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INCREASING ORAL REHYDRATION THERAPY IN RURAL HAITI  
THROUGH COMMUNITY PARTICIPATION

FINAL REPORT

SUBMITTED BY

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INCREASING ORAL REHYDRATION THERAPY IN RURAL HAITI  
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EXECUTIVE SUMMARY

INTRODUCTION

Severe dehydration is responsible for one half of the deaths of children under five in Haiti (Berggren et al, 1982/3). A considerable body of literature points to the need to extend the impact of oral rehydration therapy to the rural areas through enlisting community resources (Kols et al, 1982). To reach at-risk populations, an infrastructure must be developed at the local level to augment the extremely limited manpower of the local health district. With regard to reliance upon the local level, manpower resources which suggest themselves in rural Haiti include: the village leadership, teachers, students, traditional birth attendants, and shop owners. In order to be able to take advantage of this local resource base, there is need to develop a system of reaching the community on a systematic basis, and for developing the teaching skills of these volunteer workers so that they can pass on these complex skills to the family (Touchette, PE 1983).

STUDY PURPOSE

The overall goal of this study was to find a model for reducing death from acute diarrhea leading to dehydration through the appropriate oral rehydration therapy. The operational objective of the study was originally to determine ways of using community organization techniques to address the production, distribution, inventorying, acquisition, and appropriate use of oral rehydration solution. As the study progressed, the focus shifted from organizing the community to that of mobilizing existing resources of the community (formal groups, informal networks, institutions, and leadership) to improve the distribution of oral rehydration packets, to increase their availability and use of ORS (both packets and home mix), to ensure the appropriate preparation and administration, and to facilitate the improved management of diarrheal cases among children under five by their caretakers.

BACKGROUND

The Haitian Ministry of Health has selected as its number one health priority the reduction of deaths from diarrhea (Jasmin, 1986). The Haitian Association des Oeuvres Privées de Santé (AOPS) and the University of South Carolina School of Public Health (USC), in collaboration with the Haitian Ministry of Public Health and Population (MOHP), were funded by USAID for two years through a PRICOR subagreement to study how best to increase the household use of oral rehydration solution (ORS) through the involvement of community resources. Begun in April 1984, the project ended in March, 1986. The project site was the Petit Goave Health District in the Western Public Health Region of Haiti (see figure 1 in the full report). The district has had an oral rehydration program since 1982. Locally made packets are distributed through the health centers. An initial examination of rural Haitian communities as exemplified by the Petit Goave Health District indicated the existence of a wide range of potential resources to be used in promoting oral rehydration therapy. These include the small postes de vente, the itinerant peddlars, the village residents who are sellers in the markets in the main towns, the school teachers, the traditional health workers, and others. At the

same time, there is an apparent lack of infrastructure at the local community level for integrating these resources into an overall strategy. The nature of the ORS program had already been determined at the national level, leaving little chance initially for input by village level decision makers. Thus, the focus of this operations research study was on community participation. Control was at the district level although based on mobilizing the community resources identified in this study. Thus, volunteer participation by villagers was limited to facilitating the promotion of oral rehydration products and their preparation and administration. It was judged best to integrate the efforts of the various agencies at the village level and to coordinate them at the district level through the District Health Office.

#### OVERVIEW OF METHODOLOGY

For the problem analysis phase, a series of overlapping data collection instruments was employed to gain different perspectives on the system components important in increasing the caretaker's ability to prepare and administer oral rehydration therapy correctly, and to refer the underfive to medical care in severe cases of dehydration. This phase covered the period April, 1984 to March, 1985.

The solution development phase consisted of initial analysis of each of the studies mentioned above. The objectives of the study were four: to improve 1) acquisition, 2) preparation, and 3) administration of oral rehydration to under fives, and 4) appropriate referral of severe cases to treatment. Independent variables which were found to have a relationship to the four study objectives were identified and models developed for each in terms of these variables. These four models were laid out in summary form and presented to members of the project policy committee (including members of the national campaign against diarrhea) for their comments using a nominal group process. These models were then revised and presented to the Petit Goave District health committee and to leaders of the intervention communities for their comments. Finally, these four models were combined into a single system with four components, and assignments for further development of each component were made to project staff. This phase covered the period April, 1985 - July, 1985.

The field test phase, which covered the period August, 1985 through March, 1986 (including the intervention from November through January) consisted of four steps: 1) a pretest based on items selected from the problem analysis phase and revised based on the experience with surveys on pretest results; 2) retraining of 'agents de sante' and training of school teachers, TBA's, village leaders, and owners of ORS sales posts; 3) the intervention which, as indicated elsewhere, was truncated to a total of two and one half months from the originally scheduled 11 months; and 4) a post test which was a virtual replication of the pretest. The field test consisted of educational and promotional efforts by the school teachers, village leaders, TBA's, and owners of ORS sales posts. Their work was supervised by the 'agents de sante' seconded to the project area on a part-time basis by the Health District Office. Each was responsible for two villages.

#### TIMETABLE

The initial planning analysis phase started about a month late and finished later than planned. The solution development phase started late as

well. This was in part due to the desire to carry out surveys of school teachers and market sellers (see under problem analysis). The intervention period was terminated in January, 1986, due to political disturbances in the country. One of the most intense centers was the Petit Goave area. Thus, the intervention period, planned for 11 months, covered about two and one half. A major factor in the delay in the various project activities was the very long delay in the problem analysis phase, coupled with the slow data analysis mentioned in the report.

## PROBLEM ANALYSIS

The objectives of the problem analysis phase of the study were two: 1) to identify the major obstacles to wider effective caretaker use of ORT, and 2) to set priorities among these problems for operations research. The methodology employed in achieving these two objectives included identification of obstacles through the use of focused groups, a household KAP study, a household socioeconomic study, an initial quick study of ORS usage levels, a study of community leaders' willingness to help promote ORS and of examples of previous community participation efforts in each community, a study of sellers in the main market who come from surrounding villages, a study of owners of ORS sales posts, interviews with residents living at different distances from these posts, and a study of health facilities and the ORT program in the Health District.

Twenty villages in the District were selected for inclusion in the study. The villages were selected in order to complete a design matrix in such a way that there would be at least two villages in each of the eight study conditions: with or without a school or church, with or without an external agent, and with or without a retail shop or market. Caretakers in households containing at least one child under five comprise the study population. Interviewing was carried out by a team of trained field interviewers with at least entry into secondary school. An additional person was hired to serve as project editor/coder. Data processing was carried out on a Radio Shack TRS-80 Model 12 and a compatible statistical package.

Problem analysis variables were organized under the following headings: 1. constraints (non-manipulable); 2. controls (under the control of an agency other than that of the program); 3. decision variables (potential program activities); 4. outputs (intermediate factors influencing behavior change); and 5. outcomes (behavior change or project dependent variables). Those variables which fell primarily into the 'decision variable' category and some 'control' variables were then grouped under the headings of the four dependent variables and organized into a package which were presented to the policy committee for advice. The following were identified as the major sub-problems for which solutions would be sought: limited availability and accessibility of ORS at the village level; relatively low levels of caretaker ORS usage are related to community and individual characteristics; inadequate caretaker knowledge of how to prepare ORS; inadequate caretaker knowledge of appropriate management of diarrhea and dehydration cases; and inadequate use of services for severely dehydrated children.

Study results of respondents showed that 64% indicate that they had heard of something called ORS. 48% reported using ORS when their children have diarrhea. 60% of those use packet, 1% use home mix, and the other 39% did not

indicate the form of ORS used. 43% identified the color of the powder correctly. 40% indicated the correct mixture for packet ORS and 9% for home mix. 18% reported giving ORS on the first day of diarrhea and 11% on day 2 or 3. Major constraints included: 1. lack of a resident health worker; 2. distance and inaccessibility of villages; and 3. limited transportation options. Slow turnaround in data entering and processing and political disturbances also constrained the field test.

#### SOLUTION DEVELOPMENT

The greatest challenge of the solution development phase was the integration of results from a number of independent studies. The final product, therefore, must be seen as resulting from a qualitative process rather than a quantitative one. This was first based on the apparent relation of specific independent variables to the objectives of the study: to improve acquisition, preparation, and administration of ORS, and referral of severe cases. Second, it involved the input of project staff and experiences gleaned from the literature. This led to a fairly complex solution development process. Steps in the solution development process included: 1. presenting results of the problem analysis phase to the Project Policy Committee and involving the Policy Committee in the development of a proposed solution; 2. presenting the solution proposal to representatives of the Petit Goave Health District Committee and to representatives of the intervention villages; 3. and comparing the revised solution proposal with the results of a Microdynamo computer simulation. Three groups were involved in the solution development process: 1) the policy committee for the project consisting of representatives of national programs; 2) the district advisory committee for oral rehydration which has been created through the efforts of the District Medical Officer; and 3) the community leadership, and representatives of the potential participants.

Based on the process described above, a revised solution was developed. It included: 1) increasing packet availability, 2) emphasizing standardization of home mix 3) determining and improving care capabilities; and 4) training and education of community resources. The task of developing each of the sectors was assigned to various project team members.

#### SOLUTION VALIDATION

The solution validation phase of the project consisted of a pretest, the training of groups identified in the solution development, a field test of two and one half months and a post test.

A significant part of the solution to be tested involved reliance upon community residents including community and church leaders, TBAs, market sellers and "poste de vente" owners in the promotion of ORS and instruction in how to prepare and administer the solution. Educational objectives were established for each of the different categories of volunteer educators. Training curricula consisted of a series of modules which were adapted slightly for each of the audiences above. Pre and post tests were carried out and 119 people were trained. Objectives of the training program included: 1) improving storage of ORS packets in the poste de vente; 2) correct preparation and administration of ORS (packets and home mix); and 3) enhancing care of children who present at clinic with severe dehydration with referral as appropriate.

As soon as training was completed, trained education volunteers were asked to start working in their communities. Health assistants (agents de sante) were assigned to visit the ten intervention communities to supervise the

work of the volunteers.

## RESULTS

The study identified four priority sub-problems: 1) ORS availability; 2) ORS usage; 3) ORT knowledge; and 4) clinical treatment and referral of children with severe dehydration. Community-based solutions were developed and tested to address only the first three. Results of the field test are summarized below.

### ORS availability and usage

Twenty-eight (28) "postes de vente" were opened in the intervention villages after involving the community in the selection of people to sell the ORS packets. Training was provided to the operators in storage and promotion techniques. Interviewers were sent to the field in late December to do a qualitative analysis of the extent to which the new 'postes' were operating. A survey found that all sellers had placed ORS signs in front of their "postes"; packets were appropriately stored; and sellers were able to explain how to prepare ORS correctly. These results suggested that the training had had an effect. A study indicated that the overwhelming majority of the new 'postes' were known to the leadership of those localities as of that date.

At the posttest, 86% of the intervention village mothers claimed that they were able to find ORS packets in their localities as opposed to only 25% in the pretest, demonstrating a significant positive change since the inauguration of the new 'postes'. Moreover, 73.5% of posttest respondents mentioned a 'poste de vente' as a source of ORS packets (compared with 32% in the pretest) and 87% of these claimed they used ORS the last time their children had diarrhea. This represents a major increase over the 32 of the pretest. In addition, 87% of the ORS users were aware of a 'poste de vente' in their village as opposed to only 63% of non-users.

The program appeared to have little impact on the use of home mix ORS. The reported use of packets increased relatively ((post test/pretest X 100)-100) from by 32.6% (from 38.9% in the pretest to 51.6% in the posttest). In the control villages, respondents reported that ORS usage increased relatively 23.1% (from 42.7% to 52.6%). Although in the expected direction, the difference in use change between intervention and control villages was not statistically significant. A standardized home mix formula was developed and promoted through training of teachers, TBAs, and mothers of under fives identified by the TBAs. This may be because there was a much greater effort given to the promotion of ORS packets, and the fact that the national program promotes only packet ORS.

### Correct preparation and administration of ORS

#### The total sample

There was a statistically significant improvement (58%) in knowledge of correct preparation among the entire sample within the intervention villages from pretest (36.7%) to post test (58%) showing a relative increase of 58% while the the control villages showed a very slight decrease (from 44.9% to 44.3%).

Responses to the item on knowledge of when to begin giving the solution showed that the proportion of correct answers rose in the intervention villages by 71% (from 21% in the pretest to 36.1% in the post test), while those in the

control villages rose 40% (from 19.8% to 27.9%). The significance level of this difference is not adequate to demonstrate a true difference.

In regard to how often to give the solution, there was an increase 18 times higher in the intervention than in the control communities.

Correct responses to the question of how to give the solution rose 48% in the intervention villages (from 47.6% to 70.5%), while in the control villages, they rose 25% (from 54.1% and 67.7%). Although the differences in change of knowledge levels are small between the two groups, the percent change is not significant.

#### Responses of reported users of ORS

When responses of ORS users are considered alone, the differences between intervention and control villages show greater variability in both magnitude and direction. The results indicate that levels of knowledge about how to give the solution appeared to be higher among the total population than for the 'users only' group. This points to the need to reach users as well as non-users with information on ORS.

Results of a KAP study showed that the program had more effect in changing knowledge than attitudes. In the training programs, there had been a focus on the cognitive side of education, rather than the affective, which may explain the considerable increase in knowledge related to preparation of ORS and the relatively small increase in reported use. These results demonstrated that it is possible to have an impact on knowledge levels through the use of trained village-based volunteers. A refocusing of the educational effort could generate significant change in community knowledge about how to prepare and administer ORS and perhaps about other important PHC interventions.

#### Community involvement

After dealing specifically with the issues raised by the solution objectives, two questions were asked: 1) How much was the community involved in the promotion of ORS after receiving special training? and 2) How can the increase in community knowledge of ORS be correlated with the level of community participation in promoting ORS?

#### Community promotion of ORS

Each group which received training had been assigned at least one specific target population as a responsibility as follows:

community leaders	formal community groups
religious leaders	church groups
natural leaders	neighbors and friends

A survey later, however, found community leaders spent 76.6% of their time outside of their specific target group. The pattern was similar for the other trainee groups.

In the post test, respondents were asked "If there had been any one who came by to see you and give you information about diarrhea or ORT?" 43% of the respondents in the intervention communities said that they had been contacted. Among the community trainee contacts mentioned by women, the TBA was most frequently mentioned (39.8%); then community leaders (37.6%); sellers (17.2%);

the natural or religious leaders were next to last (4.3%), and only one of the mothers in the intervention communities was mentioned (1.1%). Even though five communities had a school health education program, neither teachers nor students were mentioned. This may be due to the fact that schools were closed as a result of political disturbances shortly after the teacher training had been completed.

Among those who said that they had been in a meeting for promoting ORT, the 'agent de sante' was mentioned most frequently as the organizer (42%). Community leaders were second (34%); then TBA's (14%); followed by natural and religious leaders (4.4%) and sellers (also 4.4%). The active participation of the leaders in the communities in the establishment of new "postes de vente" has contributed significantly to the high level of awareness of the postes in the localities and ORS availability on a larger scale.

#### Level of community effort and ORS knowledge

For determining the level of community effort, an index was constructed which included the following elements: types of activities, methods of teaching, information given on how to prepare ORS, number of related activities carried out and type of people encountered. This was correlated with the proportion of caretakers who knew how to prepare ORS correctly. The resulting Spearman Rank Correlation Coefficient was +0.72 ( $p < .05$ ). This suggests that the participation of community educators in teaching mothers how to prepare ORS played a positive role in their increased level of knowledge.

The community effort score was also correlated with the responses used to assess caretaker knowledge of how to administer ORS correctly: when to begin administration, how often to give ORS and by what method. The Spearman Rank correlation coefficient was +0.45 (with  $p = .05$  equivalent to at least .56). This did not quite reach significance.

#### CONCLUSIONS AND RECOMMENDATIONS

Although the intervention and control communities did not differ significantly in the percent increase in ORS usage rates as a result of the community-based education program, there were a number of findings of considerable value. These are as follows:

1. The fact that a district staff could be mobilized to collaborate in an operations research project in such a way that immediate adjustments could be made to improve administrative feasibility and increase replicability.
2. The fact that village volunteers could and did reach 43% of the households surveyed to promote the concept of ORS use.
3. The fact that it was relatively easy to convince villagers to open new ORS sales posts.
4. The fact that it was possible to train sales post staff in ORS storage, sales, and education.
5. The fact that TBAs were willing to receive ORT training and participate in the community education program.

6. The fact that teachers were willing to participate in training for ORT and use of Creole modules in the classroom.
7. That fact that a locally acceptable curriculum in Creole could be developed, tested, and adapted for use with different groups of community leaders.
8. The fact that it was possible to develop a standardized process for making home mix that was both acceptable to the taste and met the WHO formula requirements.

Other important considerations include the fact that the District Health Officer was directly involved the decision making process of the project and his experience could be used in intervention strategies. The project relied almost totally on district staff and what was found to work had a reasonable probability of being replicable elsewhere in Haiti. Further, it was found that villagers in general increased their awareness of the existence of a sales post as a source of ORS in their community from about 32 to 74%. An evaluation design was developed which involved which permitted the development of a comparable group of intervention and control villages.

Overall, the study was successful in showing that villagers could be mobilized and trained to serve as volunteers in a program which reached a large percentage of a given target population. However, because of time limitations, not enough attention was given to determining how best each of these resources could be used, nor to linking these efforts to on-going national training programs. Future operations research studies are recommended to determine how best each of these community resources could be employed in ORS programming and related activities.

