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# EVALUATION PLAN FOR THE GAMBIA

## Mass Media and Health Practices


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# INTRODUCTION

In the Fall of 1978, AID contracted with the Academy for Educational Development (AED) and with the Institute for Communication Research, Stanford University to design and carry out the implementation and evaluation, respectively, of a new program in the use of communication for development. That program, the Mass Media and Health Practices project, draws on the experience of several different traditions in establishing an integrated approach to changing health-related behaviors. It involves elements of educational and communication research related to the areas of social marketing, systematic research prior to designing the intervention so effort can be carefully targeted, pretesting of messages, use of both task analysis and behavioral principles in intervention design, and integrated use of non-mass media channels. In addition, it draws on recent advances in the health fields which have yielded an effective, inexpensive oral rehydration treatment for dehydration resulting from infant diarrhea.

Because these two general areas are merged in this project, it is jointly monitored by the Office of Education and of Health in AID's Bureau of Science and Technology. The program addresses the central problems faced in both the separate arenas - - in education and communications, the problem of how to use existing media and other infrastructure to accomplish significant and lasting change, and in health, how to disseminate quickly an inexpensive new treatment for a ubiquitous and serious problem - - and has the potential to demonstrate a methodology that if effective, can be applied throughout the world. For that reason, the program was structured to be implemented in two different countries, Honduras and The Gambia, and to have an intensive evaluation, so that accurate, detailed information will be available to guide others who wish to use the methodology.

This document presents the working draft of the evaluation design proposed for the Mass Media and Health Practices: Evaluation activity in The Gambia. It is organized in the following manner: this section has presented a short background that sets the context for what is to come; in the second section on the general structure of the evaluation, the model of the intervention and the selection of dependent and control variables are described, followed by the measurement methods and the organization of the effort into discrete studies; a section is devoted to the details of the sampling and data collection plan of the longitudinal study, which is the major activity in the effort; and finally the logistics of mounting the whole enterprise are discussed. Much of the initial conceptual work was undertaken in the planning of the evaluation activity in Honduras. Where the presentation of these issues would result in considerable redundancy with previous reports, the material is attached as an appendix and only an overvie is given in the text. To the maximum extent possible, parallelism between the Honduran and The Gambian evaluations is being maintained, so that we can have interpretable information on the influence of different health and cultural situations.

## GENERAL EVALUATION STRUCTURE

### A. Intervention Model and Variable Selection

The model we are using of how the intervention achieves its impact postulates that a chain of events must occur in order for the most distal project goals to be accomplished. This chain begins with the simple existence of the intervention and proceeds to the creation of cognitive and attitudinal changes in the target population. If and when accurate learning and acceptance

have taken place, one would expect to see behavioral changes being made that would ultimately lead to changes in health status. A far more detailed presentation of this model is contained in Appendix A.

The sequential nature of this chain of events that must occur guides the development of the evaluation strategy. One must monitor the accomplishment of the objectives at each step along the way to be able to assess how the results on the more distal objectives are related to the results on the proximal objectives. For example, if we fail to observe health status changes, we need to be able to discriminate among possible causes - - whether the result occurs because of theory failure (e.g., oral rehydration therapy was not an appropriate or sufficient solution in the local context) or because of program failure (e.g., radio reception was poor and the intervention never reached the target audience).

To meet these needs, we have established three general classes of dependent variables to be measured in conjunction with the independent variable, the intervention. The classes of dependent variable are cognitive change, behavioral change, and health status change. In addition to the outcome measures, a large number of other variables, probably best thought of as control variables, are to be monitored, including potential and actual exposure to the intervention components, demographic and socio-economic status variables, current beliefs and practices in relevant areas such as personal and family hygiene, diarrheal disease, child care and nutrition. A detailed outline of the kinds of variables being monitored is presented as Appendix B.

B. Central Research Questions

We have noted that the Mass Media and Health Practices project represents the intersection of several different areas, including social science, health, and development. In attempting to formally state the central questions this

evaluation should be addressing, it became clear that each of these areas had a different perspective on the project, and that each would have different sets of questions that would be of central importance to them. In order to guide the planning of the research, we have stated the central research question of interest to each community, and developed examples of the types of specific questions that might derive from it at different levels of generality.

The central questions for each area are as follows:

- Social Science: "What are the processes and constraints that influence the adoption and maintenance of new behaviors, and what implications do those processes and constraints have for the design of interventions to change behavior?"

- Health: "Can a decentralized program on the prevention and treatment of infant diarrhea, including as a major component the use of oral rehydration therapy in a non-clinic setting, have and appreciable impact on aggregate health status?"

- Development Planning: "Is this methodology effective, affordable, and manageable as a means of attacking development problems?"

Each central question has corollaries at higher levels of specificity; it is these more specific questions that will actually be answered by the evaluation. Appendix C contains a more detailed explication of the logic underlying the development of these central questions and a chart showing the more specific restatements of the general questions.

C. Measurement Methods

We have followed a strategy of using multi-method assessments as much as possible in order to increase the confidence with which we can describe changes

resulting from the intervention. This approach uses more than one technique to measure the same variable. It is a helpful approach for reducing the vulnerabilities inherent in survey research using administered questionnaires, particularly in the context of developing countries.

The methods to be used include the following:

Questionnaires

Structured observations

Structured interviews

Anthropometric measurements

Analysis of archival data

Case finding or tracer studies

The planned application of different methods to categories of dependent variables is shown in Figure 1. Obviously, not all the variables within each category of dependent variable will be measured with a given methodology, but the overlap will enable us to use convergence of findings from different measurement techniques to substantiate that a significant change has taken place. In rare cases, additional measurement methods may be applied to specific problems. For example, we have discussed with the Medical Research Council (MRC) the possibility of testing accuracy of performance of oral rehydration solution mixing by taking samples in the field and having them analyze the concentrations of sugar and salt.

D. Organization into Studies

The foregoing general description has outlined the basic areas in and methods through which research will be carried out. However, there are differences among the variables in terms of: the target audience to whom particular items are relevant; the expected rate of change in the variables (and hence the frequency with which it should be measured); and the methods or data sources

FIGURE 1

Measurement Methods Applied to Different

Dependent Variable Categories

| Method | Dependent Variable Category | | |
|---|---|---|---|
| | Cognitive Change | Behavioral Change | Health Status Change |
| Questionnaire | X | X | X |
| Structured Observation | | X | |
| Structured Interview | X | X | X |
| Anthropometric Measurement | | | X |
| Archival Data | | X | X |
| Case Finding | X | X | X |

which will be used to measure the variables. For these reasons, we have categorized the work into a number of discrete studies, which differ markedly from one another in magnitude, study population and measurement requirements. The largest of these is the longitudinal study, which is the topic of the next section of the report. The other studies are the mortality study, the health professional interview study, and the archival study.

The mortality study will attempt to detect changes in mortality due to infant diarrhea in the treatment area. It will be mounted in the communities that are chosen for the longitudinal study but will be based on the entire population of those villages rather than just the sampled families. During the entire period of the study a census of all births and deaths in these villages will be kept by the field workers who will be visiting them regularly. Birth and death dates and reason for death will be collected.

The health professional interview study will investigate a population of rural health workers, urban and rural physicians, Ministry of Health personnel, and perhaps community leaders. Its purpose is to elicit subjective assessments of the project and its impact, and to gather insights these crucial actors have for how to structure successful interventions of this sort. It will use a loosely structured interview methodology, and will be carried out on a purposive sample selected for their ability to shed light on the process.

The archival study will use the clinic and hospital record-keeping system of the Ministry of Health as its data source and will focus on infant mortality, diarrheal incidence, and to the extent possible, type of treatment prescribed. Data will be drawn from treatment and control villages both before and during the interventions and will be analyzed within the framework of a non-equivalent control groups design, for differential changes in mortality, morbidity, and treatment.

The findings from these separate studies will be integrated across research questions in the reporting of findings. They have been established as discrete activities primarily for logistical purposes.

