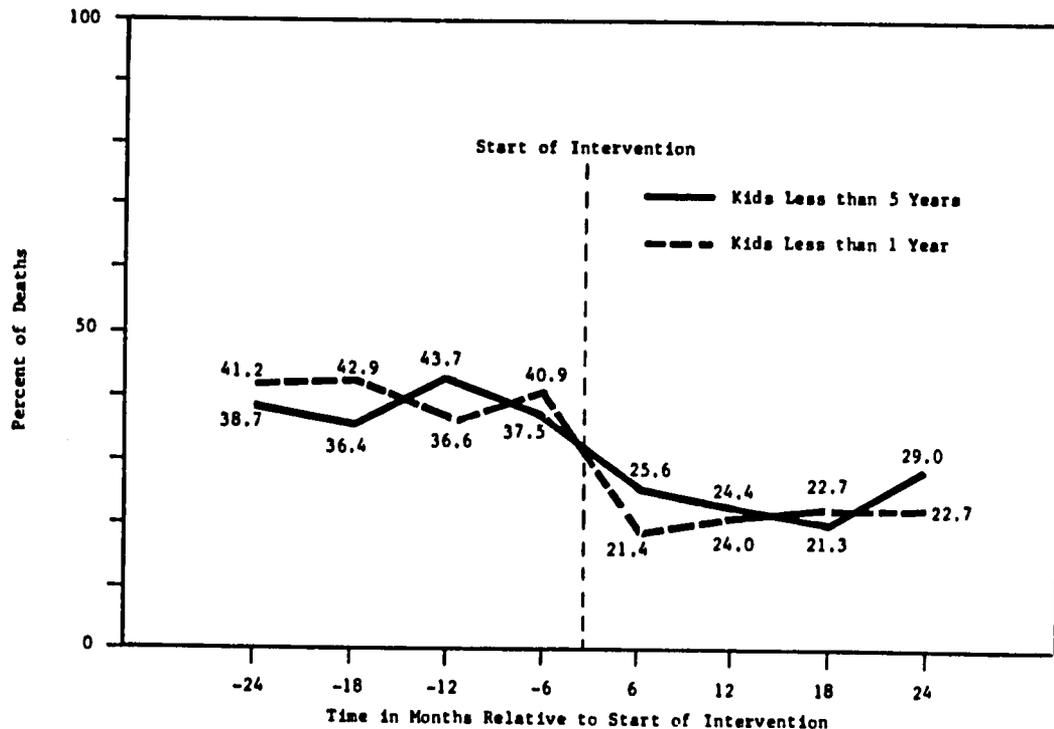
A total of 378 deaths among children under five were recorded for a period from late 1978 through March 1983. Of these, 206 occurred before the intervention and 172 occurred after the start of the project.

Figure 21 presents the mortality results for before and after the intervention for three classifications of age (children under one year, all children under two years, and all children under five years). The most prominent finding was that the proportion of deaths involving diarrhea in any way dropped sharply after the intervention started. For children less than a year old, the percentage of deaths involving diarrhea fell from 39.8 percent before to 22.9 percent after the intervention. This drop was statistically significantly (chi-square = 6.6, df=1,  $p < .01$ ). It was paralleled by drops in each of the other age groups; although the numbers were too small to achieve statistical significance, the pattern was completely consistent.



**FIGURE 21: MORTALITY IN DIFFERENT AGE GROUPS DURING PERIODS OF TWO YEARS BEFORE AND AFTER THE START OF THE INTERVENTION, SHOWING TOTAL DEATHS AND THE PROPORTION OF DEATHS INVOLVING DIARRHEA IN ANY WAY**

In addition to measuring mortality for specific age groups, we examined mortality across time. The data were categorized according to when the death occurred in relation to the start of the intervention. Deaths were categorized into six-month periods, yielding groups of cases that occurred 6, 12, 18, and 24 months before and after the start of the intervention. These data are presented in Figure 22, for children less than a year and for all children under five years. From these data we can see that the effect was stable in time and occurred immediately at the start of intervention.



**FIGURE 22:** PERCENT OF DEATHS THAT INVOLVE DIARRHEA IN ANY WAY, FOR TWO YEARS BEFORE AND AFTER THE START OF THE INTERVENTION

The abruptness and consistency of this pattern strengthens the interpretation that the drop is related to the campaign. The drop in reported diarrheal mortality may be explained by a number of contributing factors including widespread availability and use of ORT, mothers' reluctance to report diarrhea as a cause of death during the campaign stressing a treatment for diarrhea, or secular changes in health status. The findings do indicate however, that there was a reduction in deaths from diarrhea that could be attributed to the oral rehydration intervention.

## 6. Summary of the Findings

In sum, the evaluation found that the campaign environment and impacts were as follows: there was good access to all the communication channels used by the campaign; the target audience was heavily exposed to campaign messages through those channels; this exposure resulted in learning gains across virtually all the topics covered in campaign messages; the audience adopted the promoted behaviors at high rates and sustained the behavior changes over time at high enough rates and with sufficient accuracy that an impact on health status could be expected; the nutritional status of children worsened over time in ways that suggest a secular trend related to Honduras' difficult economic situation; and mortality involving diarrhea declined sharply, with a corresponding, though smaller, drop in total mortality.

## RESULTS OF THE EVALUATION IN THE GAMBIA

The project in The Gambia was known as the Mass Media for Infant Health Project (MMHP). After six months of pre-program research, message development and pretesting, the campaign started in May 1982 and continued through April 1984. The evaluation was carried out from February 1982 through July 1984.

In the following section, we will give a brief description of the project. More detailed information on the intervention is available from AED.

### A. Description of the Intervention in The Gambia

The Gambian government chose to adopt an oral rehydration solution made from water, sugar, and salt (WSS) available in the compound or village. Prior to the campaign, the Medical and Health Department had promoted WSS, but it was found that health workers and mothers used many different mixing formulas. One of the first steps was to institute a standardized WSS formula and diarrhea management policy.

Before the start of the campaign, AED worked with the Gambian Medical and Health Department to develop a definitive manual for health workers to standardize the treatment of acute diarrhea. The WSS formula promoted in this manual was one liter of water (3 Julpearl bottles), 8 Julpearl bottle caps of sugar, and 1 Julpearl bottle cap of salt.

As in Honduras, the campaign used radio, health workers and print materials. The primary audience was rural mothers, grandmothers, and older female siblings of children under five. The topics covered were correct mixing of WSS, administration of WSS with breastmilk and solid foods in the rainy season, intensive administration of WSS with breastfeeding during the dry season, taking the child to the health center if signs of dehydration were

seen, and cleaning up feces in the compound. The campaign was carried out in five phases. Figure 23 illustrates these phases and the different project inputs over time. The first year was divided into three sequential phases timed to coincide with the seasonal variations in diarrhea.

Phase I, which preceded the wet season diarrheal peak (characterized by prolonged, debilitating bouts of diarrhea) emphasized the relationship between diarrhea, dehydration, and malnutrition, establishing the concept that "dryness," or dehydration, can be prevented through a special diet of WSS, breast milk, and solid foods given to young children during bouts of diarrhea. Phase I included an intensive face-to-face training program for 150 rural health workers in the proper management of diarrhea including WSS solutions, UNICEF packets, and intravenous/intraperitoneal therapy. These health workers in turn trained mothers in 650 villages in the proper mixing and administration of the WSS solution, leaving a happy baby flag on the hut of the trained women as an identifying marker.

During Phase II, which corresponded to the wet season diarrheal peak, the major activity was to publicize WSS and teach proper mixing and administration of the WSS solution to as many mothers as possible. To this end a rural mixing contest (the "Happy Baby Lottery") was held during September and October. An important component of the contest was a pictorial flyer detailing mixing proportions and instructions. The mixing flyer was a 3-color 8" x 11" page with a picture on the front of a mixing bowl with 3 Julpearl bottles of water, 8 bottle caps of sugar, and one bottle cap of salt being poured into it (see Figure 24). The back showed a hand leveling a bottle cap of sugar or salt with a chew stick. The pictures showing the amount of water, sugar, and salt were each drawn in a box of a different color, to facilitate teaching the mothers to understand the flyer. Because earlier research found that a large number of rural mothers were unable to easily interpret pictures, radio messages were used during the lottery to explain each part of the flyer step by step.

These flyers were distributed to rural health centers throughout the country during the month of August. From there they were then distributed to rural dispensaries, subdispensaries, and Red Flag Volunteers.