INCREASING ORAL REHYDRATION THERAPY IN RURAL HAITI  
THROUGH COMMUNITY PARTICIPATION

FINAL REPORT

I INTRODUCTION

There is evidence that severe dehydration is responsible for one half of the deaths of children under five in Haiti (Berggren et al, 1982/3). The interest in this topic is growing because of the relatively recent improvement in the technology of oral rehydration (Merson, 1986) and because of some evidence that the number of families with children at risk of diarrhea/dehydration may be growing rather than receding (Feacham, 1986). There is increasing evidence of the harmful effects of 'modern' infant feeding patterns (Latham, 19 ). Efforts must be found which counteract this problem.

A considerable body of literature points to the need to extend the impact of oral rehydration therapy to the rural areas through enlisting community resources (Kols et al, 1982). To reach at-risk populations, an infrastructure must be developed at the local level to augment the extremely limited manpower of the local health district. With regard to reliance upon the local level, manpower resources which suggest themselves include: the village leadership, teachers, students, traditional birth attendants, and shop owners. In order to be able to take advantage of this local resource base, there is need, to develop a system of reaching the community on a systematic basis, and for developing the teaching skills of these volunteer workers so

that they can pass on these complex skills to the family (Touchette, PE 1983).

## II STUDY PURPOSE

The overall goal of this study was to find a model for reducing death from acute diarrhea leading to dehydration through the appropriate oral rehydration therapy. The operational objective of the study was originally to determine ways of using community organization techniques to address the production, distribution, inventorying, acquisition, and appropriate use of oral rehydration solution. As the study progressed, the focus shifted from organizing the community to that of mobilizing existing resources of the community (formal groups, informal networks, institutions, and leadership) to improve the distribution of oral rehydration packets, to increase their availability and use ORS (both packets and home mix), to ensure the appropriate preparation and administration, and to facilitate the improved management of diarrheal cases among children under five by their caretakers.

## III BACKGROUND

The Haitian Ministry of Health has selected as its number one health priority the reduction of deaths from diarrhea (Jasmin, 1986). As a result, in July, 1983, Haiti began a national campaign to promote the use of oral rehydration solution (ORS) packets. The focus was on: 1) the use of the mass media, primarily radio, flyers, and posters, 2) the use of the health care system with focus on the hospitals, 3) a social marketing distribution system which linked the health care system with commercial and public service

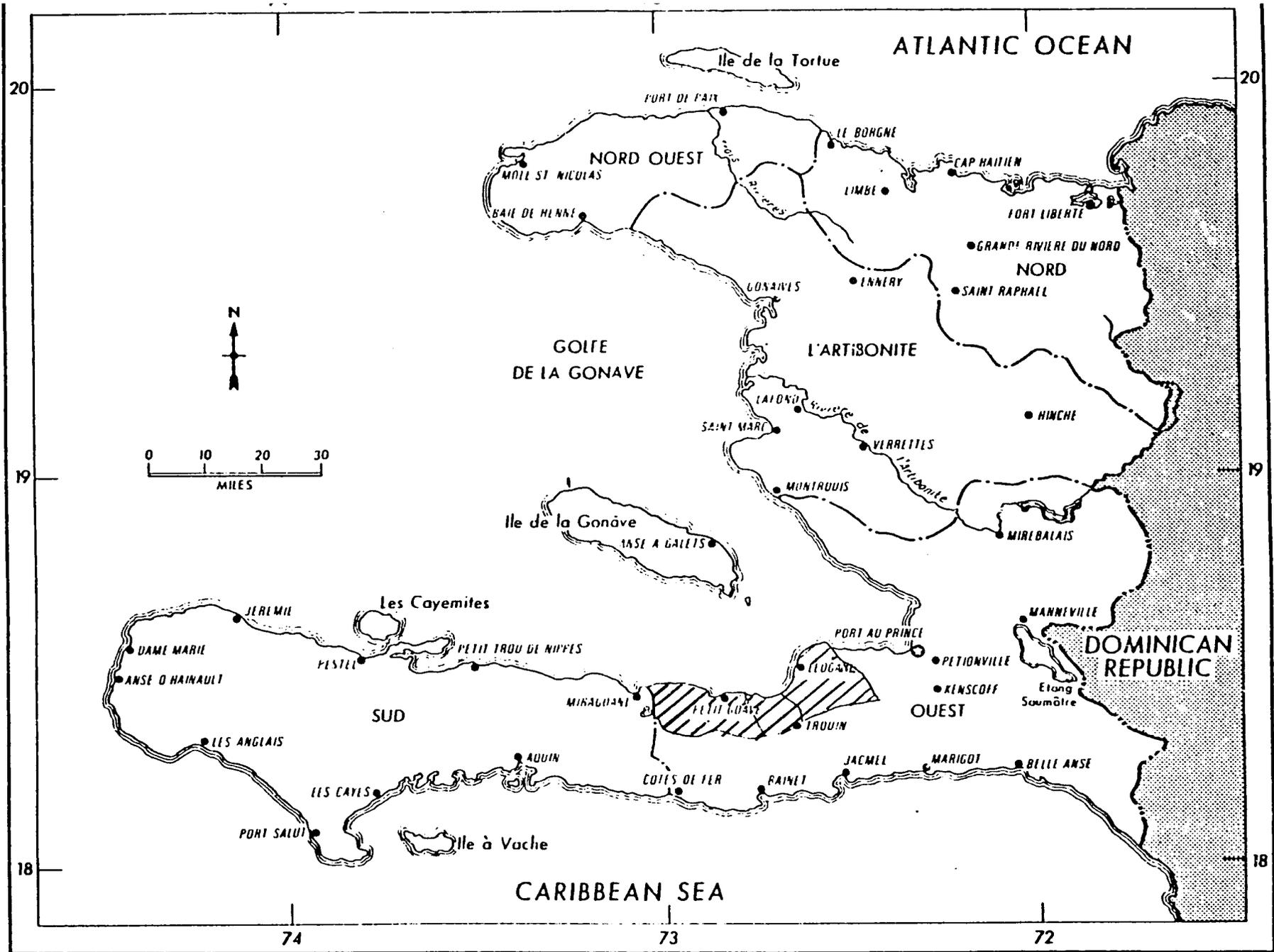
outlets, and 4) efforts at organizing the community to promote ORS (Desse, 1984).

As part of an effort to increase focus on the fourth point in the national campaign, the Haitian Association des Oeuvres Privees de Sante (AOPS) and the University of South Carolina School of Public Health (USC), in collaboration with the Haitian Ministry of Public Health and Population (MOHP), were funded by USAID for two years, through a PRICOR subagreement to study how best to increase the household use of oral rehydration solution (ORS) through the involvement of community resources. Begun in April 1984, the project ended in March, 1986. The study included a number of field surveys to identify program needs, developed relevant alternative solutions, used consensus-building techniques to reach an agreed upon solution to be field tested, and spent two and one half months in the field test phase.

The project site was the Petit Goave Health District in the Western Public Health Region of Haiti (see figure 1). The project was operated from the District Health Office in Petit Goave. The principal investigator represented the University of South Carolina School of Public Health while the co-principal investigator was based in Haiti and represented the Association des Oeuvres Privees de Sante. The District Director of Health served as the field director of the project. The District Health Nurse served as a training officer for implementing the field test phase of the project.

The Petit Goave District is a part of the Western Health Region with offices based in Port-au-Prince. The Health District encompasses three communes which had a total population of 29,658 in 1983. The Petit Goave

FIG



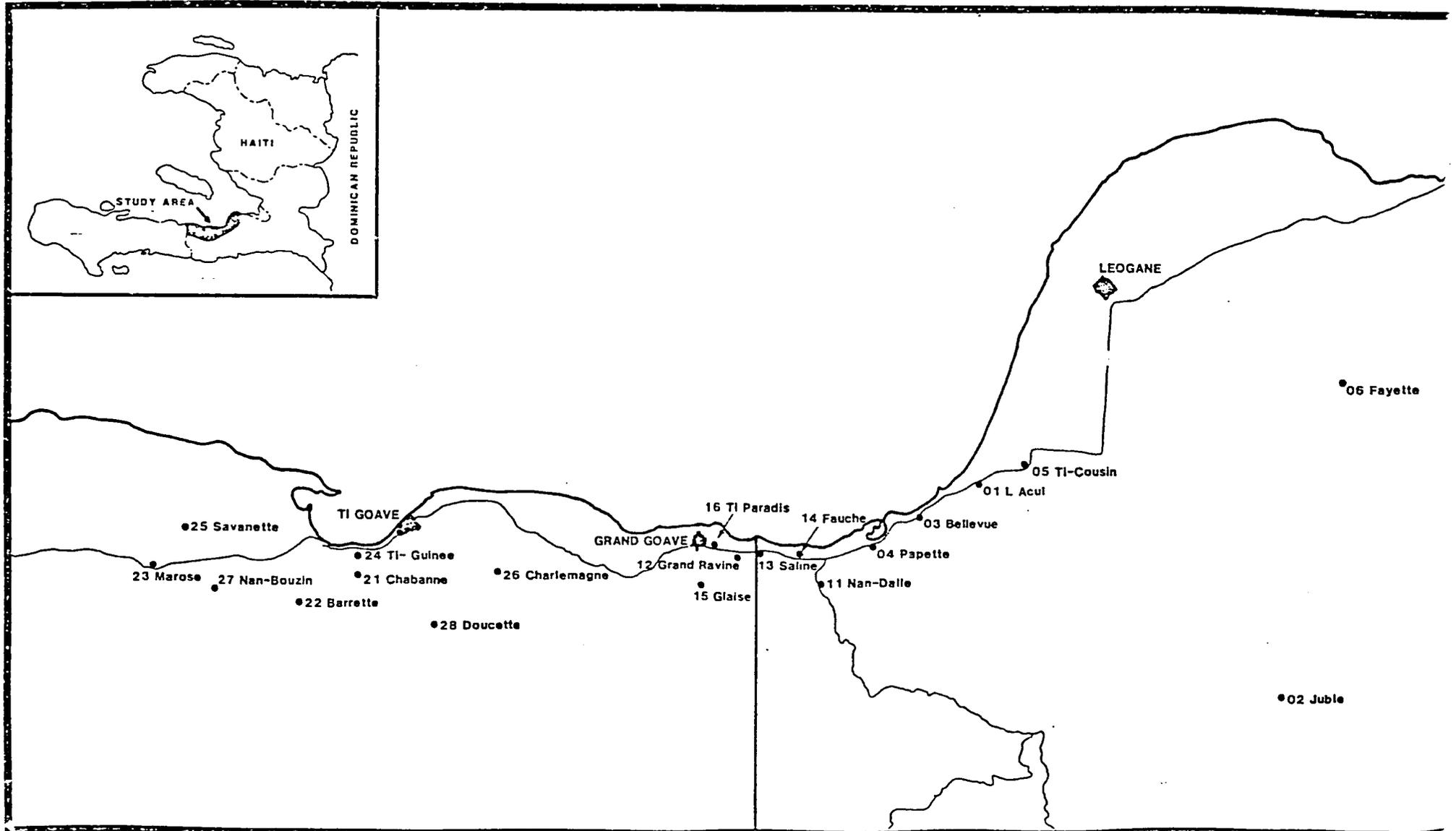
Populated Places and Political Subdivisions of Haiti

Health District population subsists on agriculture with the major marketing towns (see figure 2) serving as administrative and marketing centers. Along with fishing, the production of cane, coffee, corn, cassava, and a variety of fruits and garden vegetables comprise the major economic activities. There are considerable differences in the socioeconomic levels among villages in the District as well as among inhabitants within villages.

Within each district are one or more hospitals (3 in the Petit Goave District). At the lowest level (Niveau 3), the health care system is based on dispensaries staffed by auxiliary nurses. These workers, in addition to their clinic duties, supervise the work of 'agents de Sante' (community health workers) who are responsible for health promotion activities in a block of small communities. They are trained in surveying, community organization, environmental hygiene, nutrition, maternal and child health, family planning, control of diarrhea, malaria, and tuberculosis, first aid, and home visiting. The supervision of the auxiliaries is by public health nurses. The next higher level in the system is the health center. The health center is headed by a medical officer. There are health centers with and without beds. The beds are used for delivery and general medicine.

The district has had an oral rehydration program since 1982. Locally made packets are distributed through the health centers. In his 1982-83 report, the District Health Officer identified diarrhea as the prime cause of morbidity in children under five. It was also the second cause of death behind malnutrition. Analysis of hospital admissions for 1982-1983 showed that of 1452 cases of diarrhea admitted to the hospital, 23% died. 40% was the national average at that time (Leandre, 1983). According to the report, there

FIGURE 2



were potentially 125 ORS sales posts. the owners of which had been asked formally and had agreed to sell ORS packets by the District Health Office.

An initial examination of rural Haitian communities as exemplified by the Petit Goave Health District indicated the existence of a wide range of potential resources to be used in promoting oral rehydration therapy. These include the small postes de vente, the itinerant peddlars, the village residents who are sellers in the markets in the main towns, the school teachers, the traditional health workers, and others. At the same time, there is an apparent lack of infrastructure at the local community level for integrating these resources into an overall strategy. Further, there was the question of which government agency had the resources to expend the training time and resources needed to provide village decision makers with the understanding of the problem necessary to coordinate these resources at the local level. This involved considerable staff time and transportation resources, both in short supply in rural Haiti. As indicated above, the majority of the training resources in this study were provided by Health District staff.

The nature of the ORS program had already been determined at the national level, leaving little chance initially for input by village level decision makers. Thus, the focus of this operations research study was on community participation but control was at the district level although based on mobilizing the community resources identified in this study. Thus, volunteer participation by villagers was limited to facilitating the promotion of oral rehydration products and their preparation. During the initial problem analysis phase, village leaders indicated their willingness to organize

sessions in support of the oral rehydration program but did not offer much support for the contribution of village resources other than their time to the effort.

These constraints influenced the way in which variables could be put together in devising an effective approach to involving the community in improving ORS usage. It was judged best to integrate the efforts of the various agencies at the village level and to coordinate them at the district level through the District Health Office. This would include the integration of the efforts of the health facilities, schools, postes de vente, media channels, individual sellers in the major markets, distribution agents, etc.

#### IV OVERVIEW OF METHODOLOGY

The methodologies employed throughout the study are discussed within each of the three sections:

VI Problem Analysis

VII Solution Development

VIII Solution Validation

However, a brief overview of these methodologies will help the reader in understanding the framework of the study. For the problem analysis phase, a series of overlapping data collection instruments (figure ) was employed to gain different perspectives on the system components important in increasing the caretaker's ability to prepare and administer oral rehydration therapy correctly, and to refer the underfive to medical care in severe cases of dehydration. Studies of the diarrhea and dehydration treatment process were carried out in a variety of health posts, centers, and hospitals, among sellers of ORS, among itinerant sellers in the main markets in the district, of individuals identified as leaders of the study communities, of members of households with children under five, and of teachers and students in study villages with schools. As table 1 shows, a variety of research strategies was employed to obtain information about current practices. This phase covered the period April, 1984 to March, 1985.

The solution development phase consisted of initial analysis of each of the studies mentioned above. The objectives of the study were four: to improve 1) acquisition, 2) preparation, and 3) administration of oral rehydration to

FIG 3

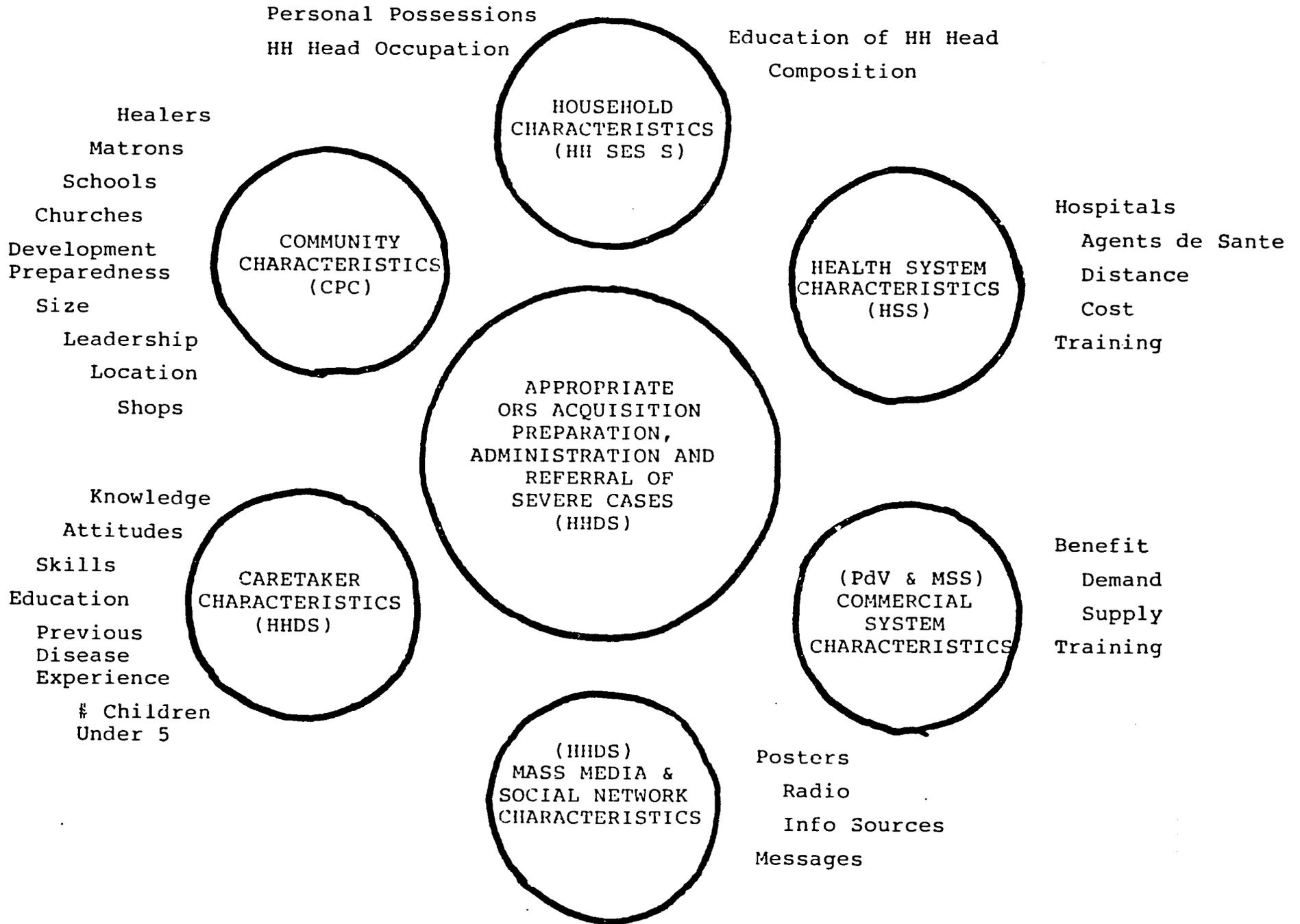


TABLE 1

## MATRIX OF RESEARCH STRATEGIES

	FOCUSED GROUP INTERVIEWS	INTERCEPT INTERVIEWS	INFORMANT INTERVIEWS	STRUCTURED KAP SURVEYS	OBSERVATION	TESTING AND TRAINING	COMMUNITY RECONNAISSANCE	NOMINAL GROUP PROCESS	SOCIAL NETWORK ANALYSIS
HEALTH FACILITIES			X		X				
SELLERS OF ORS				X	X	X	X		
MARKET SELLERS		X		X			X		X
COMMUNITY LEADERS	X			X				X	X
CARETAKERS OF UNDER 5's				X	X				X
TEACHERS	X		X	X		X			
SCHOOL CHILDREN				X					