## LONGITUDINAL STUDY PLAN

The longitudinal study will be used to investigate population demographics, knowledge and attitude measures, self-reports of morbidity, exposure to intervention elements, media use patterns, self-reports of practices, observational measures of practices, anthropometric measurements, and in-depth study of some of the individual episodes of diarrhea during the research. These will be measured using repeated administration of different instruments on a cohort of 800 mothers over a period of fifteen months. This section of the paper describes the structure of the longitudinal study and presents the logic that has led us to structure it in this fashion. It is divided into four major subsections: the context in The Gambia; the sampling plan and results; the instrument development; and the issue of controls. A fifth topic, the organization and logistics of the activity, is treated in the following section.

### A. The Contexts in The Gambia and Honduras

This subsection will not attempt to give a full-fledged description of The Gambia; rather, it will focus only on those particular points of relevance to the study design and will draw parallels with the activiy in Honduras.

Two significant areas of of difference are in the household organization and the cultural and linguistic diversity. In Honduras, we have been using the household as the unit of analysis because the characteristics of social organization there make the family, even in extended family households, a unit with a single decision-making structure and a common set of household

and social patterns. The situation in The Gambia is quite different. The basic physical organization is the compound, which typically is much larger than a Honduran household, is more likely to have more than one married male in it, and is more likely to have unrelated people living in it. In addition, married males are frequently polygamous; their wives may come from different tribal or linguistic backgrounds and will probably retain greater variability in child-raising practices than would be permitted in a Honduran household.

The situation in terms of cultural and linguistic diversity is also quite different between Honduras and The Gambia. Honduras is very homogeneous in both cultural and linguistic dimensions. The Gambia, however, is very diverse. The different tribal groups present include the Mandinkas, Wolofs, Fulas, Jolas, Sarahules and others, plus immigrants from Mauritania, Senegal, and Guinea-Bissau. The first language of these groups differ, although most people have some degree of fluency in Wolof and/or Mandinka, which serve as the primary languages for local trade. English, the official language, is spoken by a relatively small proportion of the population. Accompanying this high level of linguistic and cultural diversity is, we believe, a much higher variability in child care practices, diet, home remedies for disease, etc.

The health care structure in The Gambia consists of several overlapping systems, some of which are more active than others. The main system is a hierarchical one, descending from the hospital in Banjul to the Health Centers, Dispensaries, and Sub-Dispensaries in other towns. Parly overlaid on this is a system of Maternal-Child-Health workers who visit communities on a fixed schedule holding clinics. There appears to be no constant relationship between the fixed centers of the main health care system and the communities served by MCH workers. A new system of Village Health Workers is now being

implemented on a region-by-region basis; they are intended to fill gaps in the existing system and will be assigned to communities of more than 400 people who do not have a fixed facility. A separate system of health inspectors carries out public health inspection and education tasks on an itinerant basis. There is a Peace Corps program in health which places volunteers in some government facilities in rural areas. Finally, there are non-governmental sources of care -- various Islamic and Christian missionary clinics, clinics r by the MRC, and private care sources. This structure may have roughly equivalent penetration into rural areas as the corresponding structure in Honduras, but it has more different combinations of levels and different command structures.

The radio coverage in the two countries is quite different. The Gambia has two stations, one governmental and one private. By contrast, Honduras has more than 100, all private, many of which are very small. Except for the national networks in Honduras, coverage by a given station is of small radius. The Gambia's governmental station, Radio Gambia, covers most of the country with a transmitter near the coast; a relay transmitter up river at Basse offers unreliable service in the easternmost section of the country. In The Gambia, all project broadcasts are expected to be transmitted on the government station; in Honduras the project has deliberately diversified the stations carrying the messages.

The distribution of population in the two countries is also quite different. The Gambia has fewer people overall and fewer large population centers, but somewhat better access to rural areas because the all weather roads that run along the river and the narrow width of the country combine to make most places reasonably close to transportation. In addition, people tend to live in somewhat smaller settlements than in Honduras, and those

settlements are much more tightly defined in geographic terms. While Honduran "communities" tend to be very spread out, with houses kilometers apart, Gambian communities are very compact, with compounds all clustered together.

The amounts and types of diarrheal disease display different patterns in the two countries. Discussions with MRC indicate that the overall significance of diarrheal disease in The Gambia may be lower than in Honduras. There seems to be less diarrhea overall and what there is seems to contribute less to mortality. While there is pronounced seasonality in both countries, MRC reports that only dry season diarrhea (acute, watery diarrhea, probably Rotavirus) is a serious cause of dehydration deaths that might be preventable through oral rehydration; the wet-season diarrhea is chronic and contributes to mortality by wasting rather than acute dehydration. The two governments have diverged on their response to oral rehydration as well, with Honduras opting for a full WHO formula in packets distributed primarily through the health care system, and with The Gambia choosing a simple sugar and salt solution to be mixed in the home using locally available materials.

The above differences, combined with more general climatic, agricultural, and wealth differences, provide an adequate cross-cultural test of the intervention methodology. It also means that the intervention and the evaluation will have to adapt to local circumstances, thereby sacrificing some of the parallelism between the two implementations. The following subsections will describe the ways in which these adaptations are being made.

## B. Sampling Plan

### 1. Definition of Target Population and Unit of Analysis

Examination of the contexts in The Gambia and Honduras has served as the basis for considering whether it is reasonable to maintain parallel

structures between the research in the two locations. In the case of defining the target population for the survey, we have been able to retain almost complete parallelism. We are interested in women with responsibility for the care of children. In Honduras, this criterion was met if either of the following two conditions were met: the household included one or more children between 0 and 60 months of age, or the household included a woman between the ages of 15 and 45 years. These criteria are also being applied in The Gambia, with the exception that we now focus on the children for whom a mother has primary responsibility, rather than all the children present in the compound. "Primary responsibility" is operationalized as those children for whom the mother claims to have responsibility; they need not be her own children. This change was necessary because the social patterns and the size of the compounds make it very difficult either to assume intra-compound homogeneity in practices or to measure all the children in a given compound.

For related reasons, the definition of the unit of analysis has been changed. The Honduras unit of analysis is a "household," which is defined as a living unit that contains a place for cooking and a place for sleeping. In The Gambia the unit of analysis is defined as a "mother-children group," which is defined as a woman and those children for whom she has primary responsibility. This change was necessitated by the characteristics of a compound, which otherwise would have met the "household" criteria, since it has both a common cooking hut and sleeping places. The size of compounds varies tremendously, with a relatively low average size (perhaps 7-10 people), but with compounds of 40 or more being common occurences. It appears that there is much more variability in child care within a compound than within the equivalent "household" in Honduras, and that it would be impossible to get an accurate measure of the actual care children receive by asking the

ranking woman of the compound. Therefore we have limited the unit of analysis to groups within the compound where the behaviors are likely to be consistent and accurately measureable. For those variables that actually operate at a compound level (e.g., water supply, food availability and preparation, compound sanitation) we will still be able to analyze at the level of the compound.

2. Structuring the Sample

We have tried to retain as much as possible the intent of the Honduras sampling plan, which was a multi-stage design incorporating purposive, stratified, and random sampling at the various stages. The objective of the sampling in both cases is to be able to generalize to the full range of conditions that are represented in the country, rather than to be able to make precise statements about the aggregate national levels in a given country. This tactic was developed because of the importance of being able to generalize to conditions that might prevail in many developing countries.

We therefore set about trying to determine what the likely range of variability in The Gambia would include, and what sampling frames might exist or be developed that could reflect this range. One of the first steps was to develop a list of "stratification variables," or things we would expect to be related in some way to the outcome variables. A very lengthy list emerged, a somewhat shortened version of which is presented in Figure 2. The general categories along which we wished to ensure representativeness included health care services available, tribal identity, language of preference, radio coverage, location relative to the river and the main roads, administrative division (since services are implemented and administered on a divisional basis), type of livelihood, types of non-health community services available, and size of community.