# THE GAMBIA

## OVERALL CAMPAIGN STRUCTURE

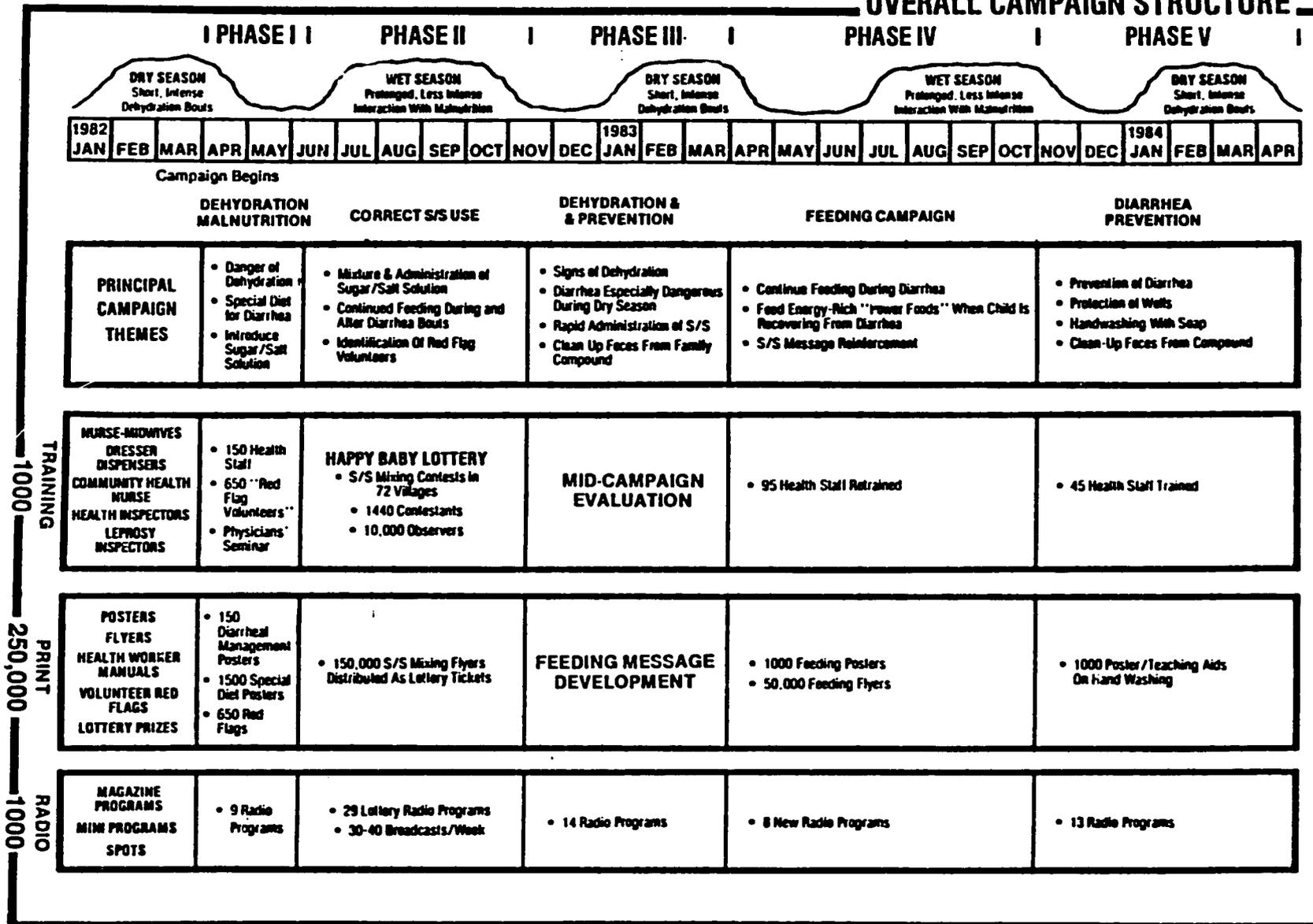
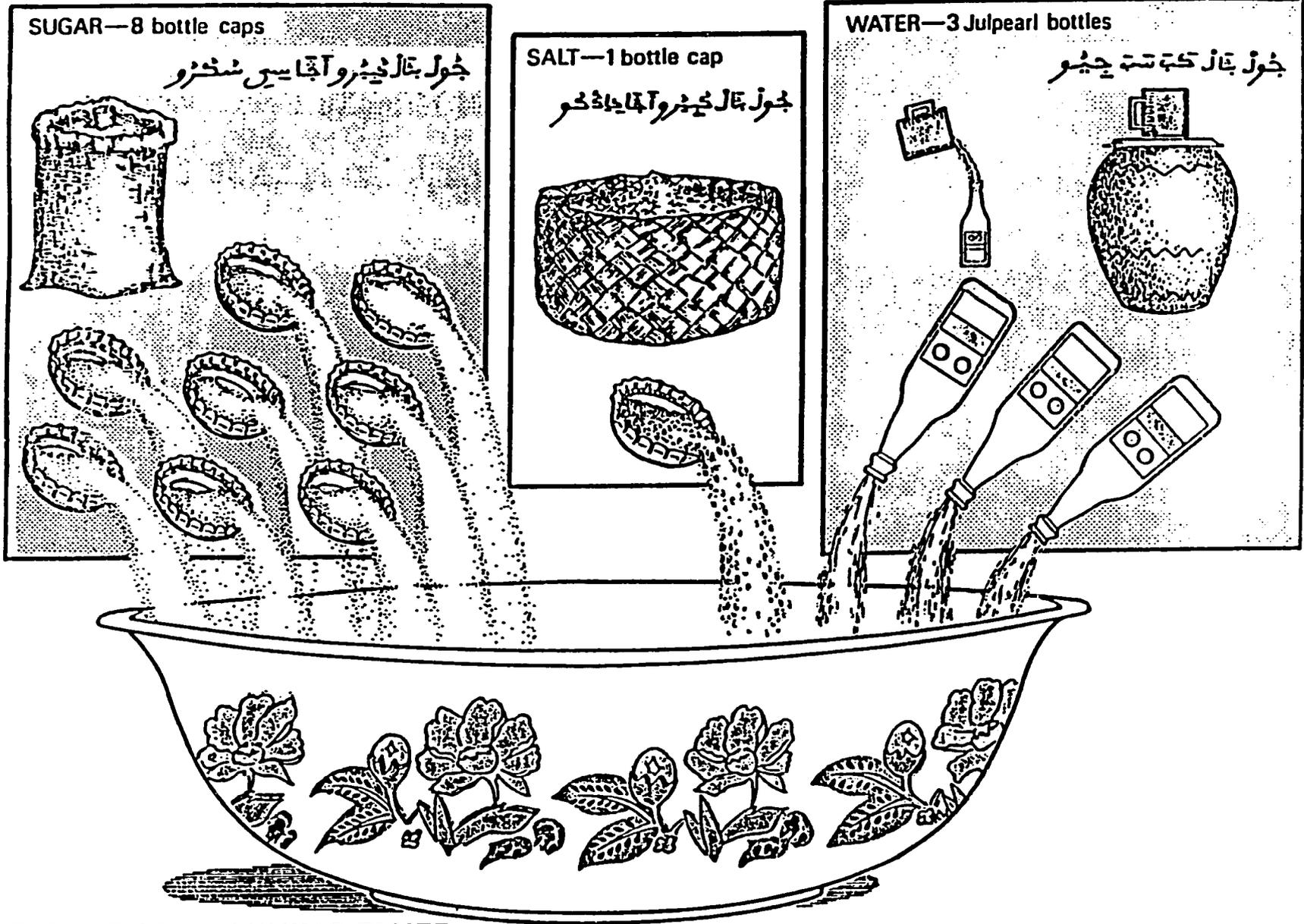


FIGURE 23: THE GAMBIA -- OVERALL CAMPAIGN STRUCTURE



**FIGURE 24: MIXING FLYER**

The lottery was a contest rewarding correct WSS mixing and administration knowledge rather than luck. The pictorial mixing flyer was an entry ticket for participation in the lottery. To win a prize required a demonstration of correct WSS mixing. For four weeks, 18 villages were randomly selected each week to be lottery villages (a total of 72 villages participated). In each village, twenty of the mothers with flyers were randomly chosen and asked to demonstrate their WSS mixing knowledge. Each mother who correctly mixed WSS was given a prize, a one-liter cup. If she could also answer administration questions, she received a bar of soap. All mothers with correct knowledge were then eligible for the Grand Prize Drawing during which fifteen mothers were selected to receive a radio-cassette player.

The lottery activities served many purposes. They provided incentives for mothers to obtain the flyer, listen to the radio spots, and learn correct WSS mixing and administration. They also provided public demonstrations of WSS mixing for large audiences of mothers, reinforcing the instructions on the radio and the mixing flyer.

Distribution of the flyers and participation in the lottery were widespread. Approximately 150,000 mixing flyers were distributed. The lottery was widely attended: 6,580 women came to the village contests with a flyer in hand, 1440 won the chance to mix WSS for the judge, and 1097 won a prize for the mixing. Participants and spectators totaled 10,728.

In the second year of the campaign, two other topics received wide coverage: feeding during and after diarrhea and a mini-campaign on sanitation. The first year of the campaign had promoted a "diet for dryness," focusing on WSS, but also including messages about continued breastfeeding and giving solid foods during diarrhea to build up the child's strength. Mothers were also told to give fluids, such as teas and juices.

In 1983, after noting low behavioral responses to feeding messages, AED reformulated the messages. In the feeding messages starting in July 1983, the focus was on coaxing children to eat something during diarrhea (when they have little appetite) and on feeding them solid and high-protein foods after

diarrhea to restore their weight and power. Nutritious local foods were recommended, as were energy-rich foods (e.g., milk, sugar, peanuts) that could be added to paps and other meals to add "power." A pictorial flyer was designed showing a mother giving her baby solid food, listing local high-energy foods and showing pictures of power foods. Fifty thousand copies of this flyer were distributed. In addition, a second series of training sessions was held in July and August for 95 rural health staff. The training sessions introduced the feeding messages, demonstrated how to use the feeding flyer to teach mothers, reviewed the overall campaign and problems seen by health workers and gave training in health education.

The final phase of the Mass Media for Infant Health Project was a mini-campaign conducted from February through April 1984, with the evaluation of the campaign conducted in May through June. Phase I (February to March) of the mini-campaign emphasized the responsibilities of the Village Development Committees (VDCs) in local aspects of the primary health care system. An important role of the VDCs was to mobilize community members to improve and maintain sanitation around community wells. This phase used radio programs to disseminate VDC and well-protection messages.

Phase II of the mini-campaign (March to April) emphasized well-protection messages and introduced information about germ theory in the context of how wells can become contaminated. Phase II messages were disseminated by radio, and were also taught at regional training sessions for Community Health Nurses in the month of March. Nurses were expected to relay messages and instructional materials to other community health workers in their areas.

Phase III of the mini-campaign (April) focused on hand washing messages and germ theory, with an emphasis on the importance of promptly cleaning up infant feces from one's compound and washing hands with soap and water, particularly after handling feces. Radio broadcasts covered these topics and were supplemented by posters illustrating appropriate times for washing hands (after using the latrine, after cleaning up feces from the compound, after cleaning up after a baby who has defecated, and before eating or preparing food). Posters were distributed to community health workers and members of VDC's.

## **B. Results of the Evaluation**

In the following pages, the major findings of the evaluation in The Gambia will be presented. The evaluation followed the same model as the evaluation in Honduras, first examining access and exposure to the campaign channels and messages, then learning, behavior, and health status changes. A more detailed presentation of these findings is in the final evaluation report for The Gambia.<sup>3</sup>

### **1. Access and Exposure to the Campaign**

Did mothers in The Gambia have access to the channels used in the intervention? We found that access was very good (see Figure 25). Questions measuring campaign access showed that:

- 80 percent of mothers had been to a health facility in the previous three months;
- 75 percent lived in a village served by a Red Flag Volunteer;
- 60 percent of mothers could show the interviewer a working radio in her compound; and
- 36 percent of mothers lived in a compound where at least one person could read a single sentence, although only three percent of the mothers themselves could do so.