under fives, and 4) appropriate referral of severe cases to treatment. Independent variables which were found to have a relationship to the four study objectives were identified and models developed for each in terms of these variables. These four models were laid out in summary form and presented to members of the project policy committee (including members of the national campaign against diarrhea) using a nominal group process. The variables were examined and evaluated in terms of both their individual importance and the extent to which they could be manipulated by the decision maker. Those which passed these test were kept in the model. Other variables were added on the suggestion of the policy committee. These revised models were then presented to the Petit Goave District health committee and to leaders of the intervention communities for their comments. For example, community leaders indicated that they would be willing to promote ORS but not to be involved in its distribution. The model for acquisition was adjusted accordingly. Then these four models were combined in a single system with four components and assignments for components were made with project staff. Because of the departure from Haiti of the consultant responsible for completing a computer simulation of the optimal solution, that part of the solution development phase was not completed. This phase covered the period April, 1985 - July, 1985.

The field test phase, which covered the period August, 1985 through March, 1986 (including the intervention from November through January) consisted of four steps: 1) a pretest based on items selected from the problem analysis phase and revised based on the experience with those surveys; 2) retraining of 'agents de sante' and training of school teachers, TBA's, village leaders, and owners of ORS sales posts; 3) the intervention which, as indicated elsewhere, was truncated to a total of two and one half months from the

originally scheduled 11 months; and 4) a post test which was a virtual replication of the pretest. As indicated, both the intervention phase and the posttest were disrupted due to the political disturbances occurring in Haiti at that time. It had been anticipated that the intervention phase would last three and a half or four months but that was not to be. The field interviewers who had been involved in the project were responsible for carrying out both the pretest and the posttest. The field test consisted of educational and promotional efforts by the school teachers, village leaders, TBA's, and owners of ORS sales posts. Their work was supervised by the five part-time 'agents de sante' seconded to the project area on a part-time basis by the Health District Office who covered a number of villages each. Due to the fact that none of the 'agents de sante' existed in the areas of the intervention villages, it was obvious that without this link to the health care system - the implementation arm of the project - it would have been impossible to sustain the impact over time. It also became obvious that the lack of an organized effort at collectively and systematically reaching village women was an important limitation of the model as implemented.

## V. TIMETABLE

The bar chart on page 15 provides a comparison of planned and actual times for project activities. The initial planning analysis phase started about a month late and finished a month later than planned. The pilot testing phase did not take place although work with school teachers on curriculum development during the spring and summer of 1985, interaction with villagers in Jeanty near Grand Goave in June to test out educational methods, and in testing and standardizing a home mix solution in the Petit Goave area in July and August were carried out. In fact, the curriculum development process was shared with staff of the Institute Pedagogique Nationale and discussions were held about integrating the final teacher training materials and curriculum into the national program.

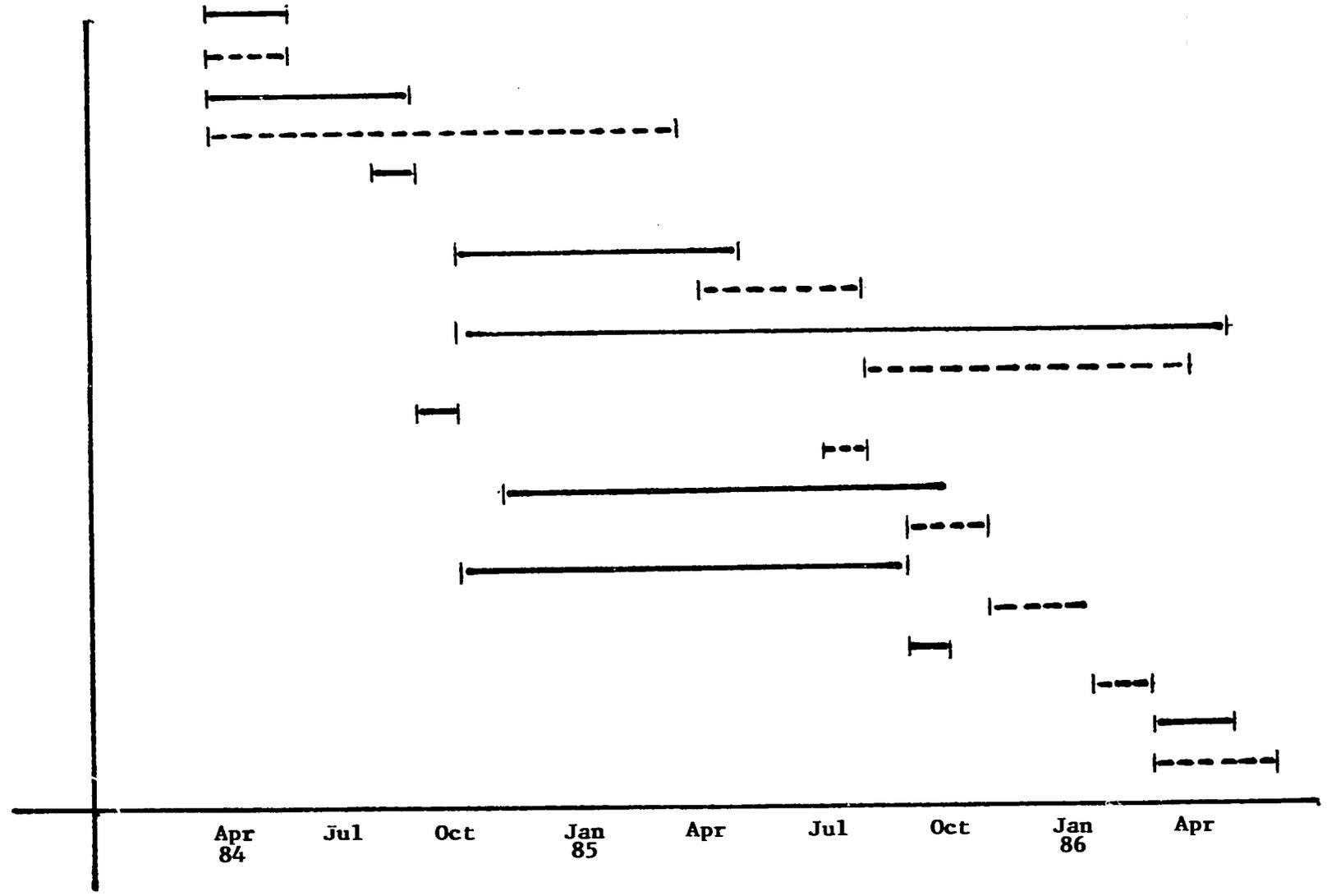
The pretest development (baseline for the intervention phase) was held up until shortly before the planned intervention and immediately preceded the actual pretest. The solution development phase started late and ended earlier than had been planned. This was in part due to the desire to carry out surveys of school teachers and market sellers (see under problem analysis). The latter studies could be viewed either as a part of the solution development (refining of the model) or as further problem analysis efforts. A description of the solution development process is found in the text. The inservice training, planned for late 1984 and early 1985, actually took place in August, September, and part of October, 1985. As a result, the intervention, which had been planned for the period October, 1984 through August, 1985 began in November, 1985. The intervention period was terminated in January, 1986, due to political

Figure 4

Project Time Chart

COMPARING PLANNED AND ACTUAL OCCURENCE OF ACTIVITIES  
April 1, 1984 to March 31, 1986

15



—————| Projected  
-----| Actual

disturbances in the country with one of the most intense centers in the Petit Goave area. Thus, the intervention period, planned for 11 months, covered about two and one half.

A major factor in the delay in the various project activities was the very long delay in the problem analysis phase couple with the slow data analysis turnaround mentioned in the report. The co-principial investigators did not have complete control of analysis resources leading to about a four month delay in obtaining a data summary adequate for presentation to the project policy committee, for revising solution alternatives in the light of their comments, and after revision, for presenting these data and potential solutions to the Petit Goave Health District committee and village leadership. In fact, the process took longer than originally had been planned.

## VI PROBLEM ANALYSIS

### A. OBJECTIVES OF THE PROBLEM ANALYSIS

The objectives of the problem analysis phase of the study were two:

1. To identify the major obstacles to wider effective caretaker use of ORT
2. To set priorities among these problems for operations research

### B. METHODOLOGY FOR THE PROBLEM ANALYSIS

The methodology employed in achieving these two objectives included a number of different information seeking approaches as follows:

1. Identification of obstacles through the use of focused groups, a household KAP study, a household socioeconomic study, an initial quick study of ORS usage levels, a study of community leaders willingness to help promote ORS including examples of previous community participation efforts in each community, a study of sellers in the main market who come from surrounding villages, a study of owners of ORS sales posts, and interviews with residents living at different distances from these posts.

Twenty villages in the District were selected for inclusion in the study. The villages were selected in order to complete a design matrix (figure

5) in such a way that there would be at least two villages in each of the eight study conditions - with or without a school or church, with or without an external agent, and with or without a retail shop or market. Respondents in households containing at least one child under five comprise the study population. The villages were not selected randomly and tended to be clustered close to the coast and the national highway (figure 2), a factor which limits the generalizability of the study somewhat. The village selection decision was taken in order to keep costs within budgetary limits and because of the lack of proper roads to reach isolated rural localities.

This final report, as indicated above, includes the findings of several separate studies. Interviewing was carried out by a team of trained field interviewers with at least secondary school education level. Ten individuals completed a 24 hour training program over the course of three days. 8 of these individuals were hired, 6 as field interviewers, one to serve as field supervisor, and one as assistant supervisor. An additional person was hired to serve as project editor/coder. The co-principal investigator (MC) served as survey director. The interviewers reached communities and sales posts by local transport and by foot for those communities which were not accessible to motorized vehicles. Data processing was carried out on a Radio Shack TRS-80 Model 12 and a compatible statistical package.

1. Identification of obstacles through the use of focused groups (FGS)

Based on individual components of the behavioral science models studied (figure 6), survey formats were designed, tested, and a baseline

COMMUNITY PARTICIPATION IN ORAL REHYDRATION THERAPY  
 SAMPLING OF 'LOKALITES' FOR PROBLEM ANALYSIS  
 CLASSIFICATION OF 'LOKALITES' BY CHARACTERISTICS

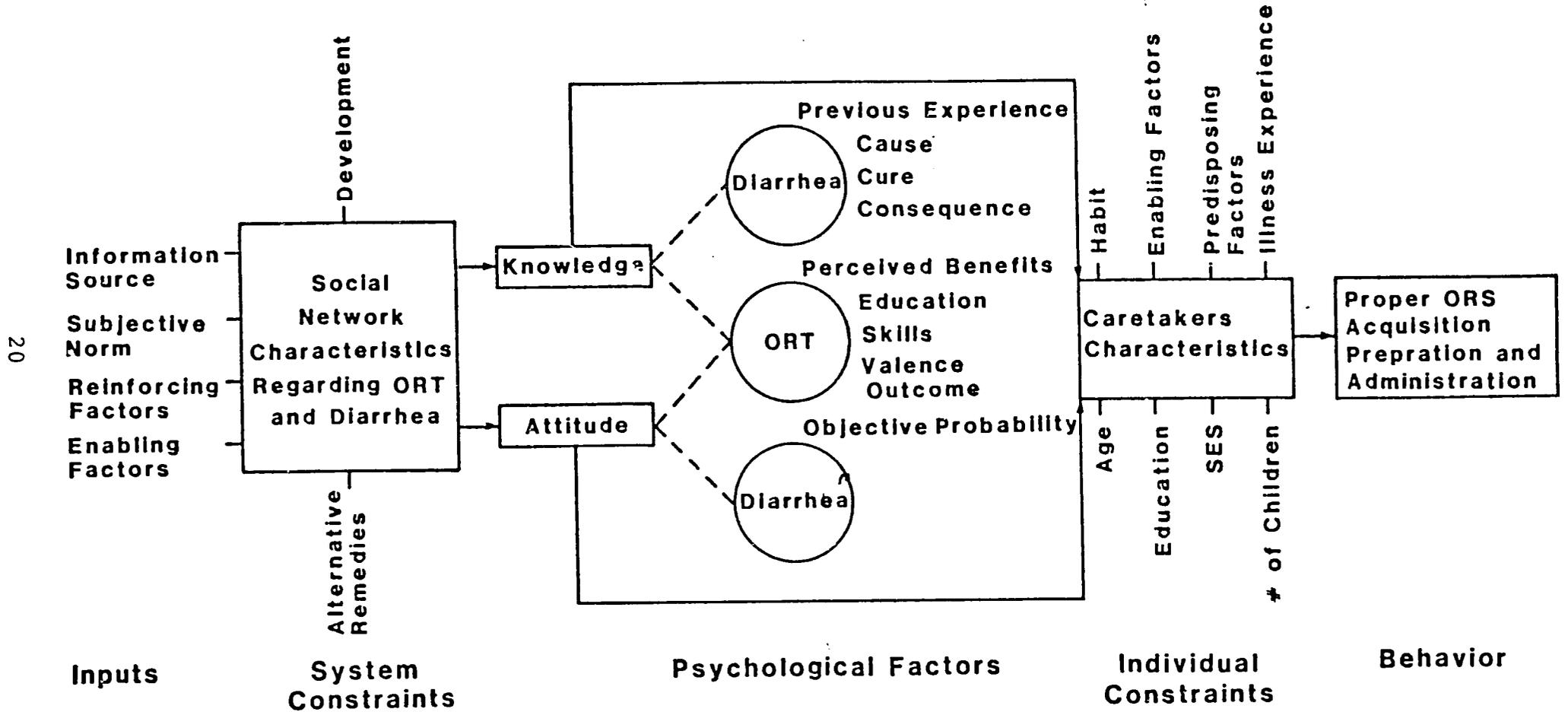
	EXTERNAL AGENT		NO EXTERNAL AGENT	
	Shop or Market	No Shop Nor Market	Shop or Market	No Shop Nor Market
School and Church	*Petite Guinee 22 *Fauche 25	*Ti Kouzin 26 *L'acul 25	*Baret 20 Grand Ravine 21	*Ducette 24 *Papette 22 *Bellvue 25
No School Nor Church	Chabanne 23 *Tiparadis	*Marose 22 *Nan Bouzin 22	Saune 18 Nan Dalle 24	*Glaize 22 *Savanette 24 *Chalemagne 27

\* Number of Household SES and ORS Usage Surveys Completed

WBW 6/25/84

FIGURE 6

Conceptual Framework of Psychosocial Determinants of Proper Use of Oral Rehydration Therapy (ORT)



survey developed to be carried out in the twenty project villages. In order to define survey document items, district health staff, teachers, and owners of village shops were asked about their experiences with villagers regarding oral rehydration therapy. Focused group interviews of leaders and early adopters in one village helped to define other survey document items.

## 2. A household KAP study (HHS)

The HHS study involved interviews of 407 respondents in households with at least one child under five. Within each household, there was an attempt to interview the caretaker of the underfive. When that caretaker was not present, another adult was interviewed. In many cases, the actual caretaker (a grandparent, a sibling, or someone else) and the biological mother were not the same (the mother might be selling in a market or living and working in the capital).

## 3. A study of owners of ORS sales posts (SPS)

The sales post (hereafter postes de vente) study was of 41 operators of commercial and voluntary association outlets for oral rehydration solution (ORS) packets (the SPS survey). These 41 'postes de vente' which were included in the study were identified from a list supplied by the District Medical Director. The postes were not necessarily those which were in the 20 study villages. These postes and their operators were initially unobtrusively observed by trained field interviewers who next posed as customers with a supposed diarrheal case at home and then were taken through a formal interview process with a survey document.

4. Interviews with residents living at different distances from these posts. (SP/RS)

Individuals who lived near the sales posts were visited and interviewed to obtain data on their awareness and understanding of ORS and where they felt it could be obtained.