FIGURE 2

"Stratification Variables"

Health Care Level

- Hospital
- Health Center
- Dispensary
- Sub-Dispensary
- Maternal-Child Health Team Visits
- Peace Corps Volunteer
- Village Health Worker
- Nothing

Tribe

- Mandinka
- Wolof
- Fula
- Jola
- Sarahule
- Other
- Mixed

Language of Preference

- Wolof
- Mandinka

Radio Reception

- Banjul transmitter
- Basse transmitter

Location

- North Bank
- South Bank

Administrative Division

- North Bank Div.
- McCarthy Island Div.
- Upper River Div.
- Lower River Div.
- Western Div.
- City of Banjul

Livelihood

- Groundnuts
- Rice
- Millet
- Cotton
- Retail Services
- Vegetables
- Cassava
- Livestock (and Cattle Herding)
- Fishing

Community Services

- Paved Road
- Bus Service
- Taxi Service
- Telephone
- Telegraph
- Electricity
- Water Taps
- Wharf Town
- Ferry
- Primary School
- Secondary School
- Weekly Markets
- Daily Market
- Shops in Houses
- Rainy Season Access
- Post Office

Population

It was obvious from the beginning that no sampling plan was possible that would adequately represent the potential combinations of these factors - there aren't enough villages in The Gambia, and the resources required would have been enormous. We therefore followed the precedent we established in Honduras of purposively selecting communities that encompassed the full range of characteristics in which we were interested. A major constraint on this was to ensure a clustering of research communities that would enable a single field data collector to live in one of the communities and travel to nearby ones to collect additional data; this constraint was required by resource limitations and the scarcity of qualified people who could be employed as survey workers.

The available information on which choices could be based was rather sparse: the Census Bureau had lists of the communities that existed and the local populations; tribal identity could sometimes be deduced from the names of villages, maps of soil type and agricultural activity as well as maps showing road access and public services were available; and local language of preference could be inferred with considerable accuracy by informants in the capital.

3. Site Selection

The first step in site selection was to establish loose quotas for the values of the "stratification variables" felt to be the most important, in order to guide the purposive sampling of communities. In roughly descending order of application, they were radio reception, administrative division, health care service availability, tribal identity, and language of preference, with livelihood and non-health community services being thought of not as quotas but as parameters along which maximum variability within the other constraints was to be the objective.

The country is divided into six administrative divisions -- North Bank, McCarthy Island, Upper River, Lower River, Western Division, and the City of Banjul, The Upper River Division was excluded because its radio reception is via the unreliable Basse relay transmitter, and we reasoned that there was little point in studying a division in which the intervention might not penetrate. The City of Banjul was eliminated because of the focus of the project on the rural poor, and because the high levels of available health care resources in the metropolitan area reduce the relevance of the home-mix sugar and salt solution that is being promoted. We decided to station a full-time field data collector in each of the four remaining administrative divisions.

The next step was to select clusters of sites that could be serviced by a single worker and that would still reflect the full range of variability with which we were concerned. The highest priority was given to level of health care services available in this selection. The process proved to be an iterative one, selecting potential clusters of sites, tabulating the characteristics they represented, and trading off sites for alternatives until an acceptable balance of characteristics was attained. Figure 3 shows the locations and characteristics of the sites finally selected by this process. The next step, now in process, is the determination that the site characteristics we expect are in fact accurate, and securing the permission of the village headman, or alkalo, to participate in the study.

4. Sampling of Individuals

The decisions about how to sample particular compounds and mothers have been guided by a series of sometimes contradictory principles. We have wanted to maintain a roughly equal likelihood for every eligible woman in a village to selected into the cohort. However, because compounds vary

FIGURE 3: Villages and Characteristics

| | Health Care Level | Census Bureau Population Figure | Tribes Primary | Tribes Secondary | Services | Access to Main Road |
|---|---|---|---|---|---|---|
| **North Bank Division** | | | | | | |
| Kerewan | Health Center | 2166 | M | (W) | Market, ferry, school, phone | main road |
| Kuntair | Dispensary, MCH | 375-540 | W | (F) | PCV(not in health), school, ag. sub-stn. | main road |
| Jissa | Sub-Dispensary | 175-420 | W | | ? | 4 1/2 km. |
| Kebbeh, a.k.a. Tuba Gumbaya | None | 234 | W | | ? | 3 1/2 km. |
| Ker Ngor | None | 221 | W | | ? | 3 km. |
| **Lower River Division** | | | | | | |
| Bureng | For practical purposes, Health Center, MCH | 483 | M | | ? | 3 1/2 km. |
| Jassong | VHW? | 640 | M | | ? | 2 km. |
| Baro Kunda | VHW? | 1322 | M | | Rice swamp farming | 2 1/2 km. |
| Jalangbereh | VHW? | 667 | M | | ? | 1 km. |
| Budayell | None? | 176 | F | | ? | 1 km. |
| **Western Division** | | | | | | |
| Gunjur | Health Center, Health PCV | 4677 | M | (J) | 1°,2° schools, tech. school | good road |
| Jambajelly | Sub-Dispensary, MCH | 1326 | M | (J) | School, mixed farm.ctr. | small road |
| Berending | MCH | 342 | M | | School | small road |
| Nyofelleh | MCH | 411 | M | (J) | ? | small road |
| Kachuma | None | <100 | J | | ? | small road |
| **McCarthy Island Div.** | | | | | | |
| Bansang | Hospital | 2119 | M | | Phone, school, garage, ferry | main road |
| Kunting | Dispensary, MCH | 668 | M | | ? | small road, 6 km from ferry |
| Medina Umfally | None | | S | | ? | |
| Ndikiri Kunda | None | 423 | S? | | ? | 5 km on main rd, then 2° rd |
| Nibras | None | 202 | S | | ? | 8 km from main rd on small rd |

Key: MCH = Maternal Child Health Team visits; VHW = Village Health Worker; PCV = Peace Corps Volunteer; M = Mandinka; W = Wolof; F = Fula; S = Serahule; J = Jola

widely in size within a community and because we are constrained to an intermediate step of sampling from lists of compounds because they are the only sampling frame available at that level, we have been forced to set some limitations on the numbers of women taken from any given compound. On the one hand, we want if possible to have at least two women from each compound in order to be able to make an estimate of "compound level" behaviors or characteristics, and to reduce the amount of "overhead" time spend by field workers in the protocol interactions prior to gaining entrance to a compound. We also want to draw more women from larger compounds so that each woman has a roughly equal chance of selection. On the other hand, we have a sample size target of 40 women in each community, which is important if we are to be able to make reasonable "community level" estimates. If a randomly sampled compound happened to be very large, it could easily dominate the village sample if all the eligible women in that compound were included. We have therefore set the following conditions for sampling of individuals.

Our first objective in sampling individuals is to get individuals from as many different compounds in a village as possible, up to a maximum of 20 compounds in a village. Our second objective is to sample 40 women per village, or as many as possible, if the village has fewer than 40 women of fertile age.

Women are eligible to be in the sample if they are between 15 and 45 years of age, or if they are the primary caretaker of a child between 0-5 years of age. This will include young women who might bear a child during the period of the study, plus women older than 45 who are the primary caretakers of children included in the study, e.g. grandmothers responsible for children whose mothers have died or are permanently absent.

The procedure for drawing this sample is as follows. When the compound

lists for a village have been drawn up, compounds will be sampled randomly without replacement until the list is exhausted or 20 compounds have been selected. The entire population of a sampled compound will be enumerated, including information required for identifying women eligible for sampling. Within a compound, the sampling frame for individuals will be the list of eligible women. From each compound, one half of the eligible women will be sampled, with a minimum sample of two, or one if there is only one. Thus in compounds with four or more eligible women, one-half of the eligible women will be sampled. In compounds with two or three women, two will be sampled. In compounds with only one eligible woman, she will be sampled. In some cases the target of 40 women per village will be over- or under-shot; if those cases are extreme values, they will be dealt with on a case by case basis; moderate variation in village sample size is acceptable.

5. Summary of Sampling Plan

The sampling plan devised for this project is a multi-stage plan with different sampling rules applied at each stage. Figure 4 presents the different steps and rules. This combination of criteria is designed to produce a sample with a total size of 800, averaging 40 women in each of twenty villages. A total sample of this size should give us room for the inevitable attrition without falling below the contractually required sample size of 600. It will give us a group of women representing the largest possible range of characteristics found in The Gambia, while at the same time being unbiased representatives of their particular characteristics.