Actual radio listening was higher than the access figure might suggest, because Gambian women listen to radios in other compounds. A total of 67 percent of women reported that they listened to the radio either daily or several times a week, with the heaviest listening taking place in the evening. We next looked at whether the mothers were exposed to the campaign.

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<sup>3</sup>Applied Communication Technology. The Mass Media and Health Practices Evaluation in The Gambia: A Report of the Major Findings. Prepared for Stanford University and the U.S. Agency for International Development, August 1985.

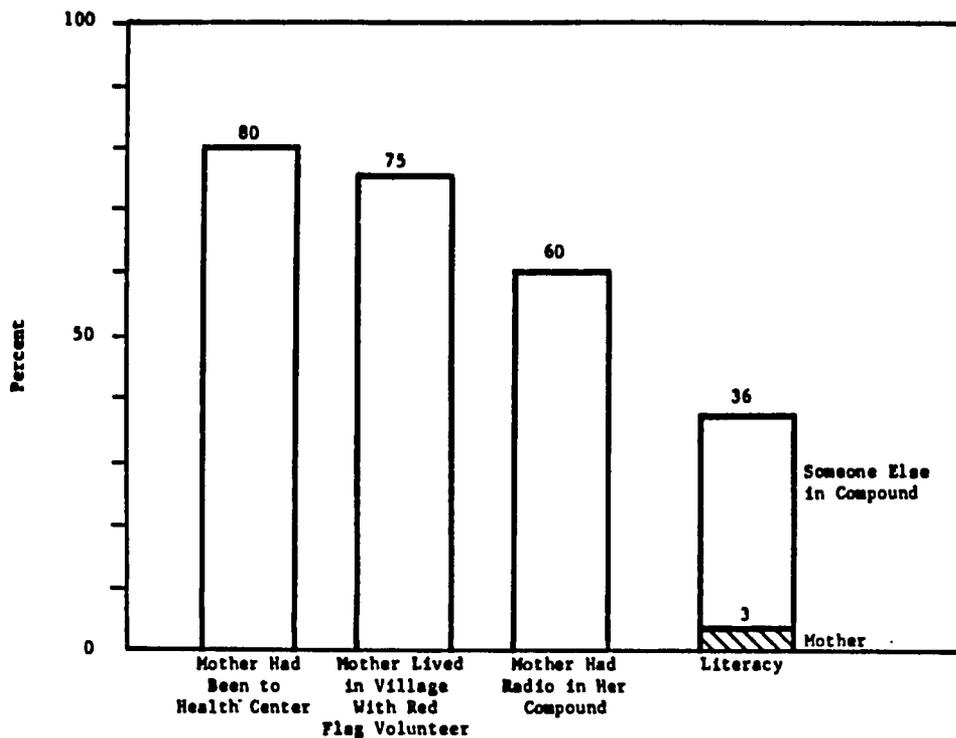
Exposure to the MMHP messages was measured by asking at different times through the project, about recall of radio messages, exposure to the Happy Baby Lottery, and ownership of the mixing flyer. Figure 26 presents the responses to these questions.

Overall, mothers had a high level of exposure to radio messages about diarrhea, but a lower level of exposure to messages about feeding. During both years of the project, an average of 56 percent of mothers reported having heard radio messages about diarrhea. In the second year, after the start of the special campaign on feeding, an average of 27 percent of the mothers had heard feeding messages.

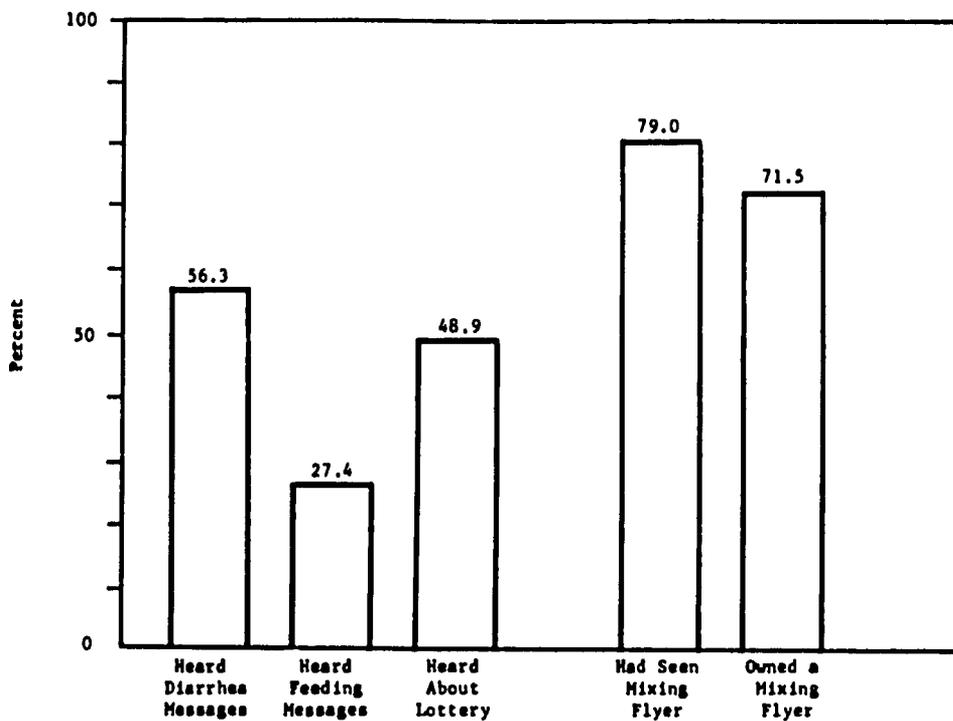
Mothers may have remembered hearing diarrhea messages more than feeding messages because of the intensive campaign activities in the first year -- the Happy Baby Lottery and the distribution of mixing flyers integrated with a high level of radio messages. About half the mothers had heard about the lottery.

The print material associated with the lottery (the mixing flyer) had very high exposure levels -- much higher than for the lottery itself. After the lottery, 79 percent of mothers reported having seen the flyer, and 71.5 percent of all mothers could actually show the interviewer their copy of it. This points out the importance of having more than one channel of information, since women got the flyer and learned from it even when they didn't receive the radio messages about its relationship to a lottery.

Because of the low rate of literacy among mothers, and low levels of pictorial materials in the compounds, there was question as to whether mothers would be able to understand the mixing flyer. The flyers were designed so that radio messages could help mothers learn to interpret them. A special study on the effectiveness of this indicated that mothers who received training in the use of the flyer (from radio or a health worker) were more likely to understand it than mothers with no training. Training in interpreting the flyer was particularly important for mothers with low ability in understanding pictures. Overall, a year after the flyers had first been distributed, a large proportion of mothers had a good understanding of the mixing flyer.



**FIGURE 25: ACCESS TO CAMPAIGN CHANNELS IN THE GAMBIA**



**FIGURE 26: EXPOSURE TO THE GAMBIAN INTERVENTION**

Health workers were an important source of information and advice. Figure 27 shows that, for mothers who were aware of WSS, an average of over 80 percent of the mothers reported having learned about WSS from a health worker. However, radio and the flyer increased in importance as the campaign progressed, and mothers began to rely on several channels of information.

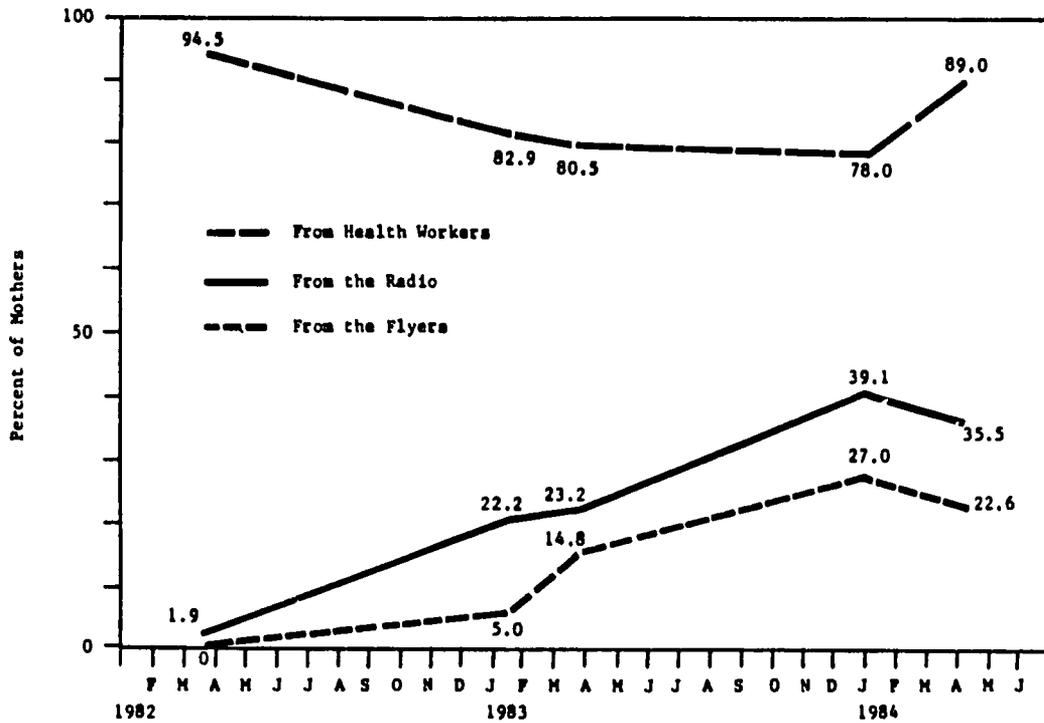


FIGURE 27: SOURCE OF MOTHERS' LEARNING ABOUT WATER-SUGAR-SALT SOLUTION IN THE GAMBIA

## 2. Learning from Campaign Messages

After determining that Gambian mothers had high access and exposure to the campaign, we asked whether they had learned the information disseminated in the different channels. Four major topics were covered by the project: WSS, dehydration, feeding during diarrhea, and sanitation. In the following pages, we will discuss knowledge change in each of these in turn.

a. Knowledge about WSS

Water, sugar, salt solution had been promoted in various ways by the Medical and Health Department before the project. Because of this, 55 percent of the mothers in the sample were aware of a water-sugar-salt mixture for diarrhea before the start of the campaign (March and April 1982). By January 1983, after the Happy Baby Lottery and after the start of dry-season messages about WSS, the percentage of WSS-aware mothers had jumped to 78.3 percent. Awareness of WSS continued to rise after these months of intensive messages about WSS, but at a slower rate, reaching a high of 89.3 percent by mid-1984 (see Figure 28).