5. A study of sellers in the main market who come from surrounding villages (MSS)

To obtain an understanding of the potential for involving itinerant market sellers in the promotion and/or sale of ORS, the market seller study (MSS) was implemented. Surveys were carried out on three separate Saturdays among 167 sellers in the major market centers of Petit Goave, Grand Goave, and Leogane. The number of individuals interviewed in each of the markets was 56, 53, and 58 respectively. From the map (figure 7) on page 23, it can be seen that 70% of the study villages were represented by at least one interviewed market seller.

6. An initial quick study of ORS usage levels (ORSUSES)

A survey of 482 households in the study villages looked specifically at ORS use patterns.

ORS use rate has been estimated using two different approaches. The HHS study yielded reported use patterns. This was based on a single item

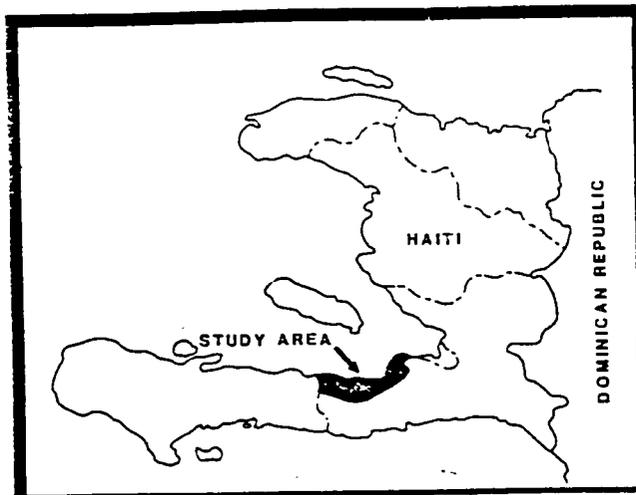
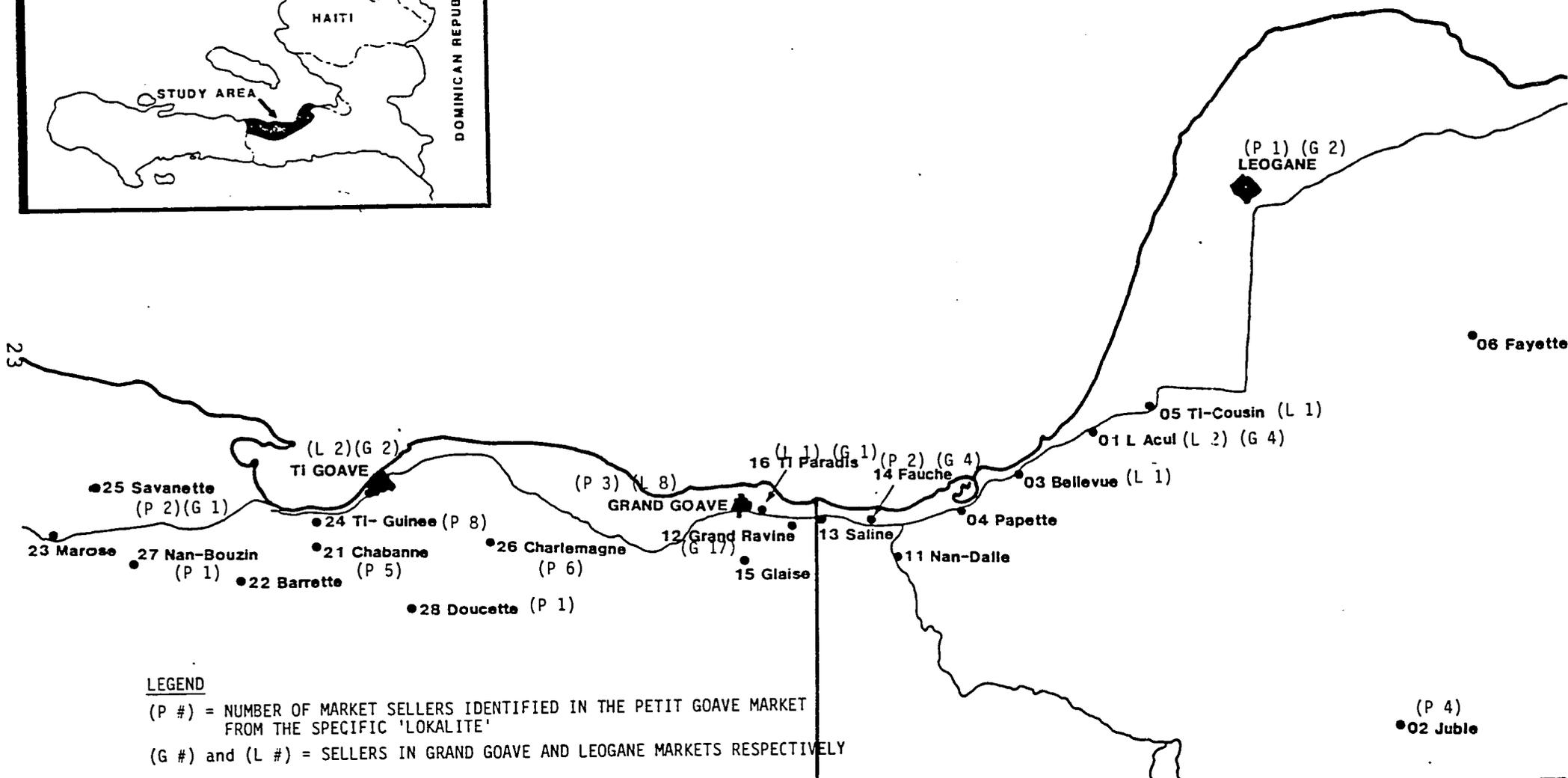


FIGURE 7

PETIT GOAVE HEALTH DISTRICT MAP OF THE 'LOKALITES'



LEGEND

(P #) = NUMBER OF MARKET SELLERS IDENTIFIED IN THE PETIT GOAVE MARKET FROM THE SPECIFIC 'LOKALITE'

(G #) and (L #) = SELLERS IN GRAND GOAVE AND LEOGANE MARKETS RESPECTIVELY

asking whether or not they had ever used ORS. In the ORSUSES in these same communities, residents were asked a series of items:

1. whether they had heard of ORS (packets or home mix),
2. if they had given it to their children for diarrhea,
3. if they knew the color (white),
4. how they utilized it,
5. how they mixed it,
6. and when they commence giving it

From the ORSUSES, 64% had indicated that they had heard of something called ORS. 48% use ORS when their children have diarrhea, they said. 60% of those use packet, 1% use home mix, and the other 39% did not indicate. 43% got the color of the powder correct. 40% indicated the correct mixture for packet ORS and 9% for home mix. 18% report giving ORS on the first day of diarrhea and 11% on day 2 or 3.

The items for these responses were developed into a weighted scale by Cayemittes. Simple correlation was made between the HHS figure and that of the ORSUSES. A high correlation ( $R = .65$ ) was found with packets and a lower but still interesting  $R = .41$  with home mix. This suggests that reporting was reasonably consistent and increases the confidence in the accuracy of reporting. Of interest, also, was the comparison of reported live births, the number of children now alive, and the number who had died and the cause of death. Although the number of those dying should be equal to the difference between those born live and those now alive, this does not always happen. For 10 of the 18 'lokalites', the figures were exact and for the other eight,

there was an error of one in five villages and 2 in the other three. This is 11 out of 1600 reported births or .6%.

7. A household socioeconomic study (HSES)

The HSES was carried out simultaneously with ORSUSE among the same respondents. 480 respondents were interviewed in 18 villages.

8. A study of the extent of community leaders' willingness to help promote ORS including examples of previous community participation efforts (COMPART)

Approximately five residents were interviewed in each of the 18 villages to obtain their perceptions of the role of community participation in their community.

9. A study of health facilities and the ORT program in the Health District

The Health District comprises 19 health units. Fifteen were included in the study which was composed of four parts:

- a. A general survey of the health units to assess the extent and nature of their participation in the ORT program.
- b. Observations of the health personnel at work to

evaluate their competence in dealing with people bringing children suffering from diarrhea

c. An interview of the nurses or auxiliaries who are responsible for the ORT program to evaluate their knowledge of ORT

d. A study of how well mothers of under fives understand the messages on ORT and diarrhea.

### C. RESULTS OF THE PROBLEM ANALYSIS

Once study variables had been examined and the extent of their correlation with the four project dependent variables (acquisition, preparation, and administration of ORS, and referral of severe cases) had been estimated, the variables were organized under the following headings:

1. Constraints (non-manipulable)
2. Controls (under the control of an agency other than that of the program)
3. Decision variables (potential program activities)
4. Outputs (intermediate factors influencing behavior change)
5. Outcomes (behavior change or project dependent variables)

Those variables which fell primarily into the 'decision variable' category and some 'control' variables were then grouped under the headings of

the four dependent variables and organized into a package which were presented to the policy committee for advice.

1. Obstacles to appropriate use of ORS

The following obstacles were identified as the major problems with each of the dependent variables:

- a. Limited availability and accessibility of ORS at the village level

An important question regarding home mix is the extent of availability of the ingredients needed. 89% of respondents had, in the house at the time of the interview, the basic ingredients (salt and sugar) for making a home based solution. An indepth investigation of the household found that there were several containers which were and could be used for mixing the solution. There were a number of slightly different sized soft drink bottles readily available. The rum bottle, found to be a common container, is equivalent, approximately, to a soft drink bottle and a half. There were also standard mixing cups which had a capacity of 1/4 of a litre. In general, there was no problem in finding such a container as long as there could be agreement on how many portions of the ingredient to use for each type. Another issue was the question of mixing spoons of which several sizes were available.

On being asked, 9% of the respondents indicated that they currently had a packet of ORS in their house. 50% of the respondents did not know where to get packets of ORS. Of those who gave a response as to where,

44% mentioned the pharmacy, 28% the doctor or hospital, 13% local shops, and 6% a nurse. In the villages with 'postes de vente', only 48% of the respondents were able to give the exact location of the selling post. The 122 selling posts existing in the district were poorly distributed, missing in most of the localities and concentrated in just a few. The awareness of community residents as to PV existence was fairly low. In addition, it was found that the existence of a PV in a village was a poor predictor of knowledge of use.

Awareness of the availability of home mix as a strategy for treating dehydration seems not to be highly predictive of actual use of ORS since approximately the same number of individuals who use packet ORS and those who use herbal teas are aware of home mix. In fact, 85% of those who use herbal teas said that they had heard of packet ORS. What is interesting, is the fact that 6.3% of those who indicated that they use herbal teas for casual treatment of diarrhea at home actually were seen to have ORS packets in the house. There seems to be an overlap in the use of all methods which would suggest that people seem to be trying a wide range of approaches in dealing with this severe health problem. The most frequently mentioned source of information about treatment of diarrhea with packet ORS was the radio (44%). For home mix, it was the hospital (27%). For herbal tea, the radio, surprisingly, was also mentioned the most (40%).

- b. Relatively low levels of caretaker ORS usage are related to community and individual characteristics

In the ORSUSE survey which was composed of 482 households, 64% of the respondents indicated that they had heard of oral rehydration solution (ORS) while 48% claimed to have used it at least once with 42% claiming to packet ORS. Out of 100 tenants who claimed to use ORS for their children suffering from diarrhea, 87 knew the exact color of ORS, and 75 could tell how to prepare it correctly. Among the last category, we found that 55 initiated use of ORS at the first signs of diarrhea.

Respondents in the study villages with schools, churches, a shop, and an extension agent reported almost three times the percentage of use of ORS (71% to 24%) as did respondents in villages without these resources. Two factors may be at work. First, the presence of schools, churches, a shop, and an extension agent suggests that these villages may be more highly developed than those without them. Second, the schools, churches, shops, and extension agents may actually have played a role in the diffusion of the ORS technology or may have served as distribution points in some cases.

c. Inadequate caretaker knowledge of how to prepare ORS packets and home mix

40% of packet users correctly described how to prepare the solution while only 9% of home mix users indicated the correct mixture. Residents in those villages with schools, churches, a shop, and an extension agent were also more likely to correctly report how to mix ORS. Although there is a very small group of male respondents in the study, virtually the same percentage of men as women were able to correctly repeat how to prepare packet

or home mix ORS. The highest rate of knowing how to correctly prepare ORS is found within the age range 26 to 40 which is not surprising in as much as these women will have had the greatest experience with under fives.

d. Inadequate caretaker knowledge of the administration of ORS to under fives

Leogane commune had the highest correct rate with 30% followed by Grand Goave (25.7%) and Petit Goave (22.7%). Neither length of residence in the village nor age seemed to have much effect on correct administration of ORS. However, while 33% of those with some education reported correct administration of ORS, only 22% of those without education were able to do so correctly. Only 20.3% of those who administer ORS correctly believe that diarrhea will kill while for those who did not report how to administer ORS correctly, the figure is 44.9%. This pattern is the opposite of what one would have expected and needs to be investigated further. It does suggest, however, that the threat of death from diarrhea is not a major motivating factor in use of ORS.

Correct administration did not seem to differ by source of hearing about ORS. Those who were unable to describe how to correctly administer ORS indicated as their major sources: hospital (60%) and radio (40%); while the others named, radio (48%), hospitals (35%), followed by doctors (22%). Of those who administered it correctly, 56.8% were taught how to prepare it by a nurse and 13.6% by a private doctor. For incorrect administrators, 23% learned how to prepare it from a nurse and 38.5% from a doctor. This suggests the need to investigate the educational skills of

physicians in the ORT program.

- e. Inadequate caretaker knowledge of appropriate management of diarrhea and dehydration cases

32 % of those who reported that they used ORS as a treatment for diarrhea were able to indicate the correct response as to when to administer ORS while those who reported using herbal teas instead were able to respond correctly only 24% of the time. While 75% of nonusers of ORS identified diarrhea as one of the five most common diseases of under fives, 88% of those using home mix and 94% of those using packets did. Although these differences are small, they are in the expected direction. While almost everyone mentioned watery stools as a symptom of diarrhea, 31% of those claiming to use no method compared with 58% who used packets and 45% of those who report using home mix mentioned constant stools as an indication of diarrhea. This suggests a positive relationship between awareness of the importance of diarrhea and the use of ORS.

- f. Inadequate use of services for severely dehydrated children

Those respondents with a shop or market and an extension agent in their village (an indication of a higher level of development) were more likely to report that they would seek treatment at a hospital at the first sign of diarrhea than would people in villages without them, a definite misuse of resources. Those living closest to a hospital were also more likely to indicate that they would rely on the hospital. This suggests that those who

have the option to use higher levels of health care services for attacks of diarrhea may tend to overuse. Education for this population might stress appropriate use of health care facilities.

#### D. CONSTRAINTS IN COMPLETING THE STUDY

In addition to the typical constraints identified above and in appendix D, there were the types of problems encountered in carrying out a research project that demanded a reasonably high level of accuracy in data collection. The major ones are discussed.

##### 1. Lack of a resident health worker

Although Haiti is committed to the concept of Health for All, there are areas of the country which lack coverage by health personnel. Even in the Petit Goave District which is one of the more accessible rural areas in Haiti, a fair number of communities are out of the range of other than sporadic contact by a health worker. Thus, there is need to investigate ways of taking existing health workers and redistributing them or appointing others in their place based on residence in a way that the health system can have contact with all of its population. Applying this principle, this study involved on a short term basis 'agents de sante' resident elsewhere to cover the intervention communities at a level that could be replicated in the start up phase of a given project. Without this input, it would basically be impossible to reach a large number of the communities and a significant percentage of the population of rural Haiti.

## 2. Distance and inaccessibility of villages

Although it has been mentioned earlier that the study villages were not selected randomly and tended to be closer to the coast and the national highway than the average village, the difficult terrain and the fact that villages were scattered along the northern side of the southern arm of Haiti meant that interviewers often had to spend considerable time travelling from one community to another. This meant that the period which had been set aside for the initial problem analysis phase was an underestimate of what was needed. Thus, this phase, which was to have run from April, 1984 to July, 1984 lasted until the end of March, 1985, a difference of 7 months which had to be taken from the last two phases - solution development and field test.

## 3. Limited transportation options

It was possible to move back and forth along the national highway by mini-bus. However, the interviewers were broken into three teams, one for each commune so that most of their travel was from the national highway inland. Most of this had to be done on foot since few villages have regular coverage by vehicles.

## 4. Slow turnaround time in data entering and processing

There was an initial delay in the actual editing and coding of the data until that staff member gained experience. However, the major problem was in having the data entered into the computer. The fact that AOPS had several

ongoing studies at this time, only one data entry person, and the fact that this person was on leave at the beginning of the problem analysis data entry period (replaced by a temporary with limited experience) delayed the processing of problem analysis results. In fact, much of the household KAP survey was analyzed at USC after a graduate student had entered the data on its mainframe. Philosophically, it is an excellent idea to have the data analyzed in country but in situations where there are deadlines and limited computing capability, exceptions should be made. The fact that the weak relationship between knowledge and skills related to ORT and a strong relationship between ORS use and social support was discovered after the field test was underway meant that the latter relationship was not given enough emphasis in the field test phase. The slow data analysis process also meant that a major burden of the initial analysis fell on the co-principal investigator (MC).

## VII SOLUTION DEVELOPMENT

The greatest challenge of the solution development phase was the integration of results from a number of independent studies. The final product, therefore, must be seen as resulting from a qualitative process rather than a quantitative one. This was first based on the apparent relation of specific independent variables to the variables of interest to the study: acquisition, preparation, and administration of ORS, and the referral of severe cases. Second, it involved the input of project staff and experiences gleaned from the literature. This led to a number of elements in developing a proposed solution. From that point, achievement of the following objectives was attempted. These elements were presented to decision makers at several levels. Each of the elements had a number of variables attached to it. Thus, the potential number of solutions to be tested was infinite.