C. Instrument Development

The general set of variables specified earlier in the paper we elaborated into specific measurement items in preparation for administration in

FIGURE 4

Summary of Sampling Plan

| Stage or Unit | Method | Sampling Frame |
|---|---|---|
| 1. Administrative Division | Purposive | Map |
| 2. Main Town | Purposive | List and map, guided by health care facility available |
| 3. Adjacent Village | Purposive | List and map, guided by lists of other stratification characteristics |
| 4. Compounds | Random | Tax lists |
| 5. Individuals | Random within quotas | Enumeration lists |

Honduras. The items were grouped into questionnaire units according to the content, the frequency with which the variable should be measured, and the limited attention span that can be expected from a busy rural mother. The objective was to produce a set of separate questionnaires that focused on different topics, could be administered at appropriate periodicity, and took roughly equal amounts of time to administer. In Honduras, this has resulted in 22 questionnaires administered to the longitudinal study cohort. The names of the instruments are given in Figure 5. These questionnaires are repeated on differing schedules, according to the frequency with which the relevant variable should be measured. Some questionnaires about the message content of the intervention are administered on half the sample (a continuing, randomly selected subset) so that the other half of the sample can be used later for a "post-only" control group on message impact. We have done this to protect against a bias caused by sensitizing the cohort to the specific messages by repeatedly asking them about recognition and acceptance of them. These questionnaires, taken as a whole, contain items measuring the entire range of variables that we have specified earlier. A list showing the set of variables being measured and the particular items that measure the variable on the different questionnaires is included as Appendix D.

The Honduras instruments have been described in detail here because they have been used as the initial input for instrument development in The Gambia. The first step was to translate the Spanish language items into English. The second step was to modify questions so that they refer to relevant parameters in The Gambia, and to add and delete items to make sure the full range of variables is measured and there are no irrelevant carry-overs from Honduras. This stage of modification, addition, and deletion is in process now, with reviews by personnel of the Gambian Ministry

FIGURE 5

Questionnaires Administered in the Longitudinal Study in Honduras

| Questionnaire Number | Questionnaire Title |
|---|---|
| 0181-02 | Register |
| 0181-03 | Household Census |
| 0181-04 | Diarrhea - Morbidity, Beliefs and Practices |
| 0181-05 | Socioeconomic Status |
| 0181-06 | Family Health Status |
| 0181-07 | Communications - Access to Media, Literacy, Mobility |
| 0181-08 | Hygiene and Water Quality |
| 0181-09 | Breastfeeding and Nutrition |
| 0181-10 | Nutrition |
| 0181-11 | Emigrants and Student Census |
| 0181-12 | Childhood Mortality |
| 0181-14 | PROCOMSI Messages |
| 0381-01 | Anthropometry |
| 0581-02 | Morbidity |
| 0781-06 | Communications - Actions |
| 0781-00 | Communications - Contacts |
| 0781-08 | Communications - Posters |
| 0781-05 | Communications - Recognition Knowledge |
| 0781-07 | Communications - Radio |
| 0881-03 | Nutrition and Breastfeeding - Mother/Children |
| 0881-02 | Nutrition and Breastfeeding - Children younger than 3 years |
| 0881-01 | Nutrition and Breastfeeding - Children over 3 and less than 5 years |

of Health and the Medical Research Council

The resulting set of items will probably be regrouped into appropriate sized units for ease of administration. The new instruments will then be translated from English into Wolof and Mandinka. The resulting translations will be given to new translators for translation back into English, so that possible confusions in the translation can be eliminated. Final versions of the questionnaires will be duplicated in Wolof and Mandinka for use by the data collectors according the the language preference of the individual being interviewed.

Obviously, there will be major differences between the Honduran and Gambian instruments, particularly in the sections covering current practices, pre-intervention measures on preventive and therapeutic behaviors, and the learning and adoption measures related to specific target behaviors in the intervention. These modifications are being coordinated by the local staffs of the implementation and evaluation contractors in The Gambia. However, the general thrust of the effort has been to maintain the maximum amount of comparability between the two projects.

D. The Issue of Controls

In the planning of the Honduras project evaluation, we devoted considerable effort to the question of whether and how appropriate control groups could be included. We concluded at that time that a range of possible internal controls existed (e.g., the household as its own control, staged implementation, natural variations in exposure, and self-determination of exposure). These internal controls, while flawed, provided a certain measure of protection in our interpretation of changes. In the Honduras case, we also discussed possible external or non-treatment controls. The reader interested in more detail should consult the section on "Provision of Control

Groups" in the September 1980 paper entitled Draft Evaluation Design - Mass Media and Health Practices Project.

The situation in The Gambia is somewhat different in that the entire country is included in the treatment area, rather than just one region as in Honduras. This has made the question of external, non-treatment controls moot. The other internal controls remain available, although they are hardly a perfect solution. We will pursue the strategy in The Gambia of using post-only controls to try to assess the effect of the measurement itself on the longitudinal cohort's behavior. The plans are still somewhat in flux, but we are leaning toward further random sampling of compounds within the communities where our field workers have been interviewing. This will not completely control for the impact of the interviewer's presence, since it will be in a community which he or she has visited regularly. However, it will ensure the comparability of the post-only group, as they will be a random sample of the same universe. Since we expect that the inter-village variability is high, it appears at this point that intra-village controls are preferable to new villages of unknown comparability. We will also follow the Honduras precedent of limiting the administration of the message-related questionnaires to a randomly selected half of the cohort, so that we can get a "post-only" measure on message recall, recognition and adoption from a group on which we have full data over time on the rest of the variables.

## ORGANIZATION AND LOGISTICS

Implicit in much of the foregoing description has been a consideration of the impact of different alternatives on logistics and the cost of carrying out the evaluation. The purpose of this section is to spell out the

organizational structure that has ultimately been arrived at, and to note where compromises have been made. The section has three main parts - field data collection plans, data handling plans, and the cycle of administration

A. Field Data Collection Plans

The main structure of the field data collection effort was outlined in the section on Site Selection. There will be four data collection clusters consisting of five villages each. A full-time data collector will live in one of the villages and travel to the other four, collecting data from a total of 200 mothers, distributed as closely to 40 mothers per village as possible.

The criteria used to select the adjacent villages required that they be quite different from the main village, in order to get our desired range of tribal, linguistic, and other characteristics. This resulted in villages located a fair distance from the residence village. In the absence of reliable public transportation, we have been forced to provide a means of transportation to the field workers. Each will be supplied with a project-owned Suzuki motorbike of 50cc displacement. Gas, oil and maintenance will be paid by the project, and use of the motorbike will be restricted to official business.

Data collection cycles will be approximately one month each, with roughly three weeks devoted to data collection and one week devoted to data coding and retraining. At least some portion of the data coding and retraining activity will be carried out in Banjul at the project office.

Recruitment and training of the field data collectors has already been carried out. A pool of over 100 applicants was screened to select qualified people who were literate in Wolof, Mandinka, and English. A two-week training session was held for eighteen of the applicants; they were given intensive

training in the theory and practice of data collection, with a special emphasis on maintaining objectivity and avoiding bias in questioning, and on supervised practice in administration of questionnaires. Four permanent data collectors and four alternates were selected at the end of the training session; they will be given additional training during the process of pretesting the questionnaire draft and enumerating compounds and families. The four alternates will be employed temporarily to collect as much data as quickly as possible during the baseline sweeps, and may be available as already trained replacements in the event that any of the data collectors terminates early. The trainees who were not selected at the end of the training course were also quite well qualified. They have been referred to an MRC project studying malarial prophylaxis that has similar data collection requirements.

B. Data Handling Plans

The data collected during each administration cycle of each instrument will be treated for logistical purposes as a separate file. Responses for each mother will be prefaced with a unique code so that the files can eventually be merged. The data will be transcribed onto standard programming code sheets and mailed to Stanford to be keyed into the computer. This procedure represents a substantial departure from the path we have followed in Honduras, where we have used AID's local computer to input data in Tegucigalpa, for preparation of a tape that is mailed to Stanford. One reason for this change is that no convenient computer facilities exist in The Gambia. Other reasons are that experience with the Honduras computer system has been quite mixed: there are undocumented incompatabilities between the data format output by the Honduras computer (WANG) and the input expected by the Stanford computer (IBM); the turn-around time for checking miscodes against

the input data has been a minimum of two months because of lon- l delays; and the file structure established in Honduras has been diff. .. match with the file structure documentation used to create the Stanford file structures. These problems are now resolved with the exception of the mail delays, but the impact has been a great deal of lost time. The system for The Gambia will make a virtue of necessity by transferring all of the computer responsibility to one locus.