More important than simple awareness of the existence of WSS was whether mothers learned to mix and administer it correctly. Mixing WSS with the correct proportions of water, sugar, and salt was particularly important because of the danger of making a toxic solution. We found a very high level of learning of the correct mixing instructions (see Figure 29). At the start of the campaign, only one mother knew how to mix WSS correctly. By the end, 70 percent of the mothers and all of the health workers knew the correct proportions. Thus, the most important educational objective was achieved at a very high level.

The pattern of learning shows that during the first year, when WSS messages were emphasized, mixing knowledge increased steeply. After the project focus changed to feeding and sanitation, learning rates rose more gradually.

The campaign also gave instructions for administering WSS, telling mothers to give WSS at the first sign of diarrhea, to give it with a cup or spoon, to give WSS until the diarrhea stops, if the child vomits to wait and try again, to make WSS every day, and to give certain amounts to children of different ages. Learning of these procedures varied (see Table 1 for details). In some cases, knowledge was high before the intervention and dropped slightly during the two years (see giving WSS at first sign of diarrhea and giving it with a cup or spoon). During the intervention mothers did show increased learning

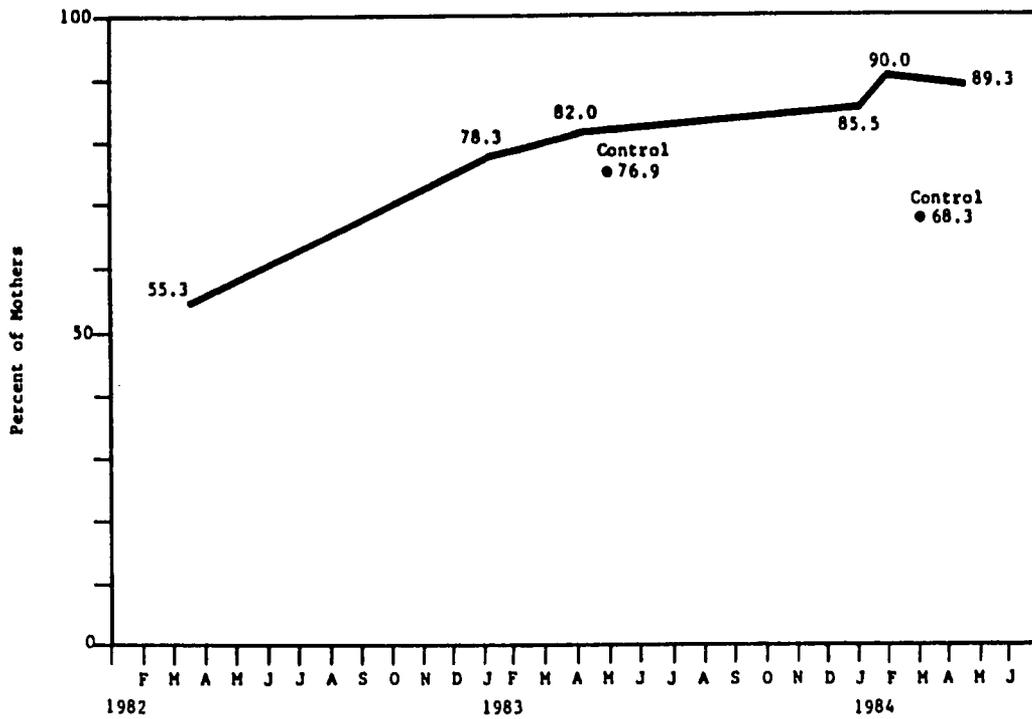


FIGURE 28: SAMPLE MOTHERS' AWARENESS OF THE WATER-SUGAR-SALT SOLUTION OVER TIME

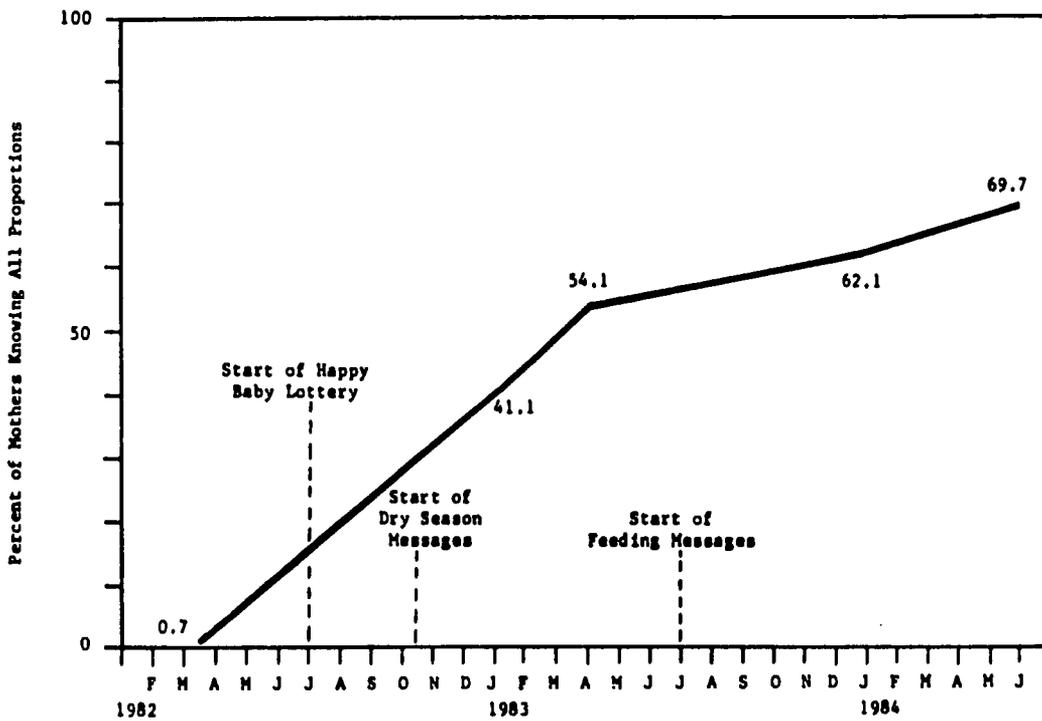


FIGURE 29: MOTHERS' KNOWLEDGE OF CORRECT WATER-SUGAR-SALT MIXING OVER TIME

about what to do if the child vomits and about making WSS every day. In the second case, learning seems to have been delayed until the second year.

**TABLE 1: PERCENT OF CORRECT RESPONSES TO QUESTIONS ABOUT WSS ADMINISTRATION**

	<u>364/82</u>	<u>162/83</u>	<u>4/83</u>	<u>1/84</u>	<u>465/84</u>
Give WSS at First Sign of Diarrhea	84.8	87.7	87.2	72.8	73.3
Give WSS With a Cup or Spoon	93.7	72.8	73.1	88.6	86.0
Give WSS Until the Diarrhea Stops	--	71.4	58.6	37.0	39.0
If Child Vomits WSS, Wait and Try Later	47.7	62.7	69.2	66.8	68.8
Make WSS Every Day	32.2	32.5	64.0	58.9	61.6
A Child 6-18 Months Should Be Given 2 Teaspoonfuls of WSS	--	11.0	23.5	20.0	20.7

The mothers seemed to have trouble in two areas: how long to give WSS and how much to give the child. The instructions to give WSS until the diarrhea stops was learned by 71 percent of the mothers in the first year, but this percentage dropped when WSS was no longer the main focus of the radio messages. Mothers may have become confused by radio messages telling them to give WSS for two or three days and then go to the health center.

Learning how much to give a child according to its age was learned later in the intervention and was learned by fewer mothers. These instructions were quite difficult, requiring the mothers to know their child's age (which a substantial proportion did not) and to be able to match up the age with the volume to give. We did find, however, that almost all mothers had learned to give a substantial volume of WSS (at least a cup, or as much as the child could take) rather than only a few teaspoons full.

Overall, we found that mothers needed time and continued reinforcement to learn all the details of WSS administration. There is some indication that mothers had difficulty learning a lot of different instructions at one time.

During the intervention, mothers were frequently reminded by the radio and health workers that WSS does not stop diarrhea. We measured mothers' learning of this and found little change -- they continued to believe that WSS stopped diarrhea. This may be because mothers refused to believe that a medicine recommended for diarrhea wouldn't stop it or because diarrhea tends to stop after two or three days anyway.

In summary, during the project, Gambian mothers developed high levels of awareness of WSS and high levels of correct mixing knowledge. Learning of administration instructions varied, although at the end of the campaign, a majority of mothers gave correct responses to most of the questions. The project was not very successful in teaching mothers about the function of WSS.

#### **b. Knowledge about Dehydration**

A second major content area of the project was teaching mothers about the signs of dehydration and their danger. During phases with many radio messages on dehydration, we saw that mothers learned to identify several physical signs such as sunken eyes, sudden weight loss and dry mouth as signs of dehydration. However, this knowledge was not maintained after messages stopped.

Although mothers couldn't always label a sign with the term "dehydration," they did learn that sunken eyes and sudden weight loss required a trip to the clinic (see Figure 30). Before the project, 60 percent of the mothers recognized that a child with sunken eyes or sudden weight loss should be taken to the health center. At the end 88 percent recognized sunken eyes and 69 percent recognized weight loss as danger signs.

#### **c. Knowledge about Feeding During Diarrhea**

In the first year, the project recommended the "diet for dryness" during diarrheal episodes. This consisted of WSS, continued breastfeeding, and solid foods. In the second year, the project emphasized solid, nutritious ("power") foods after diarrhea.

Mothers learned quickly that a child with diarrhea should continue to be breastfed (see Figure 31). This knowledge remained high and, at the end of the two years, 81 percent of the mothers said a child should be breastfed during diarrhea.