### A. OBJECTIVES OF THE SOLUTION DEVELOPMENT

The following objectives stress the solution development process as opposed to outcome. Their evaluation is based, therefore, on the degree to which they occurred, a subjective determination:

1. To present results of the problem analysis phase to the Project Policy Committee and to involve the Policy Committee in the development of a proposed solution
2. To present the solution proposal to representatives of the Petit Goave Health District Committee and to representatives

of the intervention villages

3. To compare the revised solution proposal with the results of the Microdynamo computer simulation
4. To obtain approval by the Policy Committee of a final solution proposal for field testing

#### B. METHODOLOGY FOR THE SOLUTION DEVELOPMENT

With the project moving into the solution development phase, there was a need to create a process for input on the nature of the optimal solution at four distinct levels:

- 1) the policy committee for the project consisting of representatives of national programs,
- 2) the district advisory committee for oral rehydration which has been created through the efforts of the District Medical Officer
- 3) the community leadership, and representatives of the potential participants.

A major tool in facilitating input from these three groups was the body of data which had been collected and analyzed to that point. The manner in which these data were presented was in summary form, simple, and straight forward, and in a manner which allowed for the establishing of priorities from among alternatives or the selection of all alternatives if it was felt that

resources allowed. It was planned that the format for presenting the data would include:

- 1) a statement of the extent of the problem,
- 2) presenting the variables which are influencing the problem
- 3) alternatives for reducing or removing the problem including potential resources,
- 4) determining where the decision making capability lay in using those resources, and
- 5) the potential for access to the decision making capability. (the District Health Officer, the villagers themselves, etc.)

The approach to be used differed to some extent as follows according to the three groups:

#### Policy Committee

The following is the process followed:

- 1) Presentation to the Policy Committee of a diagram with major potential components to be included in an optimal solution with a summary of findings from studies carried out and related to each of the components.

- 2) Determination of alternatives for reducing or removing the problem including access to potential resources through use of the Nominal

Group Process. Four sessions were held with members of the Policy Committee.

#### District Advisory Committee (DAC)

The proposed solutions developed in the step above were presented to the DAC for revision. Special emphasis in the discussion was directed toward:

- 1) Determining where the decision making capability lay in gaining access to the possible resources.

- 2) The potential for access to the decision making capability One session was held with the DAC. Appropriate modification of the proposed solution was made.

#### Community leadership and representatives of the potential participants

Two leaders from each each intervention locality were invited to participate in the discussion. Results of the proposed optimal solution were presented in a simple fashion to those attending. The main purpose of the discussion was to gain the approval of the leaders and to inform them about the proposed solution. They were to examine from the perspective of feasibility and the extent to which their participation could be expected.

Upon completion of the meetings, a solution to be tested was presented to the Policy Committee which gave its approval to the field test. The solution development phase was carried out during the months of May and June,

1985.

## C. RESULTS OF THE SOLUTION DEVELOPMENT

### 1. The Proposed Solution

At the beginning of the process described above, the potential alternative solutions to be tested consisted of a set of four different models for each of the four project dependent variables. These can be found in appendix D.

There were a number of considerations to be taken into account when setting program direction priorities. First, since the government was promoting packets over home mix, the policy committee felt that that should be the study emphasis except in those villages where packets were unavailable. Second, since villagers used a variety of local teas for diarrhea and since the shapes and sizes of containers and mixing utensils varied widely, they suggested that time be spent on standardizing the mix. Third, most village did not have resident 'agents de sante'. Fourth, it soon became evident that the school was one of the more ubiquitous institutions in the rural areas such that consideration should be given to seeing to what extent school staff could be involved. Five, it became apparent that an effective outreach program, to mobilize community resources, would require an outreach worker who could routinely visit the communities, support their efforts, and identify problems. Sixth, since training resources were very scarce in rural Haiti, a decision must be made as to which resources could be used in training

community representatives. These constraints helped in determining program priorities since, to try and ignore them as realities could lead to program failure.

Based on these constraints and the input of policy committee members, district advisory committee representatives, and community leaders and affected populations, as indicated in the section on solution development, the preferred program strategy evolved.

## 2. The revised Solution Proposal

Based on the process described above, a revised solution was developed. Figure 8 on page 41 is a diagram of that solution. In it, there are four major areas. These areas of program effort are described as they actually developed rather than as they were to develop.

### a. The hypothetical model (figure 8):

Based on the solution development process, there appeared to be four major program areas to be addressed. These were:

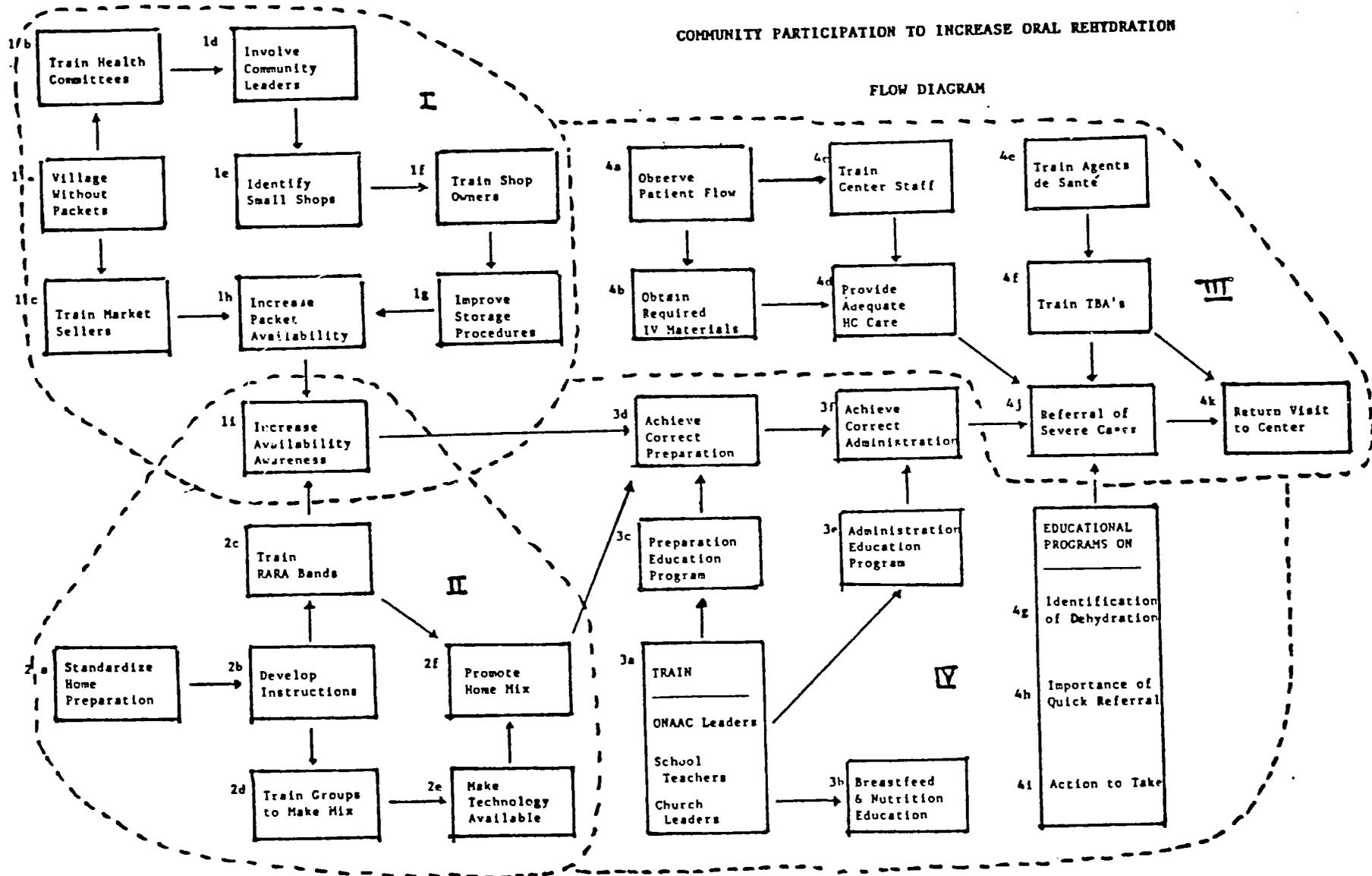
#### 1) Increasing packet availability (Sector I)

This consisted of identifying intervention communities without packet outlets, working with the local committee to select and train a shop owner to become a packet seller, how to promote, how to advise clients, and how to

FIGURE 8

COMMUNITY PARTICIPATION TO INCREASE ORAL REHYDRATION

FLOW DIAGRAM



store packages so that they would not spoil quickly. The shop owners were then given access to packets.

2) Emphasizing home mix (Sector II)

A project affiliate spent a considerable amount of time with different combinations of possible home mixes, investigated how to standardize its chemical properties, and tested the suitability of taste. The technology was not widely promoted because of limited resources. Community leaders were trained in home mix promotion but that was the extent of the effort.

3) Determining and improving care capabilities (Sector III)

Surveys were made of patient flow and treatment, the skills of health facility staff, and the need for IV materials. However, the only intervention in this sector was the training of the TBAs.

4) Training and education of community resources (Sector IV)

A major effort was made in this sector. School teachers and students were trained/educated. Village and religious leaders and TBAs were involved in the training. Some effort was given to the nutrition of diarrhea cases. A school curriculum and training modules evolved out of

the effort.

- b. The operational plan for the implementation of the solution development phase

The task of developing each of the sectors was assigned to various project team members. Sector I was covered by Dr. Michel Cayemittes, project co-PI, Sector II by Dr. Zil Mandy, an Indonesian USC MPH candidate, Sector III by Dr. Michael Leandre, District Director of Health, and Sector IV by Ms. Marion Clark, an MPH candidate at USC.

3. Results of the Comparison of the Nominal group and computer simulation approaches.

There had been initial plans to compare the solution development obtained through this relatively subjective process to one derived from the use of a computer simulation approach - the Micro-Dynamo. Unfortunately, before analysis could be completed, the investigator responsible for this task left Haiti and the work was not completed since no one remaining had those skills.

#### 4. Preparation of training materials and norms for the validation phase

##### a. Preparation of training materials

A significant part of the solution to be tested involved reliance upon community residents including community and church leaders, TBAs, market sellers and "poste de vente" owners in the promotion of and instruction of how to prepare and administer ORS. In order to most effectively involve these community residents, there was a need to prepare training materials. These activities were carried with the involvement of local residents.

Development of the training materials was carried out during the period July to September 1985, and included the following steps:

1. Review of data from the problem analysis phase:  
knowledge and attitudes of the people towards  
ORT and diarrhea
2. Determination of the terminology used by mothers to  
describe many aspects of the diarrhea-ORT problem
3. Review of the solution development objectives: to  
promote ORS and its availability, and to increase  
the appropriate preparation and administration of  
the solution
4. Development of lesson plans and preparation of  
visual aids.
5. Testing of the materials

##### b. Preparation of standardized norms for dealing with diarrhea and dehydration

Because of different approaches to dealing with cases of dehydration and the variety of mixing vessels and spoons available in rural Haiti, there was a need to prepare standardized norms for:

1. preparation and administration of ORS (packets and home mix)
2. storage of ORS packets in the poste de vente
3. hospitalization of children with severe dehydration
4. taking care of children who present at clinic severe dehydration.

These activities were carried out in the two month period July and August 1985 as follows:

1. preparation and administration of ORS (packets and home mix)
  - a. survey in the intervention area of 127 mothers and community leaders to assess the availability of ingredients needed to prepare traditional or home mix ORS solution (salt, sugar, "kola" bottles)
  - b. field test for assessing the practical reliability and acceptability of the solution in terms of taste
  - c. writing of preparation norms after discussion with the medical staff of the district health office.
2. storage of ORS packets in the poste de vente

- a. visits to select "postes de vente" to discover practical problems related to storage
  - b. discussion with owners/sellers on how to solve problems which were identified
  - c. writing of norms regarding storage
3. hospitalization of children with severe dehydration
- a. visits to Petit Goave, Grand Goave, and Leogane hospitals to assess problems related to the hospitalization of children suffering from diarrhea
  - b. discussion with the medical staff to get their opinion on how to deal with these problems.
  - c. suggestions on procedure revisions for admission of children. (norms were not developed)
4. taking care of children who present at clinic with severe dehydration.

No standards were set for the treatment of children

#### D. CONSTRAINTS

##### 1. The quantitative simulation

As mentioned, the fact that the quantitative simulation which was to have been carried out for comparison with the solution developed through nominal group approaches with the project policy committee and the members of

the health district planning committee was not completed meant that the solution emphasized the most visible components and, as a result, undoubtedly missed important but less obvious ones.

## 2. Policy committee member involvement in the project

Further, the fact that the policy committee members had not been involved in the details of the project as had been hoped meant that their input was partly a result of their own previous experience, perhaps more than a close look at the data presented to them. Although monies had been set aside for their travel to project areas, their individual schedules apparently prohibited that. The transition that the MOHP was undergoing at the time and the fact that the PAHO representative was reassigned are partly the cause of the lack of actual visits to the field.

## VIII. SOLUTION VALIDATION

The solution validation phase of the project consisted of a pretest, the training of groups identified in the solution development, a field test of two and one half months and a post test of two and one half months and a post test within project villages.

### A. PRETEST AND POST TEST

#### 1. SAMPLING

The sampling for the field test phase of the the project was completed in the beginning of June 1986. During the time between the initial "lokalite"

visits at the beginning of the project and the time at which the sample was drawn, it was found that the characteristics on which "lokalites" were originally selected had changed for a number of lokalites. This necessitated a categorization of lokalites by characteristics. The Chart on page 49 represents this new categorization.

## 2. COMPLETION OF NEEDS ASSESSMENT SURVEYS

The surveys were carried out by a single team of five field interviewers under the direction of a supervisor and an assistant supervisor, visiting households having at least one child under five years of age in each of the study localities according to a fixed schedule. The pretest lasted 35 days and was finished in August 1985. Four hundred and six households were visited. The post test lasted 32 days and was completed in March 1986. Four hundred and eight households were visited.

### B. TRAINING ACTIVITIES

As an important component of the solution development, training activities were carried out for a series of key people to be involved in the community effort to promote ORT in the intervention villages. The training hierarchy is represented on page 50.

#### 1. Objectives of the training session

Specific educational objectives were established for each of the different categories of volunteer educators as follows:

## PETIT GOAVE HEALTH DISTRICT, RURAL HAITI

## INCREASING ORAL REHYDRATION THROUGH COMMUNITY PARTICIPATION

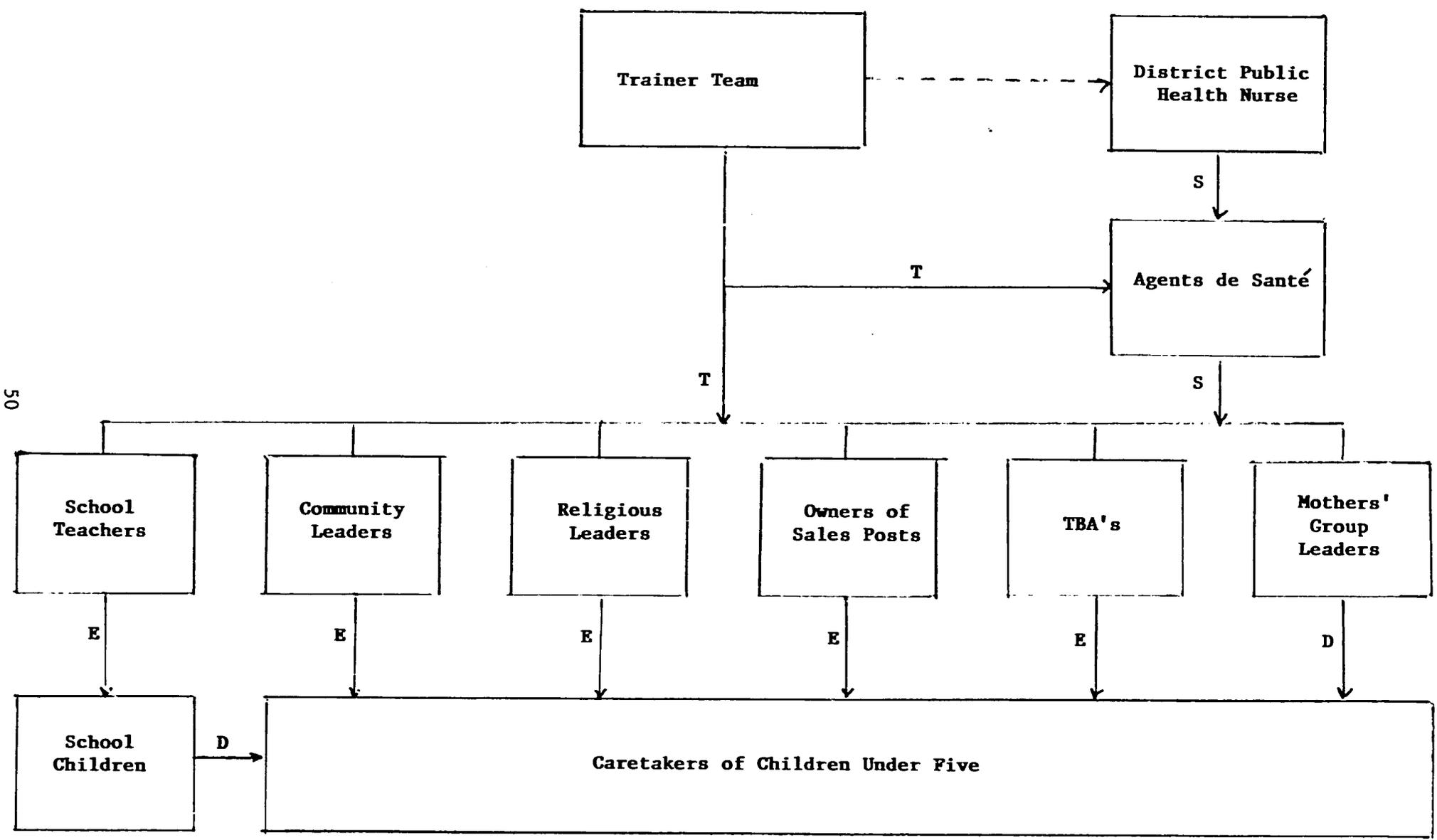
## ALLOCATION OF VILLAGES TO INTERVENTION AND CONTROL CONDITIONS\*

		WITH EXTERNAL AGENT**		WITHOUT EXTERNAL AGENT	
		SHOP OR MARKET**	NO SHOP OR MARKET	SHOP OR MARKET	NO SHOP OR MARKET
SCHOOL OR CHURCH**	INTERVENTION	FAUCHÉ	JUBLÉ	BELLEVUE	L'ACUL CHARLEMAGNE
	CONTROL	TI GUINÉE FAYETTE	MAROSE	TI KOUZIN	DOUCETTE NAN DALLE PAPETTE
NO SCHOOL NOR CHURCH	INTERVENTION	CORAIL	SAVANETTE	NOGESSE	GRAND RAVINE GLAIZE
	CONTROL	CHABANNE	NAN BOUZIN	BARETTE	TI PARADIS SALINE

\* AFTER CATEGORIZING, VILLAGES WERE RANDOMLY ALLOCATED TO INTERVENTION AND CONTROL CONDITIONS

\*\* CHARACTERISTICS FOR CATEGORIZING VILLAGES ON THE BASES OF THEIR EXTENT OF DEVELOPMENT

Figure  
**TRAINING AND SUPERVISION HIERARCHY**



50

S = Supervision Lines  
 T = Training Lines  
 E = Education Lines (Formal/Informal)  
 D = Diffusion Lines

1. Recognition of dehydration signs
2. Knowing methods of correctly preparing packet and home mixed ORS
3. Awareness of the importance of oral rehydration
4. Knowledge of the schedule of proper administration of ORS
5. Awareness of the importance of breast feeding and proper nutrition during diarrheal episodes.