C. Cycle of Administration

Plans for the cycle of administration of questionnaires are still in flux and will not become final until we have final versions of the translated items and some experience with the length of time it takes to comple'e a cycle. The general plan, at the moment, calls for a large scale sweep at the beginning of the period, just prior to the start of the intervention, to collect "basepoint" data on a large range of variables, including demographics, current knowledge and practice, morbidity, etc. Some of the items from that sweep, plus a large number of items not included in the initial sweep will be administered in repeat visits to the cohort over the following year. For example, our present plans call for the administration of anthropometric measures shortly after the sweep and then at six-month intervals thereafter for two additional cycles. Similarly, questionnaires on sugar-salt-solution knowledge and mixing behaviors, on exposure to, recognition, and recall of the communication messages, on diarrheal morbidity, on nutrition and breastfeeding, and on other preventive and treatment behaviors would be administered a total of three times each, with a scheduling as close to "beginning, middle, and end" of intervention as possible. At the end of the broadcast period, a second major sweep would be mounted, collecting post-intervention levels on essentially all the variables. For the pre- and post-intervention sweeps, additional field staff will be required

to collect the necessary data in the available time; for the other questionnaires, the permanent field staff will be able to handle the workload by themselves. The actual content of and periodicity of each questionnaire will depend in part on decisions yet to be made about grouping together different items, but the outcome should closely resemble the structure outlined above.

The total time available for data collection is approximately 15 months, beginning one month before the intervention and continuing for roughly two months after the twelve-month intervention ceases. This timetable permits full bracketing of the intervention with pre- and post-measures and should give us the best possible portrayal of change over time during the intervention period.

# APPENDICES

## APPENDIX A

## THE PROCESS MODEL

The Mass Media and Health Practices Project campaigns will attempt to change knowledge, attitudes and behaviors relating to the prevention and the treatment of infant diarrhea. The intervention is expected to result in changed health practices which in turn will lead to changes in health status. This conception of how the intervention is expected to work is diagrammed in Figure 1.

Any comprehensive approach to evaluation requires that each successive link be monitored so that useful lessons can be learned from the outcome of this project. In this way one can determine where weak links occur, or where the next step requires particular attention, and use that information to guide the planning and execution of similar projects. To that end, we have elaborated the general structure shown in Figure 1 into a more detailed version shown in Figure 2.

We will illustrate this underlying conception of the path from treatment to changed health status using as an example one specific practice the implementation campaign will probably advocate: continued breast feeding during a diarrheal episode. We describe the connections as though they were sequential links, although we realize that this is an oversimplification. Links 1 and 2 concern the existence of the treatment, links 3 to 5 the cognitive and attitudinal changes that are postulated to precede practice change, links 6 and 7 describe adoption of new behaviors and, finally, link 7 is the change in health status expected to result from the treatment.

1. Existence of the intervention. The first step is to establish the existence of campaign elements related to the topic under consideration. We will examine the extent to which the implementation effort

FIGURE 1: Postulated Relation Between Treatment and Health Change

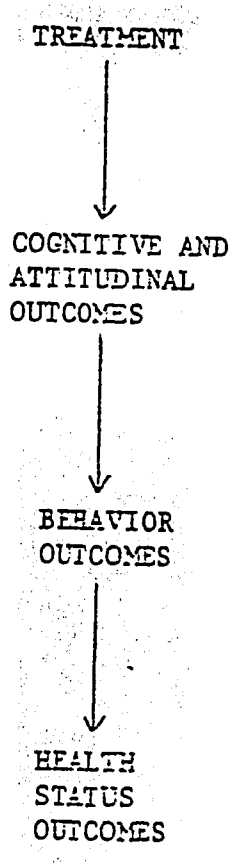
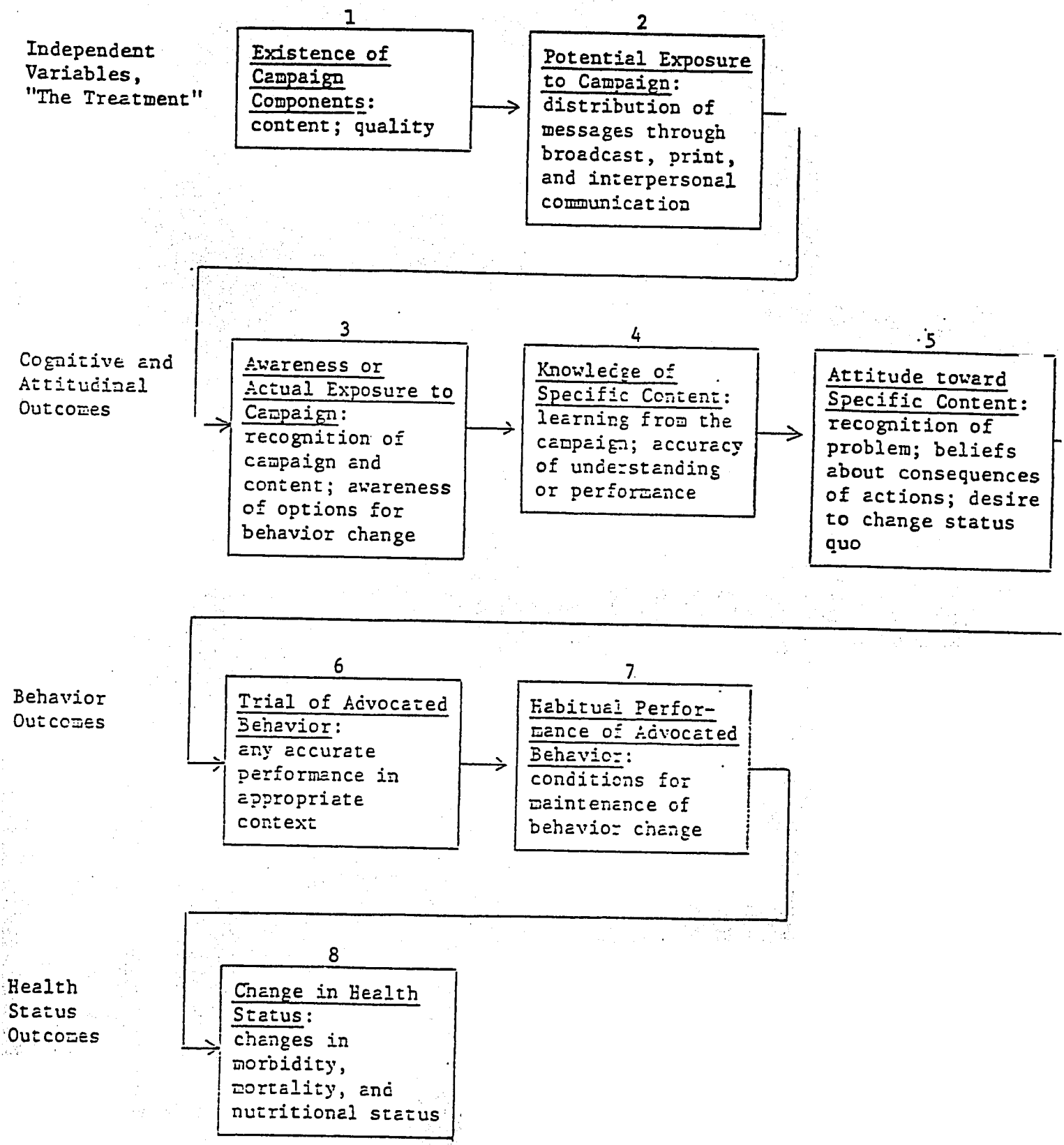


FIGURE 2: The Logical Chain From Proximal to Distal Outcomes



is devoted to the topic of breast feeding: whether radio programs or spots concern breast feeding, to what extent relevant content is incorporated in the printed materials, whether health care worker training includes instruction about the topc and instruction in how to present it to mothers.