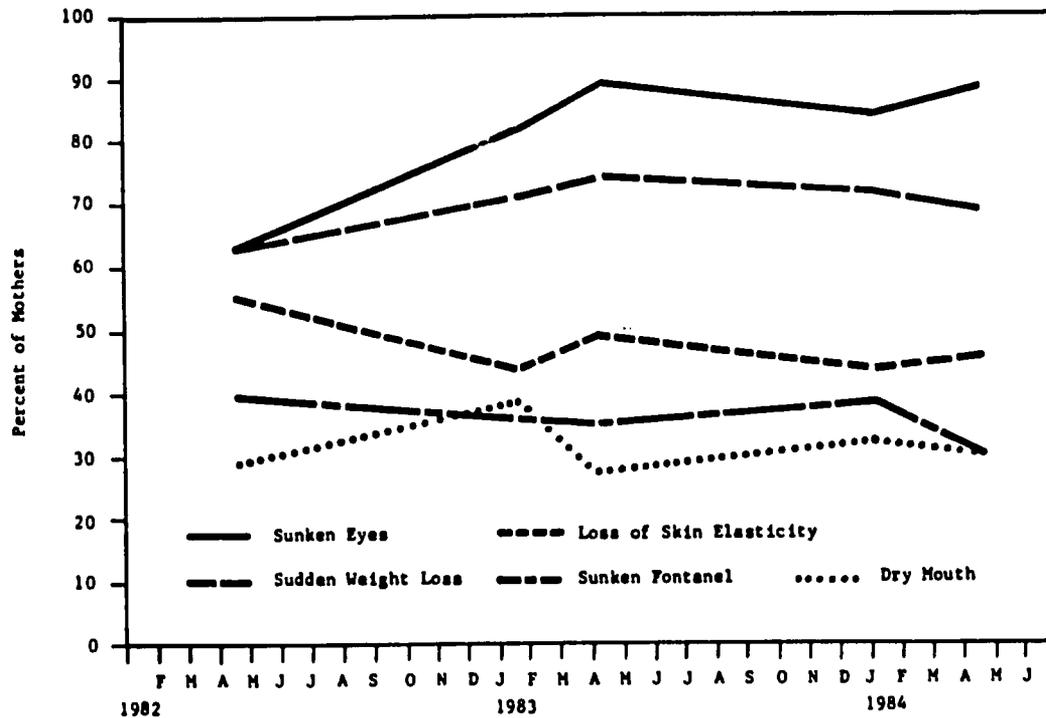
The campaign was not successful in teaching mothers that solid foods should be given during diarrhea. After six months of messages, only 39 percent of the mothers agreed that solids are good for a baby with diarrhea and three months later, this had dropped to 21 percent. Throughout the campaign, mothers continued to believe that watery porridges (or paps) are best for diarrhea.

Mothers did learn that solid foods should be given after diarrhea. Figure 32 shows a continued rate of learning to a high of 95 percent immediately after the radio campaign. In addition, during the feeding campaign, 60 percent of mothers learned that power foods (e.g., milk, peanuts, meat) should be given, a percentage that decreased after messages stopped. Another positive gain is that mothers learned that power foods should be added to paps given during diarrhea.

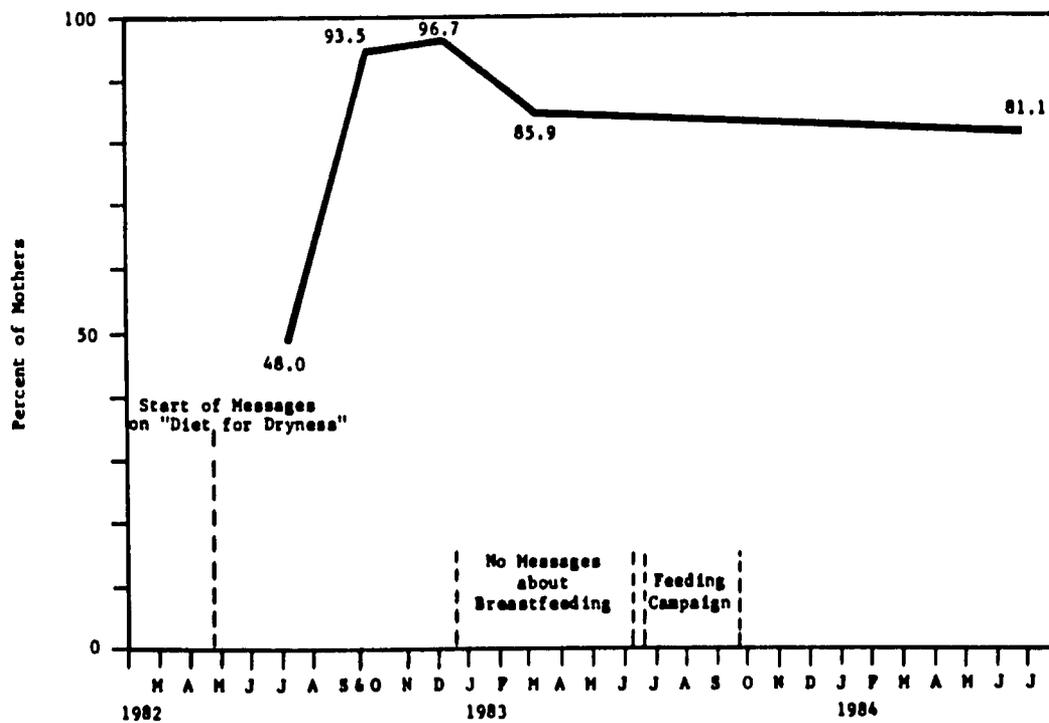
#### d. Knowledge about Personal and Compound Sanitation

Throughout the two years of the project, messages had been broadcast about germ theory, feces and disease, and the need to keep compounds clean. Near the end of the project, a mini-campaign specifically addressed sanitation. One part of this was a campaign about hand washing.

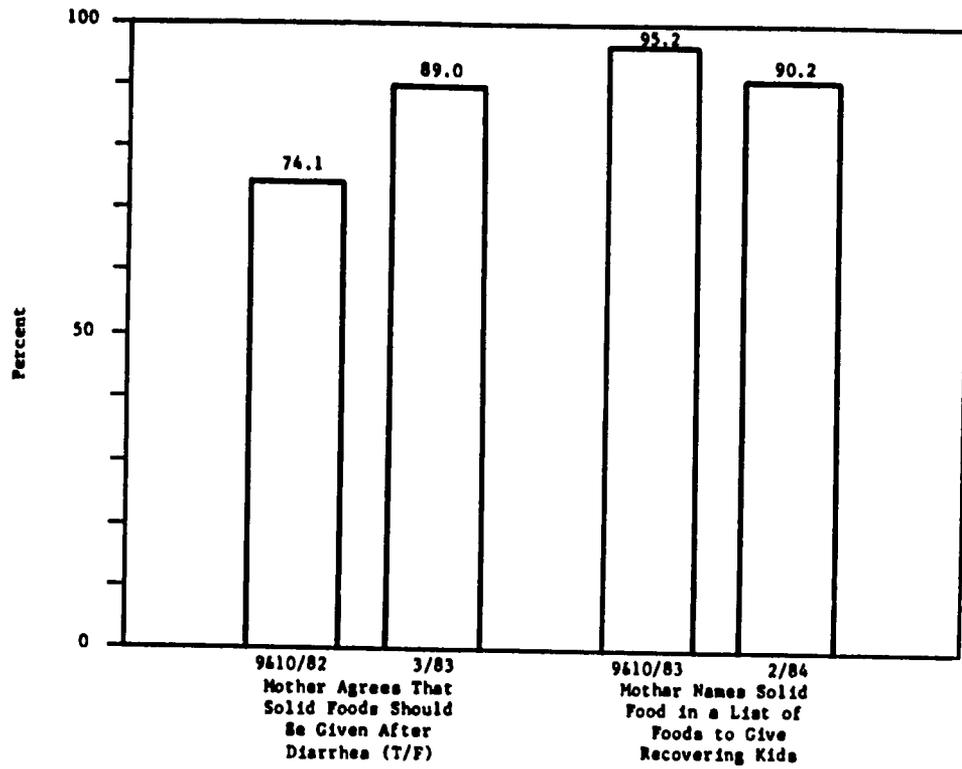
We saw that mothers learned some aspects of germ theory and sanitation, but this varied over time. Figure 33 shows responses to questions about feces and germs causing diarrhea and whether germs can be seen. A large proportion of mothers knew after the first sanitation spots that germs cause diarrhea. However, this level dropped over time, although, at the end of the intervention, 69 percent of the mothers still understood this. Knowledge that feces cause diarrhea also varied over time, with a large increase in knowledge during the mini-campaign.



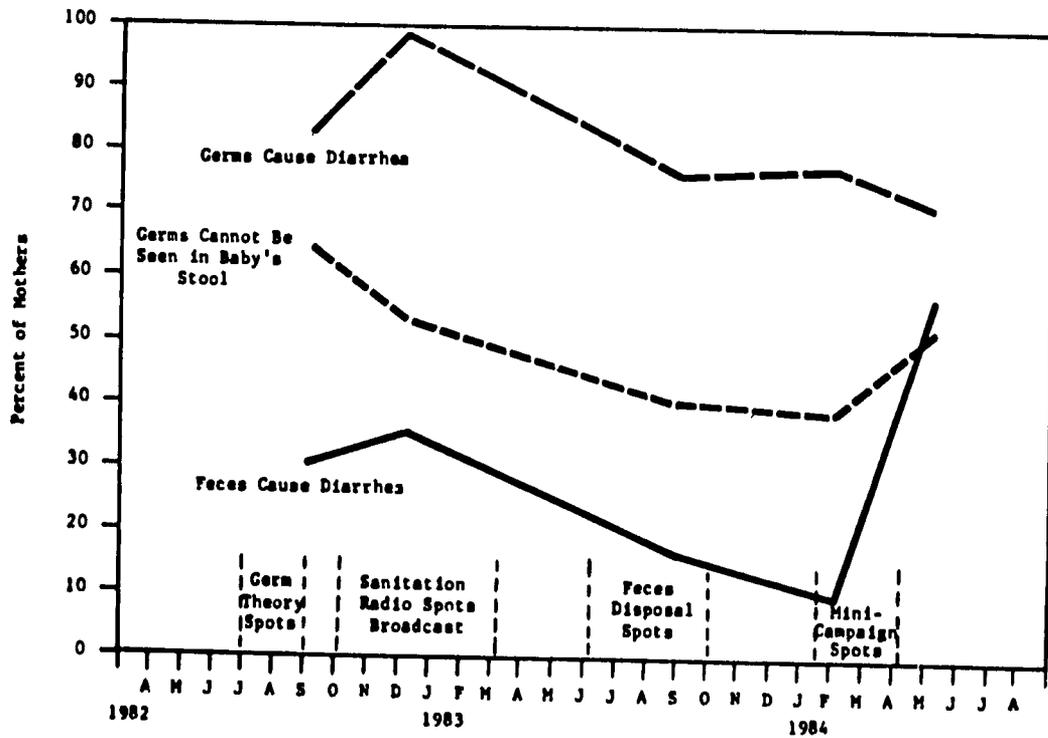
**FIGURE 30: MOTHERS' RECOGNITION OF SIGNS OF DEHYDRATION THAT REQUIRE TAKING THE CHILD TO THE HEALTH CENTER**



**FIGURE 31: MOTHERS' KNOWLEDGE THAT A CHILD SHOULD CONTINUE TO BE BREASTFED DURING DIARRHEA**



**FIGURE 32: MOTHERS' RESPONSES TO QUESTIONS ABOUT FEEDING AFTER DIARRHEA**



**FIGURE 33: PERCENT OF CORRECT BELIEFS ABOUT GERMS, OVER TIME**

After the mini-campaign, we asked mothers about when they should wash their hands. From 51 to 59 percent of the mothers said they should wash their hands before preparing or eating food, after using the latrine, and after cleaning up an infant. However, only 24 percent said they should wash hands after cleaning feces from the compound, indicating that most mothers did not have a complete understanding of the relationship between feces and disease.