#### TBA's

1. Skills in the promotion of ORS (packet and home mix)
2. Knowledge of how to correctly use ORS
3. Information on "Poste de Vente" existence
4. Recognition of dehydration signs
5. Skill in the organization of mothers' clubs
6. Skills in the promotion of breast feeding
7. Awareness of the dangers bottle feeding
8. Awareness of how to refer dehydration cases to health units.

#### Community Leaders

1. Skills in the promotion of ORS
2. Knowledge of the proper utilization of ORS
3. Information on "Poste de Vente" existence
4. Recognition of dehydration signs

#### Sellers of ORS

1. Skills in the promotion of ORS
2. Knowledge of the proper utilization of ORS
3. Knowledge of how to properly stock ORS packets.

## Health Agents (Agents de Sante)

1. Recognition of the signs of diarrhea and dehydration
2. Skills in the promotion of ORS
3. Knowledge of the proper use of ORS
4. Information on "Poste de Vente" existence
5. Skills in the organization of mothers' club
6. Skills for supervision of the teachers' classroom educational sessions

The training curricula consisted of a series of modules which were adapted slightly for each of the audiences above. As indicated, not all groups received all modules. It was felt that the module approach is more replicable than the development of totally distinct training materials for each group of trainees.

## 2. Methodology of Training

The following methodologies were used during the training programs:

1. Lecture/discussion - provision of factual information
2. Use of visual aids - includes ORS ingredients and mixing utensils
3. Demonstration - showing of the steps in preparation and administration of ORS
4. Role play - used to have trainees actual attempt to build skills based on what was presented

It should be noted that for the groups with a high percentage of illiterates, emphasis was placed on role play and demonstration. Pre and post tests evaluations (formal for teachers consisting of pre and post tests and informal discussions of what was understood for the remainder) were carried out.

### 3. Implementation of the training programs

From the 3rd of October until the 28th of November (most of the sessions took place in October), 114 people were trained, as follows:

GROUP	DURATION OF TRAINING
11 teachers	3 days
19 TBAs	2 days
24 community leaders	1 day
8 religious leaders	1 day
4 natural (unofficial) leaders	1 day
28 sellers of ORS packets	1 day
20 TBA's and mothers of under 5's	1 day

A refresher course was organized from the 17th to 19th of December for 94 individuals who had previously attended training sessions. There were two new trainees added at this point. Those missing the refresher course included 3 teachers, 15 sellers of ORS, 2 TBA's and 7 mothers. The content of the refresher course was based on:

1. Results of the the post test evaluation
2. Observation visits carried out by field interviewers
3. Reports made by health agents during their visits to the intervention localities.

#### 4. Strengths of the Training Program

The vast majority of the trained people appeared to be very interested in acquiring new knowledge and skills on ORT. It seemed that the mothers particularly enjoyed preparing the home mix solution. Trainees indicated their appreciation of the per diem. It is speculated this contributed to high rate of return for the refresher course. It may have been a factor, as well, in the apparently high rate of promotion of ORS in their respective localities.

#### 5. Problems Encountered

Acquiring new knowledge on management of diarrhea was not always an easy task for the older trainees and those who were illiterate (especially the TBAs) as the knowledge presented was somewhat in conflict with their previous beliefs. It was also found to be difficult to enable some trainees to understand and to remember:

- \* The exact quantity of ingredients to use for the preparation of ORS
- \* The time intervals for giving ORS to children and the amount to give
- \* The fact that the ORS should not be kept overnight
- \* The appropriate diet for children with diarrhea

Further, it was found that getting all rural people to attend a session on a specific day was sometimes difficult.

#### 6. Implementing the education effort

As soon as training was completed, trained volunteer promoters and educators were asked to start working in their communities. Five health assistants (HA's) or 'agents de sante' were assigned by the District Health Officer to work in the intervention villages on a two day a week basis. These individuals, who were government employees (with promotion of ORS as one of their responsibilities), were assigned to the 12 intervention communities strictly for the purpose of promoting ORS and supervising the volunteers. They operated on a rotating schedule spending what would be a normal time 'in-village' on the supervision of village volunteers as well as visiting homes and becoming involved to a limited extent (through demonstrations) in the actual educational effort. The health assistants (HA's) were given \$5.00 per day to cover expenses (travelling, food, etc.) over and above what they would normally receive, since this assignment required much greater travel time and expense on their part. In the month of November, because of lack of coordination, all did not start working at the same time. In December, three HA's worked eight days while two worked seven days. Each HA was responsible for 2 to 3 localities. Although this could be considered a high level of staffing input, it should be realized that this is often the pattern during the initial start-up phase of a project.

## IX. FIELD TEST

### A. OBJECTIVES

As indicated, 12 villages had been allocated randomly to intervention while the remaining 10 (Table 2) served as controls. The field test was carried out from the middle of November 1985 to the end of January 1986. Based on the solution development process, time and logistical constraints, the

following objectives were selected for testing during the solution validation or field test phase:

1. Acquisition of ORS

- a. To increase the availability of ORS packets in the intervention localities
- b. To increase the level of awareness of caretakers of under fives regarding the availability of ORS in these localities
- c. To promote use of home mix ORS in families with under fives living in the intervention localities

2. Preparation of ORS

To obtain correct preparation of oral rehydration solution - packet or home mix ORS - in households with under fives in the intervention localities

3. Administration of ORS

To obtain correct administration including appropriate timing and amount of ORS for children with diarrhea.

B. RESULTS

- 1. Awareness and availability of ORS packets in the localities of intervention

Twenty eight (28) 'postes de vente' were opened in the ten intervention villages after involving the community in the selection of people to sell the ORS packets. Community residents were asked to select the three most popular owners of "petite boutiques" (small shops) in their localities. Those selected were contacted and invited to attend training (described above) to increase their competence in managing an ORS poste de vente. In the ten intervention communities twenty eight potential sellers were trained in November 1985. In the training session, the sellers were taught how to promote ORS in their localities, properly use ORS and how to store ORS packet in a box (preferably of metal) away from humidity.

Interviewers were sent to the field in late December to do a qualitative analysis on the extent to which the new "postes" were operating. It was found that all of the sellers had placed signs promoting ORS in front of their "postes" and that the packets were appropriately stored. Sellers were also able to explain how to correctly prepare ORS, suggesting that the training had effect. The sellers, however, complained of selling fewer packets than they had expected. In a follow-up survey in late January 1986, leaders of the intervention villages were asked to identify new postes which had been opened since the project began. The leaders identified 92% of the postes, an indication that the overwhelming majority of the postes was known to the leadership of those localities as of that date.

In the post test survey, mothers were asked where, in their localities, they could purchase ORS packets. 73.5% of the intervention village mothers mentioned a poste de vente as a source of ORS packets and 87% of these claimed they used ORS the last time their children had diarrhea; bearing in mind that in the problem analysis phase (the study of marketing of ORS), only 32% of the respondents had identified a poste de vente (in villages where they existed) as

a source of ORS. When users were compared to non-users of ORS in the intervention villages, regarding awareness of a poste de vente, 87% of the users were aware of a poste de vente in their village as opposed to only 63% of non-users. Thus there appear to be at least some relation between awareness and use. On the other hand, among the users of ORS in the intervention villages, 86% claimed that they were able to find ORS packets in their localities as opposed to only 25% in the pretest, showing a significant positive change since the inauguration of the 28 new postes de vente. The high level of awareness of selling posts among mothers in the localities may be due to the involvement of the community in selecting people to sell ORS packets.

## 2. Increase in the Use of ORS

Home mix was promoted through training of teachers, TBA's and mothers of under fives invited by the TBAs. They were taught how to prepare the home mix ORS. Teachers were taught how to promote the use of home mix ORS among school children; TBA's among pregnant and breast feeding women; and mothers among their friends and neighbors. Packet ORS was promoted through the training of the same teachers, TBA's, and mothers among the same target groups mentioned above. Apart from these, the study trained sellers, formal community leaders, religious and natural leaders.

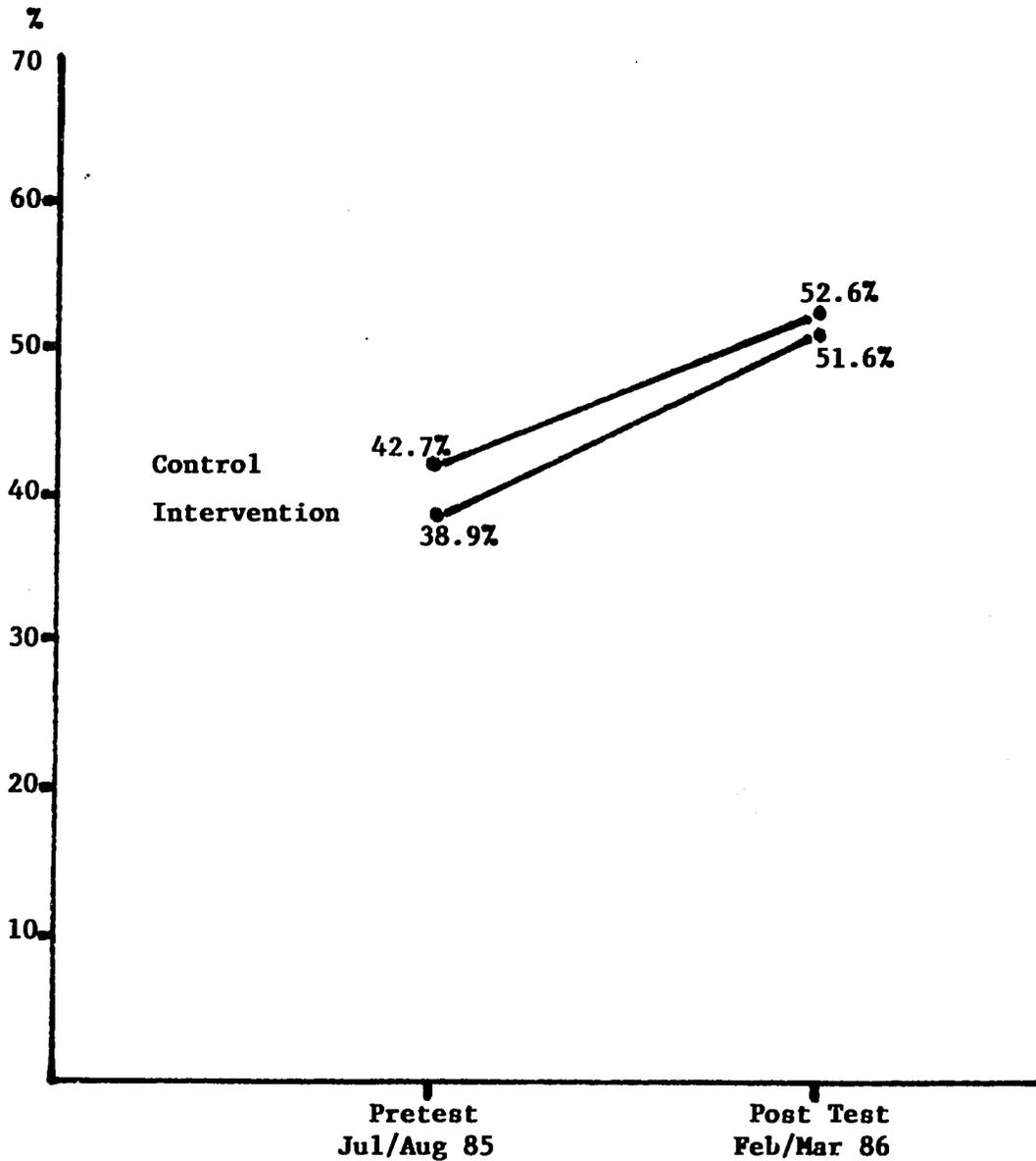
The study appeared to have little impact on the use of home mix ORS. Within the intervention villages, reported use of home mix dropped from 4.4% to 2.8%, while among control communities, the use rate decreased from 4.8% to 4.4%. During the intervention phase, there was much greater effort given to the promotion of ORS packets including opening shops and training of sellers and community leaders on ORS packets than to home mix. In addition,

consideration must be given to the fact that the national program promotes only the packets.

While the increase in the level of ORS packet use rate was quite noticeable in both intervention and control villages, the difference in the use rate increase between intervention and comparison communities was smaller. Within the period October, 1985 to February, 1986, there was a relative increase of 32.6% (from 38.9% to 51.6%) in reported use in intervention villages between pre and post tests while there was a relative increase of 23.1% (from 42.7% to 52.6%) in comparison villages (figure 10). Although the change was in the desired direction with a relatively higher increase in the intervention villages than the comparison villages (32.6% versus 23.1%), the difference was not statistically significant. This suggests that the community participation approach has the potential of positively increasing use rate. However, to achieve a significant change, it is suggested that attention be given to approaches which were directed to changing individual attitudes in addition to the awareness, knowledge, and skill changes stressed in this effort. However, the very short intervention period, one which was disrupted by the political events going on in early 1986 in Haiti, might have been a factor in the small amount of change found. Further, the fact that there was a considerable change in the control villages would suggest that the pre and post test interviews might have had a role in sensitizing the control population to ORS. It should be noted that the reported prevalence of diarrhea during the last two weeks preceding the survey during the pretest was 31.9% in the intervention villages and 38.2% in the comparison villages; in the post test, the prevalences were 27% and 28.6% in the intervention and comparison villages respectively. Thus, the histories of diarrhea prevalence in the intervention and comparison communities appear to be similar.