2. Exposure to the intervention. At this level, the potential exposu to the intervention components is assessed, including the number of radio programs broadcast; times of day of broadcast; listening patterns of target audience; successful physical distribution of printed materials; posting or circulation of printed materials; numbers of client contacts with health care workers in which continuation of breast feeding is mentioned; and proportion of time devoted or relative emphasis given to this practice by health care workers.

3. Awareness of the intervention. This step tries to determine whether any of the potential exposure to the intervention actually "got through" to the target audience. It measures consciousness of actual exposure to intervention components. For example, we will ask members of the target audience to report topics of the campaign, or to recognize theme music or specific intervention messages. We will also ask target audience members to judge the frequency or relative exposure to specific components and to judge whether that exposure was sufficient.

4. Knowledge of specific content. At this stage, amount and accuracy of learning resulting from the actual exposure is measured, using such approaches as: recall of message content, that is, asking the respondent to generate a description of the content of a message

rather than merely recognize it; understanding of the content and reasons for adopting the behavior; accuracy and level of detail of knowledge of the advocated practice; and ability to exercise new skills.

5. Attitude toward specific content. At this stage we focus on acceptance of or reaction to advocated behaviors. Typical topics for measurement include: recognition of the current practice as a problem; beliefs about the current practice and the consequences of adopting the advocated practice; level of desire to depart from the status quo; perception of own position in relation to community norms; perceived conflict of advocated behavior with other valued beliefs or practices; and attitudes towards message sources.

6. Trial of advocated behavior. This next stage is to discover whether, when confronting an appropriate context, mothers have ever accurately performed the behavior. For some behaviors this can be measured by observation, but in the case of continued breast feeding during a diarrheal episode, we will depend on self-report, along with adequate description of the context and corroboration by other sources.

7. Habitual performance of advocated behavior. This step investigates whether there has been repeated or habitual performance, and the conditions required for maintaining the behavior. When possible, the behavior will be observed. In the present case we will depend on self-report, as noted above. Accuracy of performance and rate of display of the behavior under appropriate circumstances need to be measured. This investigation will attempt to determine the conditions that lead to continued practice of the new behavior.

8. Change in health status. The final stage involves the measurement of whether the changes in health behaviors produce a detectable

effect on health status. In the case of continued breast feeding, a likely effect is a change in nutritional status or growth velocity. For other advocated behaviors, morbidity or mortality measures might be better suited. (Note that we are only describing appropriate measures, not suggesting ways of demonstrating causal relationships.)

Measuring the impact of each of these successive links in the chain will provide information of a detailed nature about exactly where the program is successful, and what types of remedial action to take to improve the situation. The information obtained in these measurements has a value that extends to other projects as well, because this model is quite general.

The actual structure of the evaluation does not follow the structure of the model; instead, the evaluation structure is dictated by methodological and logistical issues. The model of the process involved is interwoven throughout the evaluation because it serves as the basis for criteria for decision making among methodological alternatives.

# APPENDIX B

## VARIABLE CLUSTERS

I. DEMO Characteristics of the family

A. Enumeration of the household

For each person in household (as appropriate)

age
sex
relationship to head of household
civil status
level of education•
occupation
religion

2. For each child under five

where born (home, hospital)
who attended birth
how long breast fed
when weaning food started

B. Enumeration of non-resident family members

1. Adults living elsewhere (where?)

2. Children living elsewhere (where? school?)

3. Dead children - what was cause of death?

C. Relationship to others in community

II. COM Communication Variables

A. Radio Use

1. If radio in home

a) functioning?
is it working now?
does it break often?
where do you get batteries?
where do you get it fixed?

b) hours listened?
when is radio turned on?
what programs?

c) decisions about use
for major listening time (am, pm)
who decides when the radio is turned on,
to which stations?

2. If no radio in home, access elsewhere in community?

B. Other media

1. Books, magazines in home?

2. See a newspaper?

C. Literacy

1. Report on who can read

2. Report on who can write

3. Literacy test of person considered most literate (can be child)

D. Mobility and travel

1. Visits to cabecera - how often, who?

2. Visits to capital - how often, who?

3. Familiarity with bus schedules, routes

4. Who comes in from outside? How often?

5. Where does news come from?

III. SES Socioeconomic level of household

A. Land tenure and use

1. How many manzanas does family own?

2. How many manzanas does family rent?

3. How many manzanas does family farm?

B. House ownership

1. Who owns house?

C. House construction and quality

Floor type

Wall type

Roof type

# rooms and divisions

Furniture

D. Employment and occupational characteristics

Primary, secondary occupation

Subsistence, farming, cash cropping

Seasonal occupation for work

Agricultural wage labor

E. Remittances and salaries

Money from non-resident family members

Wage earned, regularly, seasonally

F. Expenses by Season

1. Medical

2. Schooling

3. Clothes

4. Staples

IV. SAN Sanitation Variables

A. Use of Soap

1. Is there a bar of soap in the house?

a) If yes, what is it used for?

b) How often is a new one purchased?

2. If no, has household had soap in past

B. Toilet Facilities

1. What kind? Who uses?

2. Chamber pots used?

a) If yes, where emptied?

C. Water Purity

1. Water source

a) Where does water come from (by season)?

b) How often is it obtained?

c) Ever boiled?

2. How is water stored?

a) Off, on ground

b) Covered containers

c) How is water dipped?

V. DIA General Beliefs and Practices about Diarrhea

Begin with description of last episode

How long?
What caused it?
What did you do?

A. Salience of diarrhea

1. How important a health problem is diarrhea?

2. How often do children in household have diarrhea?

3. How is existence of an episode defined?

4. Assessment of severity

B. Commitment to folk medical system

1. Cause of diarrhea

2. Use of MOH medical system

3. Use of folk system

C. Appropriateness of treatment

1. Use of purgatives

2. Feeding practices during episode

3. Use of medicines

4. Use or oral rehydration

D. Decisions to seek care

VI. NUT General nutritional level in family

A. Food Variety

1. Foods eaten last week (check list)

2. Other foods sometimes eaten

B. Food Quality

(children, nursing mothers)

# eggs eaten per week

when and if chicken, when meat eaten

staple quantity, if corn, rice, beans

fruits eaten?

VII. HEA General health level in family

A. Amount of sickness

1. Who gets sick most often? How often?

2. What have been major health problems?

3. How many times have family members been taken to hospital?

B. Use of traditional health care system

If child has ojo, who do you go to for treatment?

parteras

plant remedies

family member who makes decisions?

C. Use of modern health care system

visits to clinic, hospital

vaccination certificate

medicine in house

visits to personnel - doctors, pharmacists

travel time to clinic

VIII. CC Child Care Practices

A. Level of responsibility of caretakers

1. Who feeds, cooks for, dresses, watches child?

B. Exposure to contamination

1. Does child have (wear) shoes? adequate clothing?

2. With whom does child sleep?

# APPENDIX C

## RESEARCH QUESTIONS

As the description of the genesis of this project makes clear, it is not a simple experiment testing a limited range of hypothoses. It is, instead a very broad thrust in the direction of developing effective, affordable methodologies for producing significant progress in major problem areas. It represents the synthesis of a diverse set of experiences and the application of that synthesis to a problem with many different facets. In this context, any attempt to make concise statements of the major research questions addressed in the project denies the potential richness of the information available to us. However, it is clear that some relatively general organization of the issues of interest is required in order to guide both the planning of the research and the presentation of the findings.

In grappling with this problem, we have concluded that the research questions can be organized along two different dimensions - the community to whom the information is of interest, and the level of generality of the question itself.

### Communities of Interest

One of the features that characterizes this project is that a variety of professional communities (or disciplines or constituencies) have an interest in the results. Each discipline regards the problem from its own unique perspective and requires an answer that is phrased in terms familiar to the community. An initial attempt to identify the various constituencies for the evaluation findings resulted in a very long and not terribly useful list. Examination of the list, however, revealed that the disciplines tended to have one of a few perspectives in common. We have organized the communities

into three groups with differing perspectives on the project. The groups, with examples of their membership are as follows:

- social science perspective, including disciplines such as communication research, rural sociology, anthropology, and social marketing;

  health perspective, including nutrition, pediatric medicine, public health, and health education;

  development planning perspectives, including project design and management, health planning, water and sanitation planning, manpower planning and training, and resource allocation decision-making.