#### **e. Relationship Between Exposure and Knowledge about WSS**

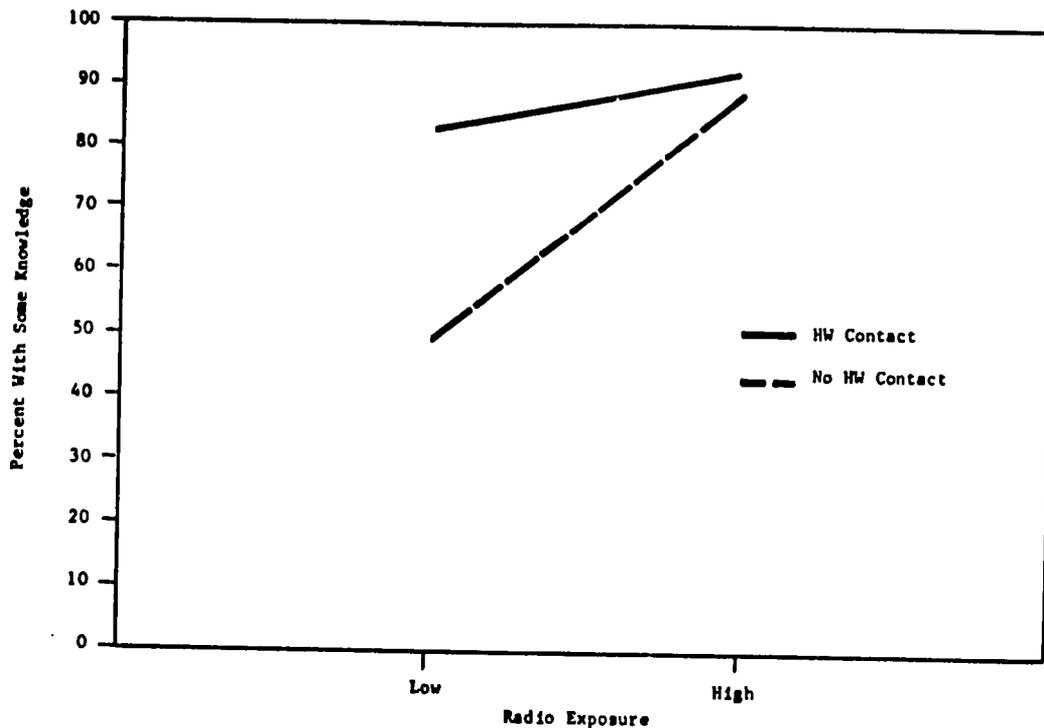
A separate study examined the relationship between exposure to Radio Gambia and knowledge about WSS after removing the influence that other factors might have on the relationship. The analysis found that: mothers with high radio exposure were significantly more likely to know something about WSS than mothers with low radio exposure; and mothers with interpersonal sources of information (health worker, Red Flag Volunteer, or other mothers in the compound) were more likely to know about WSS than mothers without such contact. However, for mothers with low interpersonal contact, frequent listening to the radio could teach them about WSS (see Figure 34 for the relationship between health worker contact and radio exposure).

These findings support the use of multiple channels in health information campaigns. Radio instruction seems to have been important in teaching a segment of the population who weren't receiving WSS information from other sources and in helping to close a gap in health knowledge.

#### **f. Summary**

The campaign's effects on learning were highest for WSS, the subject that received the most attention in the broadcasts and perhaps also from health workers. Awareness of WSS increased from 55 percent of the mothers before the campaign to 89 percent of the mothers by the end of the campaign. Correct WSS mixing was learned by a large percentage of the mothers. Mothers also learned about WSS administration, but learning was slower and not as high as for mixing.

Knowledge that breastfeeding should continue during diarrhea and that solid foods should be given after diarrhea increased during the campaign. There was also an increase in recognition that sunken eyes and weight loss indicated the need for clinic treatment.

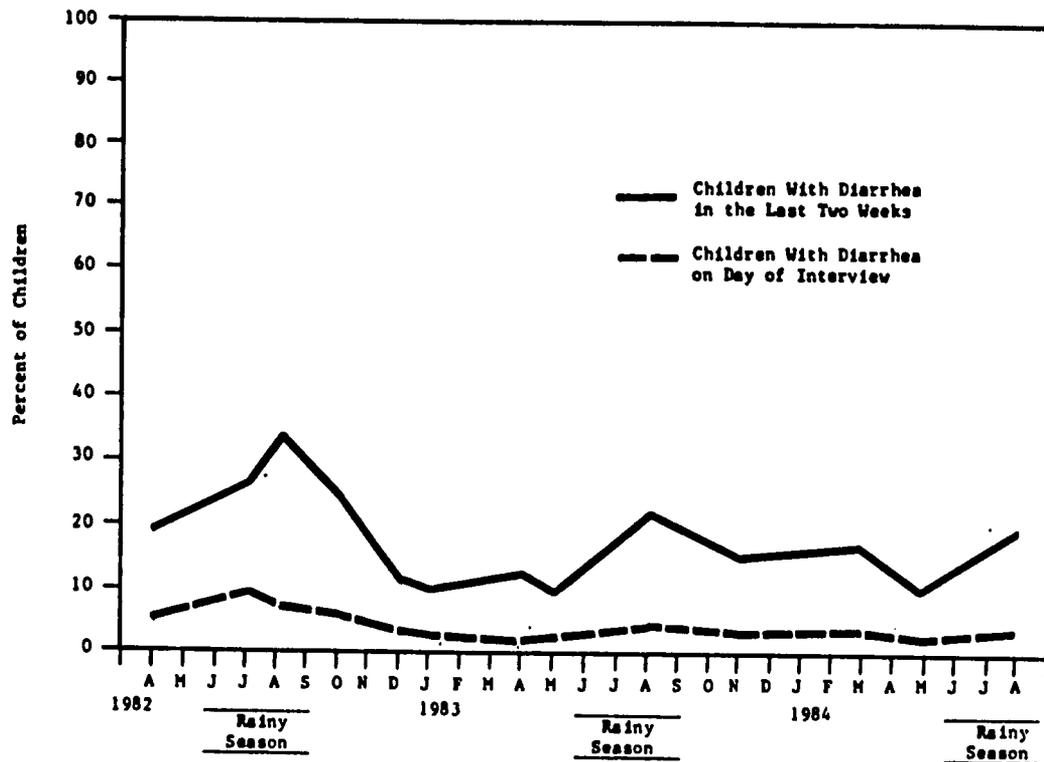


**FIGURE 34: RELATIONSHIP BETWEEN KNOWLEDGE ABOUT WSS AND THE INTERACTION BETWEEN RADIO EXPOSURE AND HEALTH WORKER CONTACT**

Mothers also showed some learning about sanitation. Gains were made in knowledge about germ theory and hand washing. Learning was lower for cleaning the compound of feces.

A pattern that was seen across all topics was forgetting of some of the information. During the time that a topic was being covered intensively by the campaign, we generally saw rises in knowledge. When the campaign shifted its focus to another topic, even if messages on the first topics continued at a lower level, mothers' knowledge about the latter tended to drop. This indicates that the mothers needed continued high levels of messages to maintain knowledge.

four days of diarrhea in the past two weeks, there were more cases of diarrhea over four days long in the rainy season than in the dry seasons. In the dry seasons, we saw a slightly higher percentage of children with reduced urine output and dry eyes, both signs of dehydration.



**FIGURE 35: PREVALENCE OF DIARRHEA: PERCENTAGE OF ALL CHILDREN ILL WITH DIARRHEA DURING THE PREVIOUS TWO WEEKS AND ON THE DAY OF INTERVIEW, OVER TIME**

We then examined prevalence and severity of diarrhea for children of different ages. We found that younger children had higher rates of diarrhea, but that age was not related to severity. Figure 36 shows the percentage of children with diarrhea in the last two weeks, by age and season. Weaning-age children showed higher rates of diarrhea than both newborns and older children. Six-month olds to one-and-a-half year olds showed the highest rainy season rates, 34.5 to 39.0 percent ill in the last two weeks. Rainy season diarrhea rates declined steadily after one and a half years. We see the same general pattern during the dry seasons, but lower rates of diarrhea for all age groups.

(April/May 1984).<sup>4</sup> We saw a corresponding change in use of health centers for treatment of diarrhea: the percentage of cases being treated at health centers dropped from 76 to 47 percent. This represents a savings for the mothers in the time and cost of visiting a clinic, and for the Ministry of Health in terms of demand on health facilities.