Figure 10

USE RATE OF ORAL REHYDRATION SOLUTION  
IN PACKETS AMONG THE TOTAL SAMPLE



Relative Change	Intervention villages:	32.6%
	Control villages:	23.1%

### 3. Correct Preparation of ORS

#### a. Knowledge of correct preparation of ORS among the total sample (users and non-users)

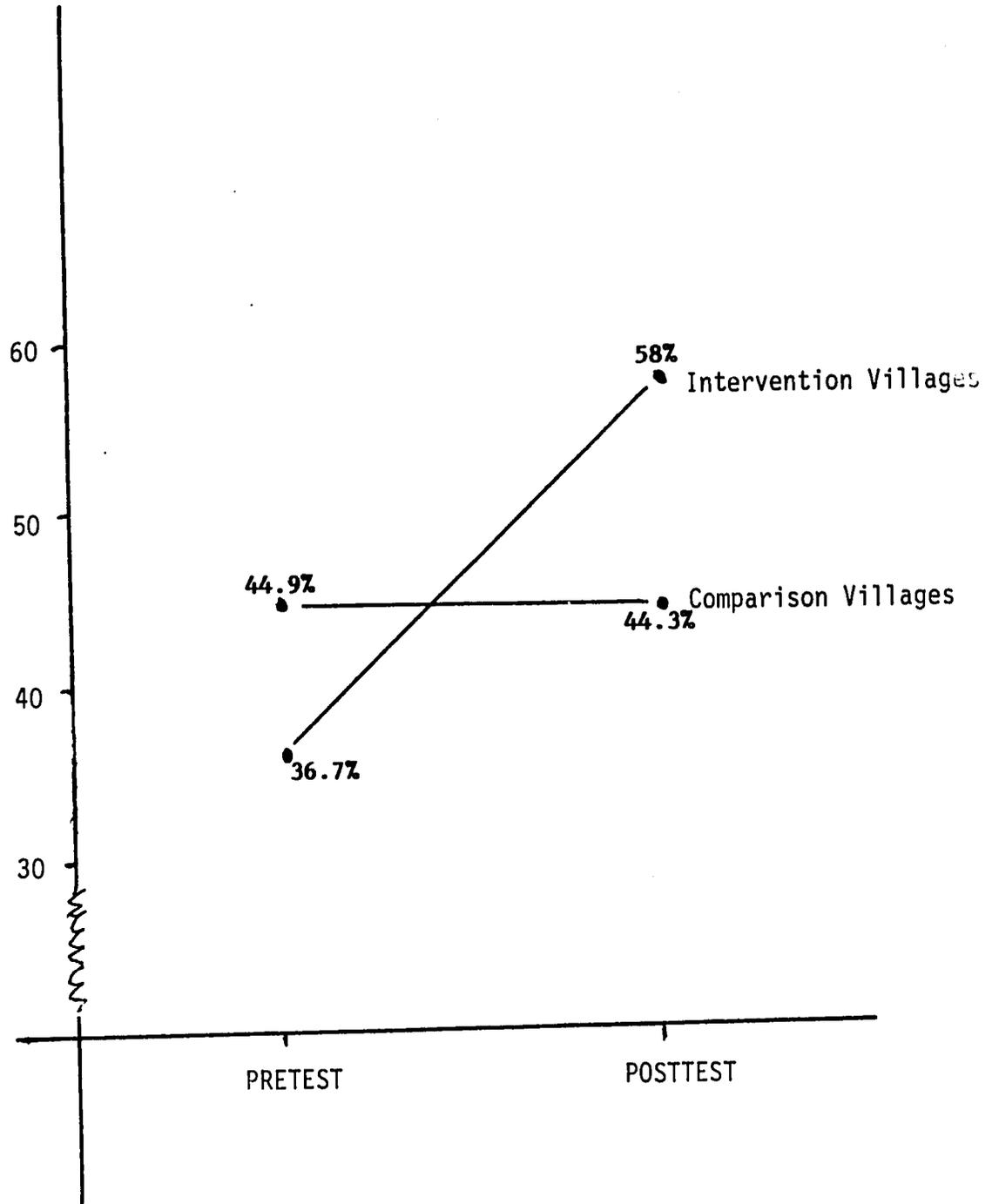
There was a remarkable improvement (58%) in knowledge of correct preparation among the entire sample within the intervention villages from pretest (36.7%) to post test (58%) showing a relative increase of 58% while the change in the control villages was a decrease of 1.4% (from 44.9% in the pretest to 44.3% in the post test). The change is statistically significant ( $p < 0.05$ ) assuming a standardized population for the intervention villages of 183 and of 226 for the control population. If we integrate responses on how to use ORS (having an actual range of 2.45 - 10.17 - see appendix K), we obtain a response mean of 4.87 for the pretest and 6.61 for the post test in the intervention villages and 5.32 and 5.06 for the pre and post tests respectively in the control villages. The magnitude of change is a 40% increase in favor of the intervention.

#### b. Knowledge of correct preparation of ORS by users

The study showed an increase in correct reporting of preparation of ORS among users (figure 12, page 63). There was an increase of 98% in reported correct preparation by respondents in intervention villages between pre and post tests (from 32.4% to 64.2%) compared to an increase of only 4% (from 53.7% to 55.8%) among control villages between pre and post tests. The observed change is statistically significant ( $p < 0.05$  - assuming a standardized population for the intervention villages of 94 and 114 for the control villages).

Figure 11

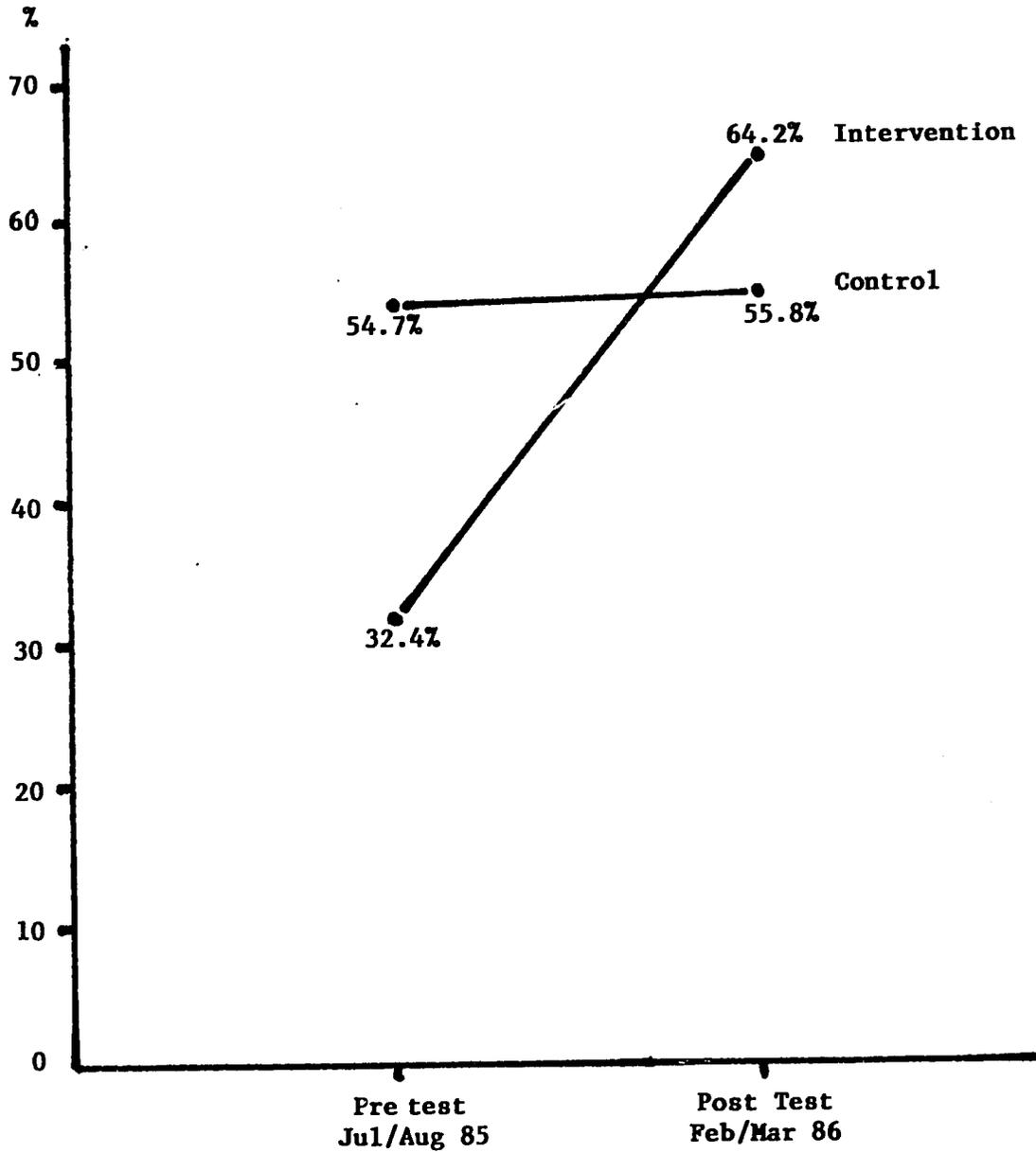
KNOWLEDGE OF CORRECT PREPARATION OF  
ORAL REHYDRATION SOLUTION AMONG THE  
TOTAL SAMPLE



Relative increase for the intervention villages      58%  
Relative decrease for the control vilages              1.4%  
△ 56.6%

Figure 12

**CORRECT PREPARATION OF ORAL REHYDRATION SOLUTION  
AMONG REPORTED USERS OF ORS ONLY**



Relative Increase    Intervention villages: 98%  
   Control villages: 4%

#### 4. Correct Administration of ORS

This can be measured by three variables:

- 1) When to begin giving the solution
- 2) How often to give the solution
- 3) How to administer the solution

Because of the open-ended nature of these items, it was necessary to rely primarily on qualitative answers in determining the level of correct administration for the three variables. Results are discussed by user status.

- a. Knowledge of correct administration of ORS among the total sample (Users and non-users)

- 1) When to begin giving the solution

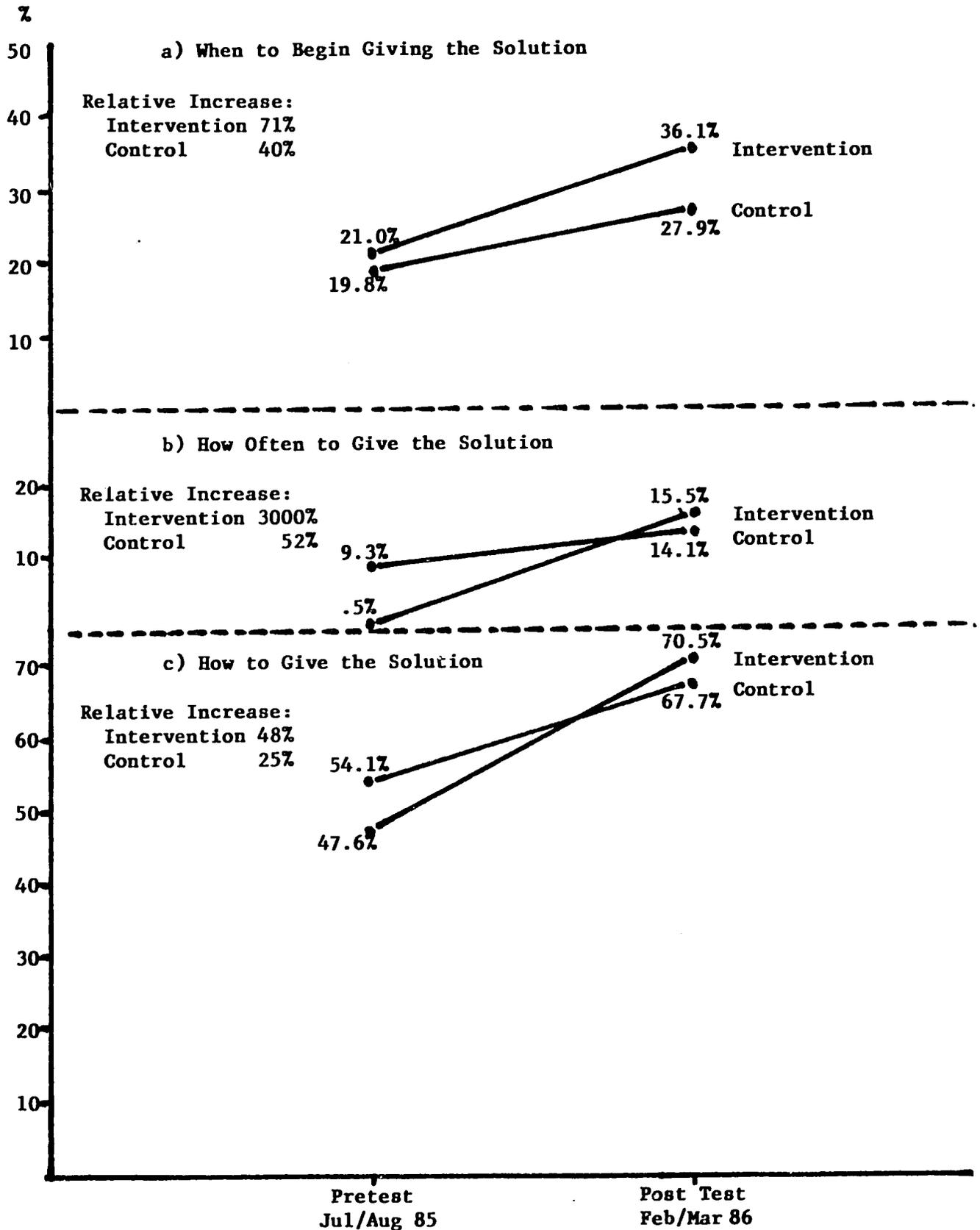
The level of correct answers changed in the intervention villages from 21% at the pretest to 36.1% at the post test, a relative increase of 71% while the percentages were 19.8% and 27.9% from pre to post test respectively; showing a relative increase of 40%. The magnitude of change between intervention and control villages is in favor of the intervention. The significance level does not meet the criterion of  $p = .05$ .

- 2) How often to give the solution

There was a change from the pretest (0.54%) to post test (15.5%) among intervention villages, while the change in the control was from 9.25% at pretest to 14.1% at post test. The magnitude of change among intervention

Figure 13

LEVEL OF KNOWLEDGE OF CORRECT ADMINISTRATION OF ORS  
AT PRETEST AND POST TEST AMONG THE TOTAL SAMPLE



villages was 18 times higher than in the control communities. This resulted in a significance level of  $p < .01$ .

### 3) How to administer the solution

The level of correct answers changed from 47.6% at the pretest to 70.5% at the post test in the intervention villages resulting in a relative increase of 48% while, in the control villages, the percentages were 54.1% and 67.7% from pre to post test with a relative increase of only 25%. The magnitude of change between intervention and control villages is in favor of the intervention villages (Figure 13, page 65). The significance level does not meet the criterion of  $p = .05$ .

#### b. Knowledge of correct administration of ORS among users

##### 1) When to begin giving the solution

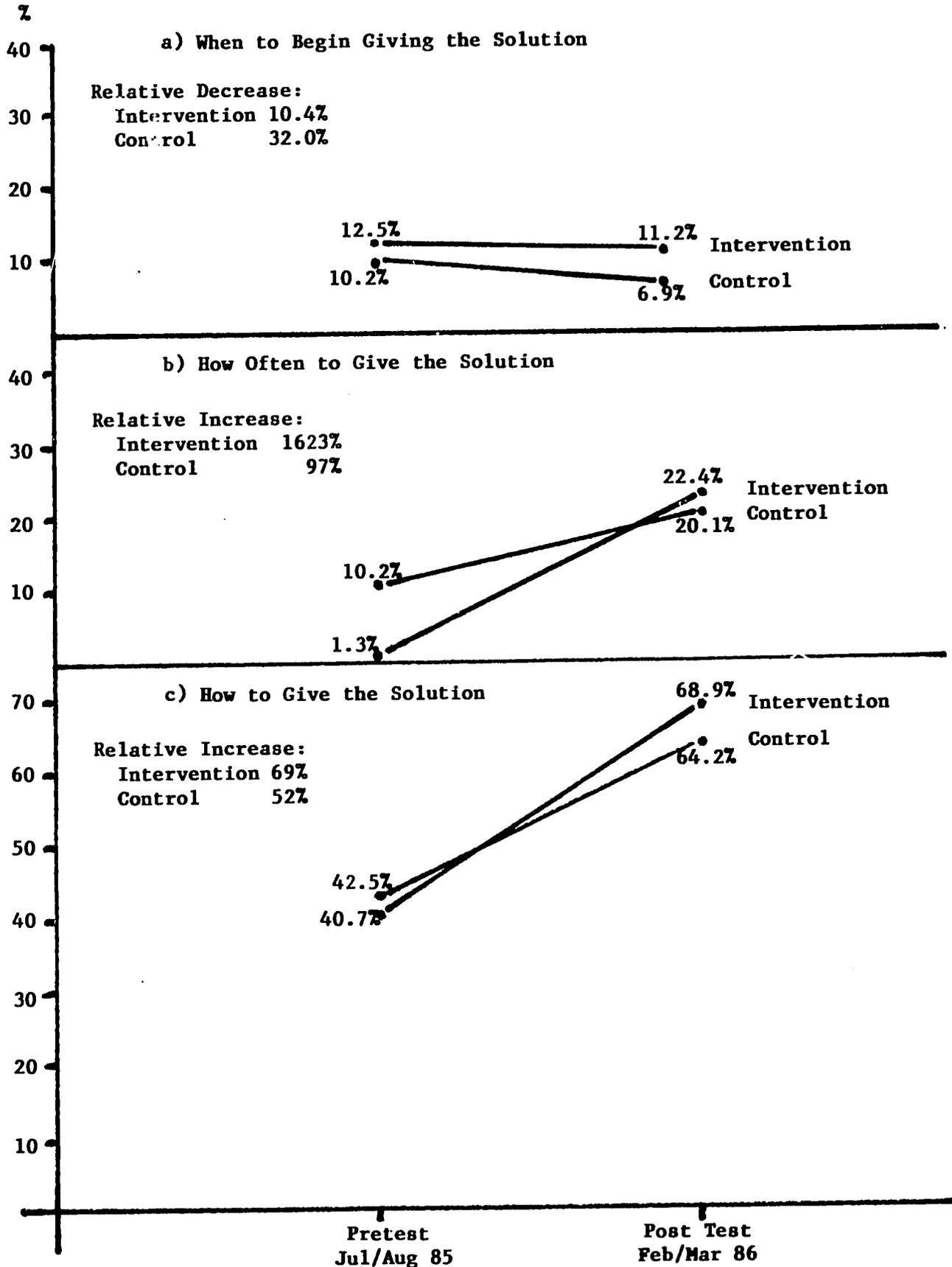
The level of correct answers among the intervention villages changed from a pre-test rate of 12.5% to a post-test 11.2%, showing a relative decrease of 10.4% while in the control villages, the percentages for pre and post-tests were 10.2% and 6.9% respectively; a relative decrease of 32%. Although the intervention group showed a smaller decrease, this was in the opposite direction to what was expected.

##### 2) How often to give the solution

The level of correct answers changed drastically in the intervention villages from 1.25% to 22.4% while it changed from 10.2% to 20.1% in the control villages. The difference in change between the intervention and control villages is highly in favor of a positive impact of the intervention;

Figure 14

LEVEL OF REPORTED CORRECT ADMINISTRATION  
AMONG USERS OF ORS



the relative increase being 8.5 times higher in the intervention than the control villages. The level of significance is  $p < .05$ .