Each group can be expected to be interested in different aspects of the problem, and to desire an answer that is expressed in familiar terms.

Levels of Generality

In addition to the range of questions posed by the constituencies for this research, there is variability within groups as to the levels of generality of the questions they ask. For example, someone in the development planning persepctive might legitimately ask the following types of questions about this project: "What personnel and financial resources do I have to put into a project of this sort?"; "What payoffs do I get for putting more of one of the components (say, more formative evaluation or more face-to-face communication) into the mix?"; and "How does this use of resources compare to other possible applications?" Similarly, someone in the health community might ask a series of questions of this sort: "Are mothers who receive instruction under this project using oral rehydration therapy in their homes?'; "Did children who received oral rehydration therapy show nutritional or health gains?"; and "Can oral rehydration therapy applied

outside a clinic setting be a powerful public health measure?"

These sets of questions are intended to illustrate the range of levels of generality of questions the evaluation might hope to address. For the sake of simplicity, we have categorized them into three levels:

- planning and implementation questions. These are questions that are essentially descriptive of the actions of the project and the environment within which it is operating. They have to do mostly with the specific process of this intervention.

- impact questions. This category included questions relating to what happened in this project in terms of cognitive, behavioral, and health status changes. This is the usual level of generality for evaluation questions, which typically ask, "What happened as a result of this project?"

- generalizability or policy questions. This level of questions extrapolates from the project at hand to try to formulate lessons for broader application. The Mass Media and Health Practices project has the unique advantage of having two similar implementations in differing cultural contexts that will create a solid base for the extrapolation and permit us to address the question, "How do projects of this type generally work?"

At each higher level of generality, measurement problems increase and the confidence with which one can state results or relationships diminishes. At the lowest level, it is possible to measure and describe the environment and project actions with considerable accuracy. At the impact level, measures of the change on some dependent variables, such as knowledge gain, are straightforward and likely to show a change. On others, such as health

status change, the probable change is much smaller and may be difficult to detect. It may be close to impossible to say with much confidence that whatever changes are observed should be attributed to the intervention. Finally, at the highest level of generality, the connection to hard data is at its most tenuous state. Much of what can be said must be based not only on the specific data from this project, but also on such nebulous quantities as "professional judgement," or "synthesis of experience."

In the research plan presented in subsequent sections, we have tried to strike a reasonable balance in allocating evaluation resources in order to maximize the return on the investment in evaluation. We have used three criteria for making these judgements:

How likely are we to get a definitive answer?

Who wants to know the answer?

How much will it cost to get the answer?

Although we are forced to list these questions linearly, they are not in order of importance. In fact, deciding how much weight to give to each of them will be extraordinarily difficult. In general, we will find that the answers of most interest to important audiences are the hardest and most expensive to come by.

Primary Research Questions

Having said all that, it is now possible to state the research questions of primary interest to each community. These can be expressed most economically at the highest level of generality - - at the lower levels, the questions multiply into an unmanageable array of detail.

The following expression of the questions is not meant to be definitive, but to indicate the realm of information that is of primary interest. For each different disciplinary perspective, the primary research questions are:

- social science perspective: "What are the processes and constraints that influence the adoption and maintenance of new behaviors, and what implications do those processes and constraints have for the design of interventions to change behavior?"

- health perspective: "Can a decentralized program on the prevention and treatment of infant diarrhea, including as a major component the use of oral rehydration therapy in a non-clinic setting, have an appreciable impact on aggregat health status?"

- development planning perspective: "Is this methodology effective, affordable, and manageable as a means of attacking development problems?"

The more detailed questions, the answers to which are required in order to approximate an answer to the primary question, are too numerous to list exhaustively. In Table 1, illustrative questions at each level of generality are given for each of the communities of interest. Previous reports on the evaluation planning have presented some of the issues in tabular form. The interested reader is referred to project reports, "Evaluation Planning Report: Specification of Variables and Measures," January, 1980; "Evaluation Issues and Preliminary Planning," April, 1980; and "Draft Evaluation Design," September, 1980.

TABLE 1

ILLUSTRATIVE RESEARCH QUESTIONS BY LEVEL OF GENERALITY AND COMMUNITY OF INTEREST

| LEVEL OF GENERALITY | COMMUNITY OF INTEREST | | |
|---|---|---|---|
| | Social Science Perspective | Health Perspective | Development Planning Perspective |
| Planning and Implementation Questions | Who listens to what on the radio? How are decisions made within the family? Who takes care of small children?<br>What are the levels of literacy and formal education?<br>To what print materials are rural people routinely exposed?<br>How great a penetration do the various components of the campaign achieve in the countryside?<br>What messages can people recall or recognize from the campaign?<br>What are aspects of family structure, community organization, or economic activity that are relevant?<br>What social or economic constraints limit current practices?<br>How prevalent are: functioning radio? availablity of soap? infant formula? diarrheal medicines other than oral rehydration therapy? vegetables? treated water? latrines? wage employment? | What are current information levels about health matters? from what sources does the information come?<br>What are traditional responses to diarrheal disease?<br>What are current infant feeding and weaning practices?<br>What are current attitudes toward the Western medical system?<br>What preventive measures are now practiced?<br>What health services are currently available to campesinos and what is the level of use?<br>What are current practices in the areas of domestic water supply, human waste disposal, personal hygiene, food preparation?<br>Do people perceive diarrhea as a salient problem? | What resources in terms of trained or experienced personnel exist for media, logistical, medical, and research components of the project?<br>What is the magnitude of the current diarrheal problem? Is it a tractable problem from a public health perspective? |

TABLE 1 (cont.)

| | | | |
|---|---|---|---|
| Impact Questions | Were changes in levels of morbidity, mortality, or nutrition related to the amount of exposure to the campaign elements? to any particular element?<br>What role did the formative evaluation play in improving messages?<br>Can any systematic relationships between format or structure of messages and effectiveness be detected?<br>What role did the planning research play in shaping the project? in improving its effectiveness?<br>Do different tasks function best when assigned to particular channels of communication?<br>What are the influences of secondary transmission of information within the community?<br>What aspects of the diarrheal disease problem appear to be information problems rather than environment or resource problems? | Did morbidity levels drop? Did nutritional levels rise?<br>Did attitudes toward traditional or modern medical systems change?<br>What is the relationship between gastrointestinal infection and growth velocities? between chronic malnutrition and predisposition to infection? between participation in preventive measures and morbidity levels?<br>Does early oral rehydration therapy prevent or reduce the severity of dehydration? give quicker appetite recovery? give quicker return to normal intestinal absorption?<br>How safe and effective does administration of oral rehydration therapy based on home-mix appear to be? | What is the relationship between use of different levels of health care facility and health status?<br>Were the logistics of the delivery system successfuly handled?<br>How does the absolute level of impact compare to a comparable investment in, say, water supply systems? |

TABLE 1 (cont.)

| | | | |
|---|---|---|---|
| Policy Questions | What are the processes and constraints that influence the adoption and maintenance of new behaviors, and what implications do those processes and constraints have for the design of interventions to change behavior? | Can a decentralized program on the treatment and prevention of infant diarrhea including as a major component the use of oral rehydration therapy in a non-clinic setting, have an appreciable impact on aggregate health status? | Is this methodology effective, affordable, and manageable as a means of attacking development problems? |

APPENDIX D

LIST OF VARIABLES AND THEIR LOCATIONS IN QUESTIONNAIRES

The following is a breakdown of pertinent variables by subject and location in instruments developed by Evaluacion PROCOMSI. The variables were chosen from the "Medidas de las Variables" (Measurement of the Variables) given in the Annual Report and updated to include the instruments up to February 1982.