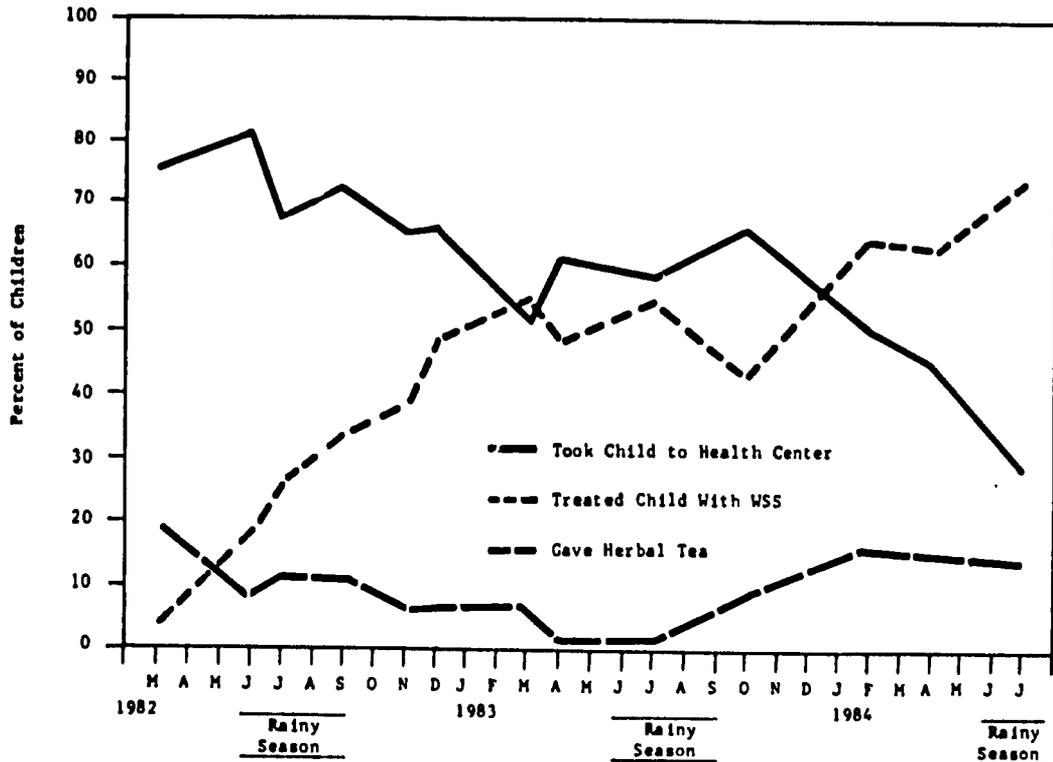
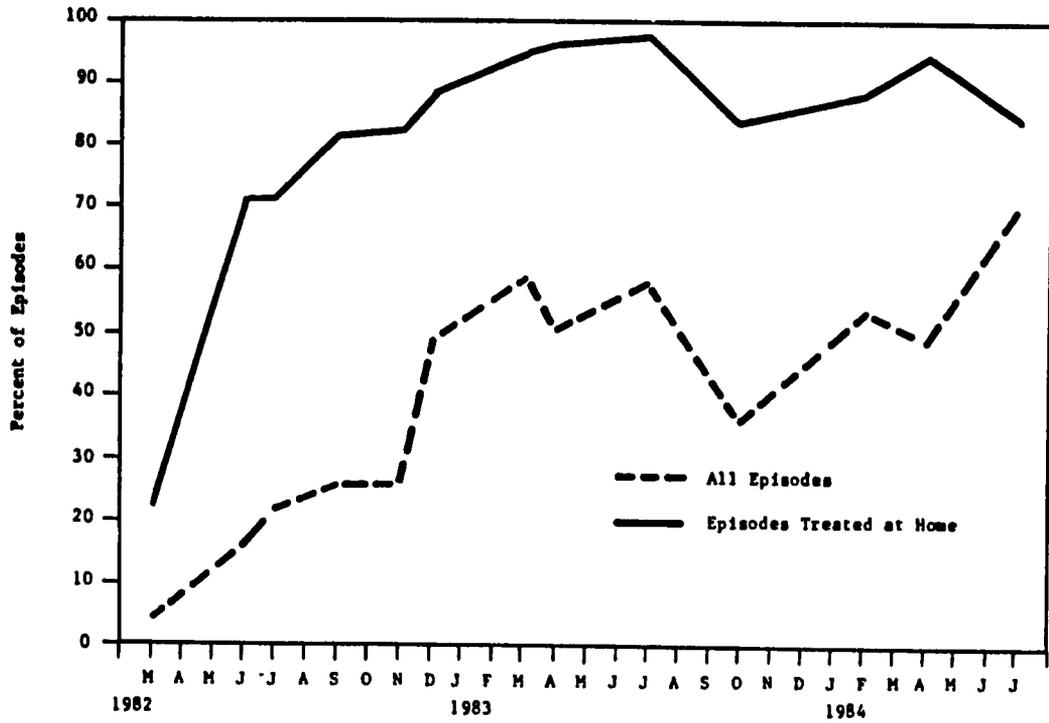


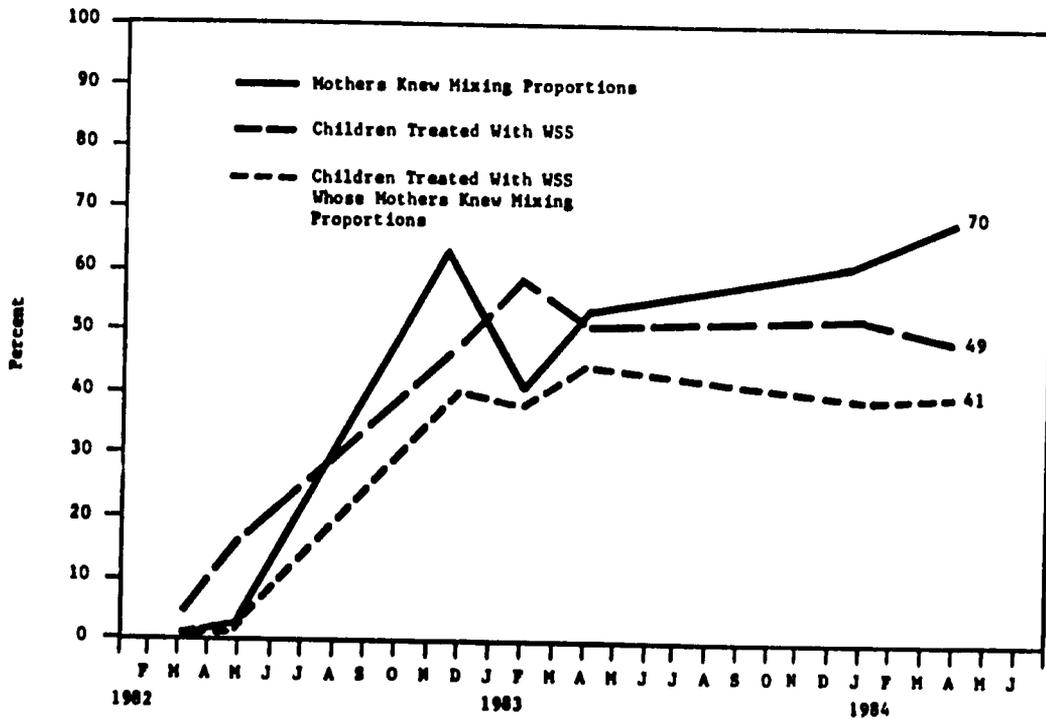
FIGURE 37: TREATMENTS FOR CHILDREN WITH DIARRHEA DURING THE TWO WEEKS PRIOR TO THE INTERVIEW

We also saw that WSS displaced virtually all previous home treatments (such as teas and pharmacy drugs). When we looked only at cases treated at home, we found that WSS use rose from 22 percent in the first interview to 94 percent in the twelfth (see Figure 38). Because many of the previously used home treatments were either ineffective or possibly harmful, the displacement effect represents a significant improvement in the "quality of care" beyond the simple rise in percent of cases treated with WSS.

<sup>4</sup>We do not fully understand the sudden shifts in treatments in wave 13, thus we will only discuss the results through wave 12.



**FIGURE 38: EPISODES TREATED WITH WATER SUGAR SALT SOLUTION, SHOWN AS A PROPORTION OF TOTAL EPISODES AND OF EPISODES TREATED AT HOME**



**FIGURE 39: KNOWLEDGE OF MIXING PROPORTIONS AND PRACTICE OF WSS**

as before diarrhea or solid foods. Behavior change increased during message phases stressing feeding and dropped somewhat when messages were reduced.

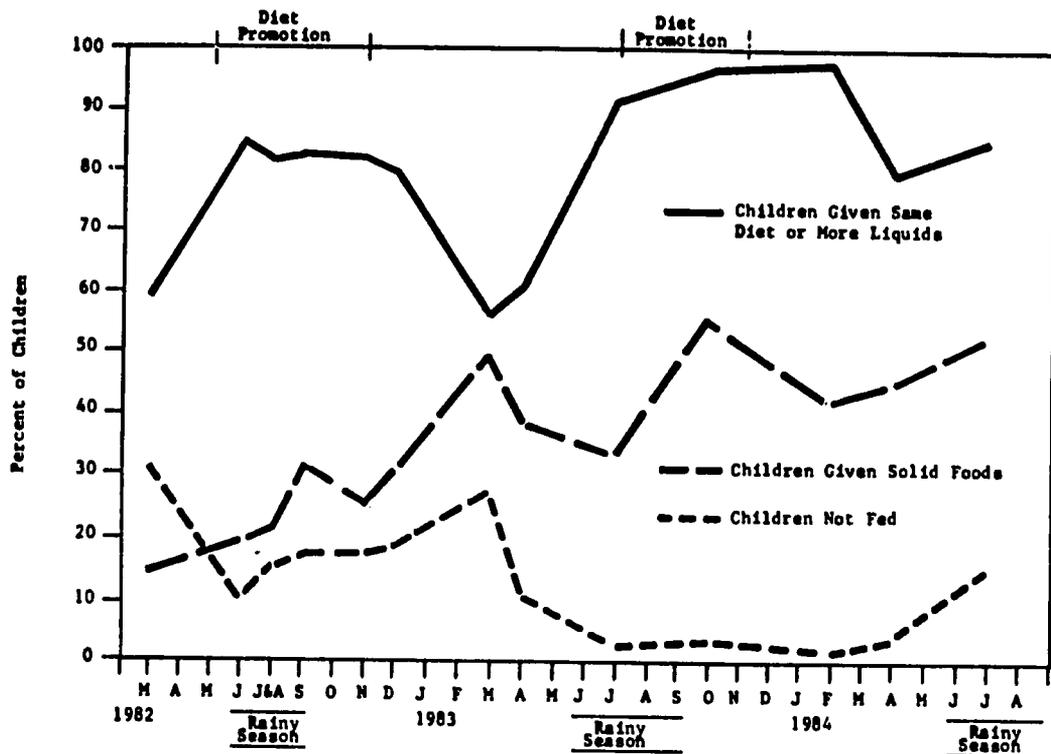


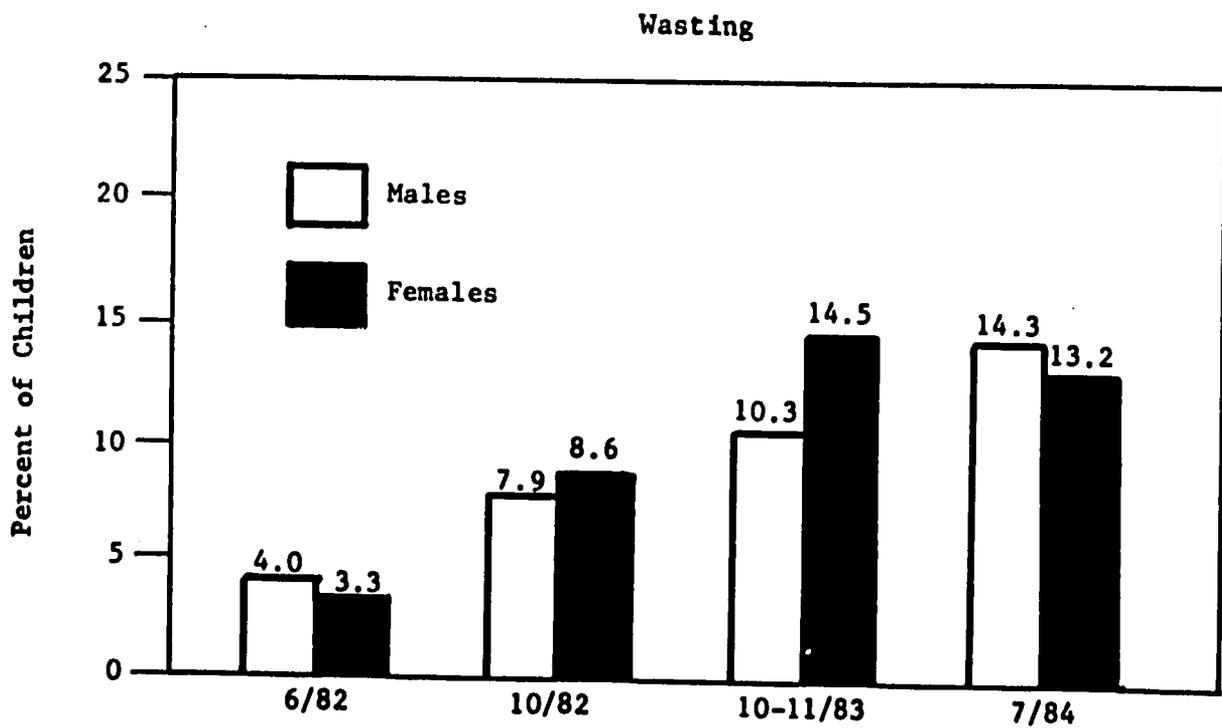
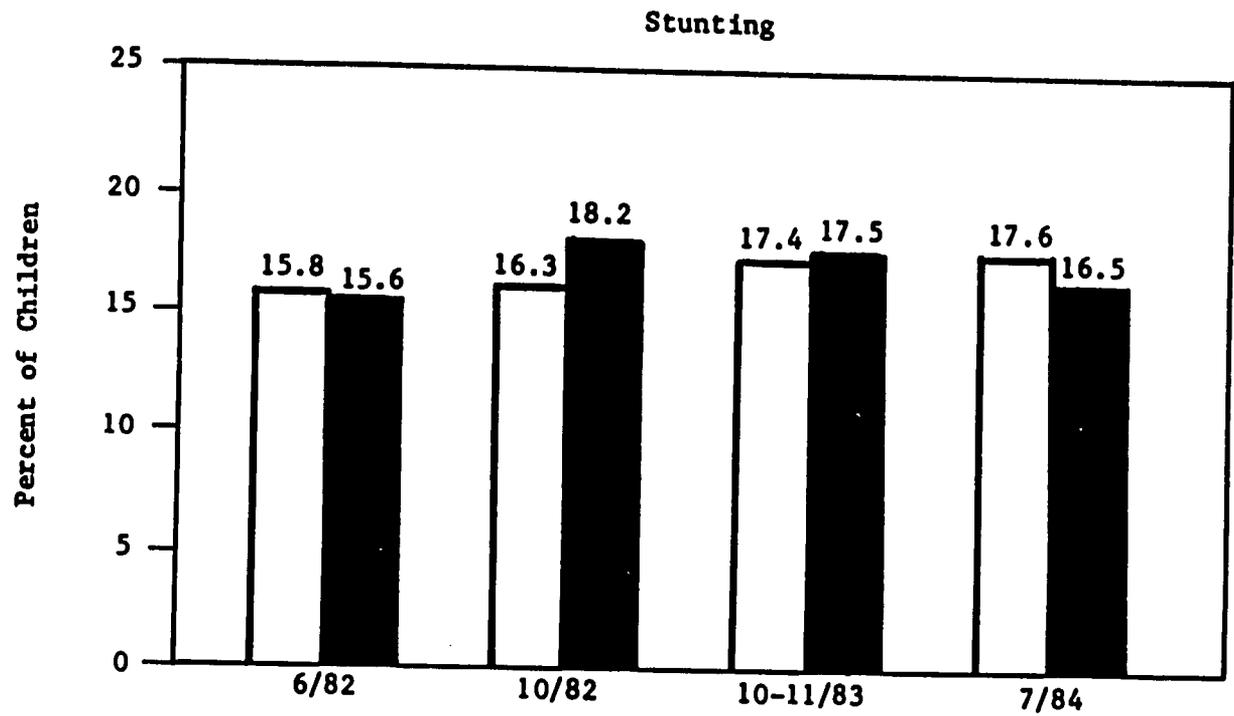
FIGURE 40: FEEDING OF CHILDREN DURING DIARRHEA

## 5. Changes in Health Status

The final step in the evaluation was to examine changes in children's nutritional and health status. This was done by taking physical measurements of children and by collecting data on mortality.

### a. Anthropometric Measures

Anthropometric measurement of sample children was carried out four times. The two most informative anthropometric variables are height and weight which provide data about stunting (low height for age) and wasting (low weight for height). Stunting indicators measure the cumulative history of retardation and indicate only that problems existed in the past whereas wasting indicators measure the existence of problems at the time of measurement.



**FIGURE 41: PREVALENCE OF STUNTING AND WASTING**

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## Chapter IV

### SUMMARY AND CONCLUSIONS

Two of the major goals of the Mass Media and Health Practices Project in Honduras and The Gambia were:

- To develop and implement a communications methodology using the latest methods of development communications and social marketing to change health behavior, and
- to contribute significantly to the prevention and treatment of acute infant diarrhea in rural areas of both countries.

Overall we found that the health communication methodology and the individual health education interventions showed a high level of success in both countries. In the following pages we will summarize the main characteristics of the methodology and the projects, then summarize the major results and discuss the overall trends.

#### A. Health Communications Methodology

The same overall communication approach was used in both Honduras and in The Gambia. Before developing the individual interventions, there was a planning and development phase in which information was collected in the country to use in preparing a relevant program design. The interventions lasted for over two years and consisted of discrete cycles of messages presented through radio, interpersonal channels and print materials. Monitoring and evaluation of the projects were incorporated at the start and provided information to make adjustments as the intervention progressed.

The interventions in both Honduras and The Gambia focused particularly on the introduction of oral rehydration therapy (giving an oral rehydration solution, and breastfeeding and giving other foods during diarrhea), but also

- Although only one-third of Gambian mothers lived in literate compounds, mothers were taught to "read" the pictorial flyers through the radio and interpersonal channels.

## 2. Exposure

The findings about mothers' exposure to the messages of the interventions can be summarized as follows:

- In Honduras, exposure to radio messages was very high (80 percent) and to posters was high (40 percent). In the Gambia, three-quarters of the mothers had a mixing flyer, over half had heard messages on the radio, half had heard about the lottery, and mothers reported health workers to be important sources of information. Mothers were found to rely on more than one channel of information, underscoring the importance of a multi-channel intervention.

## 3. Knowledge

The major findings about knowledge of the information of the campaign were:

- Mothers showed a steep rise in learning about Litrosol and WSS after the start of the interventions, and more gradual learning after this.
- Correct knowledge about how to mix Litrosol or WSS increased sharply and leveled off at high levels.
- Mothers in Honduras and The Gambia had problems understanding the concept of dehydration. There was, however, some learning about how to treat a child with signs of dehydration.
- Knowledge about breastfeeding and correct feeding during diarrhea generally increased during the interventions, although there was some variation.
- Overall there was more learning of the topics which received the greatest attention in the campaigns. Learning about Litrosol and WSS was very high, whereas learning about the other topics was not as high.
- A pattern was seen of learning, forgetting, and relearning in response to the cycles of intensity of messages. When the campaign focused on a particular topic, learning of this topic was high. When messages were reduced or stopped, knowledge started to drop.

the intervention. Gambian children showed increased wasting. These declines can be attributed to the worsening economic situation in both countries during this time and a severe drought in The Gambia in 1983.

- In Honduras, a drop in mortality related to diarrhea occurred immediately after the start of the intervention. The proportion of deaths associated in any way with diarrhea among children less than five years old dropped from 39.8 percent during the two years prior to the intervention to 24.4 percent in the two years after the start of the intervention. Mortality data were not collected in The Gambia.

## 6. Conclusions

One can conclude from the findings that the interventions met their goal of contributing significantly to the treatment of infant diarrhea in Honduras and The Gambia. Mothers learned about new treatments for diarrhea, adopted them, and used them correctly. In particular, the levels of learning about and use of oral rehydration solutions were impressively high.

One can also conclude from the findings presented here that the health communication methodology underlying both interventions was a success. Applications of the same approach in two different countries showed similar results and the same overall patterns of change. The magnitude of the changes achieved was large and demonstrated that the methodology can play a significant role in efforts to change behaviors in the health sector.