| Variable | Questionnaire |
|---|---|
| 1. Diarrhea | |
| a. episodes (morbidity) | a. Diarrhea - 7a<br>Morbilidad - 1a - 2b, 22a-c |
| b. folk beliefs | b. Diarrhea - 13, 20-23, 18<br>Nivel de Salud - 6, 9, 10, 12<br>Medidas de Conocimiento - 27, 28<br>Mensajes de PROCOMSI - 10-13, 1-9 |
| c. causing mortality | c. Ninos Muertos - reason for death<br>Medidas de Conocimiento - 3, 4<br>Hojas de Ninos Muertos<br>Diarrhea - 10 |
| d. causes of | d. Mensajes de PROCOMSI - 2, 9, 11<br>Diarrhea - 4<br>Acciones de Entrevistado - 13b<br>Nivel de Salud - 10 |
| e. treatment | e. Mensajes de PROCOMSI - 13<br>Nivel de Salud - 6<br>Morbilidad - 16, 19, 20, 21, 22e, 22f, 22g, 22h, 22i<br>Amam/Nutr. de Madre - 3, 4<br>Acciones del Entrevistado - 13a, 14, 18<br>Diarrhea - 8, 9, 11 |
| 2. Dehydration | |
| a. knowledge of | a. Medidas de Conocimiento - 1, 2<br>Para Expertos (only administered to health workers) |
| b. signs of | b. Diarrhea - 7a<br>Morbilidad - 10-14 |
| c. radio spots about | c. Medidas de Conocimiento - 11, 15, 16 |

| Variable | Questionnaire |
|---|---|
| **3. Litrosol** | |
| a. use of | a. Morbilidad - 16, 16a-d, 22e<br>Acciones de Entrevistado - 14, 18, 19<br>Medidas de Conocimiento - 39 |
| b. knowledge of preparation | b. Acciones de Entrevistado - 16a-f, 17a-f<br>Medidas de Conocimiento - 22 |
| c. radio spots about | c. Medidas de Conocimiento - 15, 20 |
| d. opinions about | d. Medidas de Conocimiento - 40, 41 |
| e. distribution | e. Morbilidad - 16c-d<br>Datos Generales de la Comunidad (administered once a month in the community) |
| f. exposure (courses, posters, etc.) | f. Medicion de Afiches - 3, 4<br>Acciones de Entrevistado - 17<br>Contactos Posibles - 9a.5, 9b.5 |
| **4. Messages from PROCOMSI** | |
| a. recognition of radio messages | a. Medidas de Conocimiento - 9-25<br>Conteo Radial |
| b. exposure to posters | b. Medicion de Afiches - 3a-g, 4a-g |
| c. recall of posters | c. Medicion de Afiches - 3a-g, 4a-g |
| d. 24-hour radio recall | d. Conteo Radial |
| **5. Communication Characteristics of the Community** | |
| a. who are they visited by | a. Comunicacion - 18<br>Contactos Posibles - 9a.1-9, 9b.1-9 |
| b. mobility to cities | b. Comunicacion - 16, 17<br>Datos Generales de Comunicacion (administered every month in the town) |
| c. possession of radio | c. Contactos Posibles - 1-4<br>Comunicacion - 1-4<br>Socio-Economico - 22 |
| d. radio listening | d. Contactos Posibles - 5,6<br>Comunicacion - 7-10 |
| e. Literacy and exposure to written materials | e. Comunicacion - 11-15. |
| **6. Health Characteristics of Community** | |
| a. water source and use | a. Hygiene - 1, 1a, 2,3,5<br>Acciones de Entrevistad - 1 |
| b. visits by health representative or promotor | b. Contactos Posibles - 9b.1-9<br>Information from "Datos de Nivel de Cesar" about visits of doctors, nurses, and auxiliary nurses in the community. |

| Variable | Questionnaire |
|---|---|
| 7. Hygiene Practices | |
| a. boiling and storage of water | a. Nivel de Salud - 8<br>Higiene - 4-9<br>Acciones de Entrevistado - 2,3<br>Medidas de Conocimiento - 31-33 |
| b. soap use | b. Acciones de Entrevistado - 4,5,6a-c, 7<br>Higiene - 9<br>Socio-Economico - 48d<br>Mensajes de PROCOMSI - 5 (Yusc./Danli) |
| c. boil cow's milk | c. Amamantamiento - 12 |
| d. use and storage of diapers | d. Acciones de Entrevistado - 8, 9, 10a-b |
| e. hygiene and food preparation | e. Acciones de Entrevistado - 12<br>Medidas de Conocimiento - 36, 37 |
| f. waste and garbage disposal | f. Socio-Economico - 16, 17<br>Higiene - 11, 12 |
| 8. General Health Status of Family | |
| a. hospitalization | a. Nivel de Salud - 4, 5 |
| b. opinions of children's health | b. Amamantamiento - 8, 9, 10 |
| c. who attended child's birth | c. Contactos Posibles - 9a.3<br>Nivel de Salud - 3 |
| d. who gets sickest of the family | d. Nivel de Salud - 7 |
| °. Breastfeeding and Mixed Feeding | |
| a. breastfeeding only, times per day | a. Amam/Nutr. menores de 3 anos - 1-3, 8, 14-16<br>Amam/Nutr - mayores de 3 anos - 1,2<br>Amamantamiento - 1, 5 |
| b. bottlefeeding only, times per day | b. Amam/Nutr. menores de 3 - 4a-b, 6a-b, 7-10<br>Amam/Nutr. meyores de 3 - 3,4,5, 6a<br>Amamantamiento - 5 |
| c. breastfeeding and bottle-feeding simultaneously | c. Amam/Nutr. menores de 3 - 11<br>Amamantamiento - 1 |
| d. in relation to diarrhea | d. Amam/Nutr de la Madre - 2<br>Diarrhea - 16<br>Morbilidad - 15, 15a, 15b |
| e. in relation to diet or food restrictions | e. Amam/Nutr. de madre - 6, 7, 10, 11, 12 |

| Variable | Questionnaire |
|---|---|
| **10. Nutrition Recall and Eating Habits** | |
| a. during and after episodes of diarrhea and other illness | a. Amam/Nutr. de Madre - 3, 4, 5<br>Morbilidad - 18a-k<br>Diarrhea - 11, 14, 15-17 |
| b. diet for pregnant women | b. Amam/Nutr. de Madre - 6-9 |
| c. diet for breastfeeding women | c. Amam/Nutr de Madre - 6, 7, 10, 11 |
| d. recall for children under three years | d. Amam/Nutr de menores de 3 - 4a-g, 6a-g, 12<br>Amamantamiento - 4 |
| e. recall for children 3-6 years | e. Amam/Nutr. de mayores de 3 - 6a-g<br>Amamantamiento - 4 |
| f. one week family consumption of food | f. Nutricion - 1a-dd, 2-6 |
| g. preparation of food for household | g. Amamantamiento - 2,3,6,7<br>Amam/Nutr de la Madre - 1 |
| **11. Mortality** | |
| a. infant mortality | a. Ninos Muertos<br>Hoja de Ninos Muertos |
| **12. Demography and Household Census** | |
| a. enumeration, birthdays, marital status, relationship to head of household, occupation, education | a. Enumeracion de la Familia<br>Socio I<br>Estudiante y Imigrantes |
| b. who studies of send money and lives away from the family | b. Estudiantes y Imigrantes |
| c. changes in household (deaths, migration, immigration, births, changes of houses | c. Nuevos Datos de Enumeracion |
| **13. Socio-Economic Characteristics** | |
| a. type of house lived in | a. Socio-Economico II - 1-13, 15 |
| b. possessions in house | b. Socio-Economico II - 14, 17, 22, 23, 24, 46.a, 46.b, 46.d, 46.e, 46, g, 46.h, 46.i. |
| c. lighting in house | c. Socio-Economico - 21 |
| d. quantity of land owned and cultivated | d. Socio-Economico - 34-38 |
| e. production of household (crops and foodstuffs) | e. Socio-Economico - 39a-e, 41-45 |

| Variable | Questionnaire |
|---|---|
| f. number of animals owned | f. Socio-Economic - 40a-d |
| g. weekly and yearly expenditures of household | g. Socio-Economic - 48a-m, 49-51 |
| h. occupation and salary of workers in household | h. Socio-I - 31.1, 32.1 |
| i. money received from relatives living outside home | i. Estudiantes y Imigrantes - 10 |
| 14. Growth and Development | |
| a. height, weight, head circumference, arm circumference, sub-scapular skinfold, triceps skinfold and arm length measurement for each child under 5 years | a. Antropometrica |
| b. Signs of edema | b. Antropometrica |