### 3) How to administer the solution

The level of correct responses in the intervention villages changed from a pretest 42.5% to a post test 64.2% showing a relative increase of 52%. In the control villages, the percentages were 40.7% and 68.9% in the pre and post tests respectively, a relative increase of 69% (figure 14, page 67). This suggests that the program had no apparent effect on this variable.

It is apparent that a greater impact was found among the total population (with about half being non-users) than among users only. This is not surprising. When we look at the table on page 65, it is apparent that for items 'a' and 'b', there was a major increase from pre to post test for both the intervention and control communities. This suggests two things. First, a combination of the continuing effects of the national campaign and sensitizing effects of the pretest were factors in the increases. Second, because of the lower correct response levels at the pretest among the total population than among the users only group, there was greater opportunity for impact during the intervention. What is of interest is the relatively high level of knowledge of how to give the solution at the pretest among respondents in both intervention and control groups. What is further interesting is that levels of knowledge about how to give the solution appeared to be higher among the total population than for the 'users only' group. This points to the need to reach users as well as non users on this specific item.

A summary of the findings of this section is presented in table 3 on page 70.

### 3. The relation between the results and levels of community participation

After dealing specifically with the issues raised by the objectives lets ask two questions: How much was the community involved in the promotion of ORS? and how can results be correlated with the level of community participation?

#### a. How much was the community involved in the promotion of ORS?

Each group which was trained had at least one specific target population as a responsibility as follows: community leaders - formal community groups; religious leaders - church groups; natural leaders - neighbors and friends. A survey later, however, found that those trained tended to work across the board rather than focusing on a specific subset of the population. For example, community leaders spent 76.6% of their time outside of their specific target group. The methods which they reported using in health promotion were by rank order: information provision (51%), demonstration of ORS preparation (30%), and having mothers role play the demonstration (15%). According to respondents, demonstrations with information and explanation were the most common type of educational activities (38.5%); second was the simple provision of information (29.6%); third was simple demonstration (25.2%); fourth was having mothers do demonstrations (5.9%).

Table 3

COMPARING THE RELATIVE CHANGE\* IN ORT KNOWLEDGE AND USE  
BY CARETAKERS OF UNDER-FIVES BETWEEN THE PRETEST AND POST TEST

THE TOTAL SAMPLE OF RESPONDENTS

Pre and Post Test Items Type of Village	KNOWLEDGE OF ORT				ORS Packet Usage
	How to Prepare	When to Begin	How often to Give	How to Administer	
Intervention Villages	↑ 58%	↑ 71%	↑ 3000%	↑ 48%	33%
Control Villages	↓ 1%	↑ 40%	↑ 52%	↑ 25%	23%
Significance of Differences in Relative Increases	↑ p < .05	↑ NS	↑ p < .01	↑ NS	NS

USERS ONLY

Pre and Post Test Items Type of Village	KNOWLEDGE OF ORT			
	How to Prepare	When to Begin	How often to Give	How to Administer
Intervention Villages	↑ 98%	↓ 10%	↑ 1623%	52%
Control Villages	↑ 4%	↓ 32%	↑ 97%	69%
Significance of Differences in Relative Increases	↑ p < .05	NS	↑ p < .01	NS

\*Relative Change =  $\frac{\text{Post test change}}{\text{Pretest change}} \times 100 - 100$

The difference in ranking may be simply a function of the fact that the demonstrations may have been carried out with a larger group than the information giving but demonstrations have been reported to be more appealing in other educational programs elsewhere and their reported frequency by respondent suggests that this approach should not be overlooked in program planning. This focus on the cognitive side of education, rather than affective, may be the cause of the considerable increase in knowhow related to preparation of ORS and the relatively small increase in reported use.

In the post test, respondents were asked if "there had been any one who came by to see you and give you information about diarrhea or ORT?" 43% of the respondents in the intervention communities said that they had been contacted. Among the positive responses given by women who were contacted, in rank order, the TBA was most frequently mentioned (39.8%); second were community leaders (37.5%); next were the sellers (17.2%); the natural or religious leaders were next to last (4.3%), and only one of the mothers in the intervention communities was mentioned (1.1%). This lack of mention of the mothers who had been trained as contacts may be a weak point in the program, since a number of studies show that peer group contact can have a significant impact. It may also mean that the mothers were not perceived as having a role in the promotion and actual contacts may not be seen as such. Even though five communities had a school health education program, neither teachers nor students were mentioned. This may be due to the fact that schools were closed as a result of political disturbances shortly after the teacher training had been completed.

As to reports of meetings about ORT, organized by anyone, from within or from outside the community, the 'agent de sante' was mentioned most frequently by those who said that they had been in a meeting (42%). Community leaders were second (34%). The TBAs were mentioned as 14% of the responses. The natural and religious leaders (4.4%) and sellers (also 4.4%) followed. Finally, only one of the responses mentioned a mother as leading a meeting.

b. How can results be correlated with the level of community participation?

No quantitative assessment can be done for the effectiveness of the intervention as no quantitative objective was set. Besides, we cannot totally eliminate external factors which may play a role in the results. For example, the national program on promoting ORT which was going on at the same time may have contaminating effect. Nevertheless, the following comments can be made:

The acquisition of ORS -

Needless to say, from data presented earlier in the report, the active participation of the leaders in the communities in the establishment of new "postes de vente" has contributed significantly to the high level of awareness of the postes in the localities and ORS availability on a larger scale.

The preparation of ORS -

To determine the possible effect of community participation on increased knowledge of how to prepare ORS, we used a Spearman Rank

Correlation test between the level of knowledge on how to prepare ORS and the level of community effort in the different intervention villages. We used an appropriate scoring system for evaluating all responses on how to prepare ORS as was described earlier in the report. For the level of community effort, the following elements were taken into consideration: types of activities, methods of teaching, information given on how to prepare ORS, number of related activities carried out and type of people encountered. These elements (dependent variables were combined into an index with a value range from 1.24 to 13.24 points (with a mean of 5.47). The resulting Spearman Rank Correlation Coefficient was +0.72 yielding a p value of <.05. This suggests that the participation of community educators in teaching mothers how to prepare ORS played a positive role in their level of knowledge.

#### The administration of ORS -

Here again we used the Spearman Rank Correlation Test to assess the degree of correlation. The following responses related to administration were used with appropriate scoring: when to begin administration, how often to give ORS and by what method. Variables related to community effort were: type of community activities used to meet with people, method of teaching, information given on administration, and number of related activities carried out. Scores had a range of from 1.06 to 10.7 with a mean of 4.54. The correlation coefficient was +0.45 (not significant at the  $p = .05$  level). That this correlation did not seem to be significant suggests that the level of community effort may not be sufficient and that other factors dealing with attitudes of the people may be intervening. Again, however, the value was in the desired direction and suggests that had the intervention gone on for an additional period of time, a significant relationship might have occurred.

## C. CONSTRAINTS

There were a number of obvious constraints which seemed to have a direct impact on the outcomes of the intervention period.

### 1. Very limited time for the intervention period

As was indicated above, the intervention period, which had been planned for a minimum of six months, was reduced to a period of about two and one half months. The fact that a number of data items appeared to be in the desired direction but not quite significant suggests (although this is only an assumption) that a more extended intervention period might have resulted in a more measurable impact.

### 2. The political disturbances during the intervention phase

Oral rehydration therapy, while constantly in the minds and on the lips of the researchers, is quite certainly not a major topic of discussion under the best of situations. The fact that Haiti was going through some of the most auspicious changes in the last several decades at the time of the intervention phase must have had an impact. What is not known is the extent to which there was an impact. The post test was carried out during periods of reduced movement within the country. It would not be irresponsible to assume that the sight of field interviewers going house to house and collecting personal information during this period, given the supercharged political climate, might have had an impact on response patterns. Since this apparently happened across the board during the post test, there is no immediately apparent way of factoring out the impact of the political disturbances. Further, it can not be said whether the response patterns would have been positively or negatively influenced.

### 3. Slowness of data entry and processing

The fact that a single institution (AOPS) was providing support to several concurrent PRICOR studies as well as responding to its own data analysis needs led to fairly slow turn around time for the data analysis. This extended the periods between phases and was, to some extent, responsible for the short intervention period at the end. Further, the fact that data analysis support in any significant amount was not written into the University of South Carolina's share of the budget hampered the ability of that institution to provide backup support. In one study, the graduate assistant researcher entered the data in order to be able to analyze them for his dissertation research. The delay meant, however, that the data were not effectively available for use in the designing the proposed solution for field testing. The findings, which will be reported elsewhere, did point to the fact that a lack of emphasis on the attitudinal and social network component of the educational effort may have reduced its effectiveness. Further, the editing and coding process were slowed somewhat by the need to hire and train a person from the area because of the lack of availability of such a person in the host organization. It is suggested that the types of analyses required of an operations research study be done on a computer of greater power than the TRS-80 Model 12 that was available for this study. Consideration should be given to ensuring the availability of more sophisticated hardware in future programs as the costs of powerful microcomputers have been reduced to the point where they would have been a small part of the total budget of this one study.

### 4. Absence of stable community health workers in the intervention communities

## X. CONCLUSIONS AND RECOMMENDATIONS

Although ORS use rates did not change significantly between intervention and control communities there were a number of findings of considerable value. These are as follows:

1. The educational intervention by volunteers and health assistants had a definite impact

The fact that there was a significant increase in the knowledge of correct preparation of ORS among intervention communities compared with control groups; the fact that there were increases among the total intervention group sample for when to begin and how often to give and among users of packets in intervention villages for how often to give demonstrates that village volunteers, in collaboration with government workers, can have an impact on ORS education.

2. The fact that a district staff could be mobilized to collaborate in an operations research project in such a way that immediate adjustments could be made to approve administrative feasibility and increase replicability.

The involvement of the District Health Officer as field supervisor permitted his direct involvement in the entire decision making process and meant that his experience and that of his staff could be used in testing the administrative feasibility of a number of the intervention strategies selected. It is suggested that variants of this approach be part of the typical

operations research efforts at the field level. Further, the fact that the project relied almost totally on district staff for program effort meant that what was found to work had a reasonable probability of being replicable in similar settings elsewhere in Haiti.

3. The fact that village volunteers could and did reach 43% of the households surveyed to promote the concept of ORS use.

A real question was the extent to which volunteers could be counted on to promote ORS. That almost half of the households with under fives had been contacted in a period of two and a half months indicates a significant effort on the part of the volunteers and suggests that this is a viable approach. It is felt that the training program might have been too brief and that there would need to be a sequence of in service training efforts to cover all areas of a relatively complicated program such as this. However, the data point to this approach as quite viable in field outreach efforts. How often such volunteers would need reinforcement, both to maintain their level of knowledge and to continue to promote ORS should be investigated through further operations research studies.

4. The fact that it was relatively easy to convince villagers to open new ORS sales posts.

28 new posts were opened in ten villages out of 30 attempts. Although there is a definite risk in having people assume a risk of selling ORS packets without the guarantee of demand or profit, it seems that if those logistic issues could be worked out, the involvement of community leaders in encouraging

villagers to undertake the selling of a given product speaks well for using this approach to increase access in the future.

5. The fact that it was possible to train sales post staff in ORS storage, sales, and education

Observation showed that new sales post operators correctly displayed an ORS promotional sign, knew how to counsel clients of preparation of ORS, and were recognized by leaders as sources of ORS several months after beginning their effort. Further, it was found that villagers in general increased their awareness of the existence of a sales post as a source of ORS in their community from about 32 to 74%. These are rather dramatic findings and point to the fact that health education resources can be expanded quite rapidly in a rural community through the training of volunteers who are seen as having a logical role in the education of villagers about a specific topic. This is an exciting finding.

6. The fact that TBA's were willing to receive ORT training and participate in the community education program.

TBA's in some countries have been found to be initially reticent to become involved in the modern medical system although there is an extensive literature documenting their impact. The fact that they not only were willing to participate but were mentioned by respondents as the most frequent contacts in the promotion of ORS points to them as important resources in such a program for the future. The fact that they were a bit more difficult to train than the younger, more literate villagers, suggests that additional effort will have to

be expended in developing effective training approaches.

7. The fact that teachers were willing to participate in training for ORT and use the module in the classroom.

Initial barriers were found to having teachers participate in the program because of disagreements over wage negotiations with the government. However, in the final analysis, after being promised the standard per diem for attending in service training, it was found that they were quite willing to participate. Unfortunately, they went on break at the time of the beginning of the intervention and then were hampered by the initiation of political disturbances on their return. Thus, their impact could not be assessed. Further studies should be done in this area along with the integration of the curriculum that was developed into a district wide effort. The fact that the curriculum served as the basis for training modules of other volunteers is an important point that should not be overlooked.

8. The fact that a locally acceptable curriculum in Creole could be developed, tested, and adopted for use with the schools and with different groups of community leaders.

Although there are no results analyzed as of yet on the school intervention, teachers were willing to work as a group in the development and testing of a Creole based curriculum. Further tests of the approach in developing of other health related curriculum pieces should be tested.

9. The fact that it was possible to develop a standardized process for

making home mix ORS that was both acceptable to taste and met the WHO formula requirements.

By working with villagers in their own setting, it was possible to take local ingredients, use local mixing and measuring devices, and develop a solution that could then be tasted and tried by mothers of under fives for acceptability. This was done in a way which stayed within the guidelines of the WHO as to formula requirements.

10 The development of a design which involved matching of villages according to specific characteristics - presence or absence of a school or church, presence or absence of a shop or market, and presence or absence of a government extension worker.

This approach permitted the development of a comparable control group of villages and the ability to assess the impact of these characteristics and their interactions on the use of ORS. This has been a problem in previous rural primary care research efforts but did not seem to be an issue in this study.

The weakness in the project seemed to be the lack of time to test each and refine each of the positive findings listed here. Significant community resources were identified, developed, and involved in a program to promote ORS, but it is evident that not enough attention was paid to determining how best each of these resources could be used nor how to link these efforts to ongoing national training programs. The recommendation is that there be future studies to determine how best each of these resources could be employed in ORS programming and in related activities.

Overall, the study was successful in showing that villagers could be mobilized and trained to serve as volunteers in an important but complex and demanding program in a way which would reach a large percentage of a given target population. This implies, however, that the very sparsely scattered number of 'agents de sante' would need to be redistributed to provide backup, training, supervision, and evaluation for such an approach to be successful. Because of the fact that the strategies taken in this study offer a promising way to reach a larger share of the population with key primary health care interventions, there is a need to reexamine the current primary care approach in rural Haiti in ways which draw upon the resources of the community.

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XII. APPENDICES

DEPARTMENT OF PUBLIC HEALTH AND POPULATION  
HEALTH PRIORITIES SUMMARY  
PUBLISHED MAY 1982

Priority #1 - DIARRHEA

- Justification - approximately 75% of recorded deaths of children under 1 year are attributable to diarrhea.
- Objectives - promote oral rehydration therapy; increase access to potable water; promote latrine construction & urban sanitation services.

Priority #2 - IMMUNIZATIONS

- Justification - 45% of known causes of death are due to communicable diseases.
- Objectives - increase immunization coverage of the most vulnerable age groups with BCG, DPT, polio, measles and tetanus immunizations.

Priority #3 - TUBERCULOSIS

- Justification - TB is the second leading cause of death and has a prevalence rate of 2-3%.
- Objectives - reduce the risk of infection via BCG vaccination, case-finding, ambulatory treatment and organization and standardization of treatment.

Priority #4 - NUTRITION IMPROVEMENT

- Justification - approximately 60% of children under 5 years suffer from some degree of malnutrition.
- Objectives - increase agricultural production; improve nutritional state of pregnant women and children under 5 years; eliminate kwashiorkor and marasmus.

Priority #5 - MATERNAL AND CHILD HEALTH/FAMILY PLANNING

- Justification - maternal & infant mortality is unacceptably high (3.2/100 and 125/1000). Efforts to reduce mortality must also include family planning to prevent too rapid a growth in population.
- Objectives - decrease maternal and infant mortality to 2/1000 and 110/1000 by 1986 and decrease birth rate to 33/1000 by 1986.

Priority #6 - MALARIA

- Justification - approximately 60% of the land area is in malaria regions. About 16% of the population live in areas where the incidence rate is greater than 10%.
- Objectives - eradicate malaria by means of house spraying, mass distribution of medications, drainage of low areas, anti-larval poisons and health education.

FORMATION DES VENDREURS DU SERUM ORAL  
Projet de rehydratation oral  
Formation 1 hour. Vendredi 25 Octobre.

1) OBJECTIFS A ATTEINDRE.

- Faire la promotion du serum oral.
- Expliquer l'utilisation du serum oral.
- Informer les clients sur l'existence des postes de ventes.

2) HORAIRES DE FORMATION.

9h a 9h30 Lecon 1 et 2. Qu'est-ce que la diarrhee? Besoin de remplacer l'eau perdue.

9h30 a 9h45 Lecon 8. Les signes de deshydratation. Utiliser les aides visuelles. (fleur fanee et grenadia dessechee)

9h45 a 10h Lecon 4. Demonstration du serum oral en sachet. Demander a plusieurs de venir faire la preparation. Il serait excellent que chaque marchand puisse faire la preparation, car ils sont responsables de la vente des sachets.

10h a 10h30 Lecon 6. Demonstration du serum oral artisanal. Il est bon que les marchands puissent expliquer aux meres comment preparer le serum oral a la maison. Ceci est important, si il y a rupture de stock.

10h30 a 10h45 PAUSE.

10h45 a 11h. Comment promouvoir le serum oral. Affiches/posters a la porte de leurs magasins et de leurs habitations.

11h a 11h15. Existence des postes de ventes.

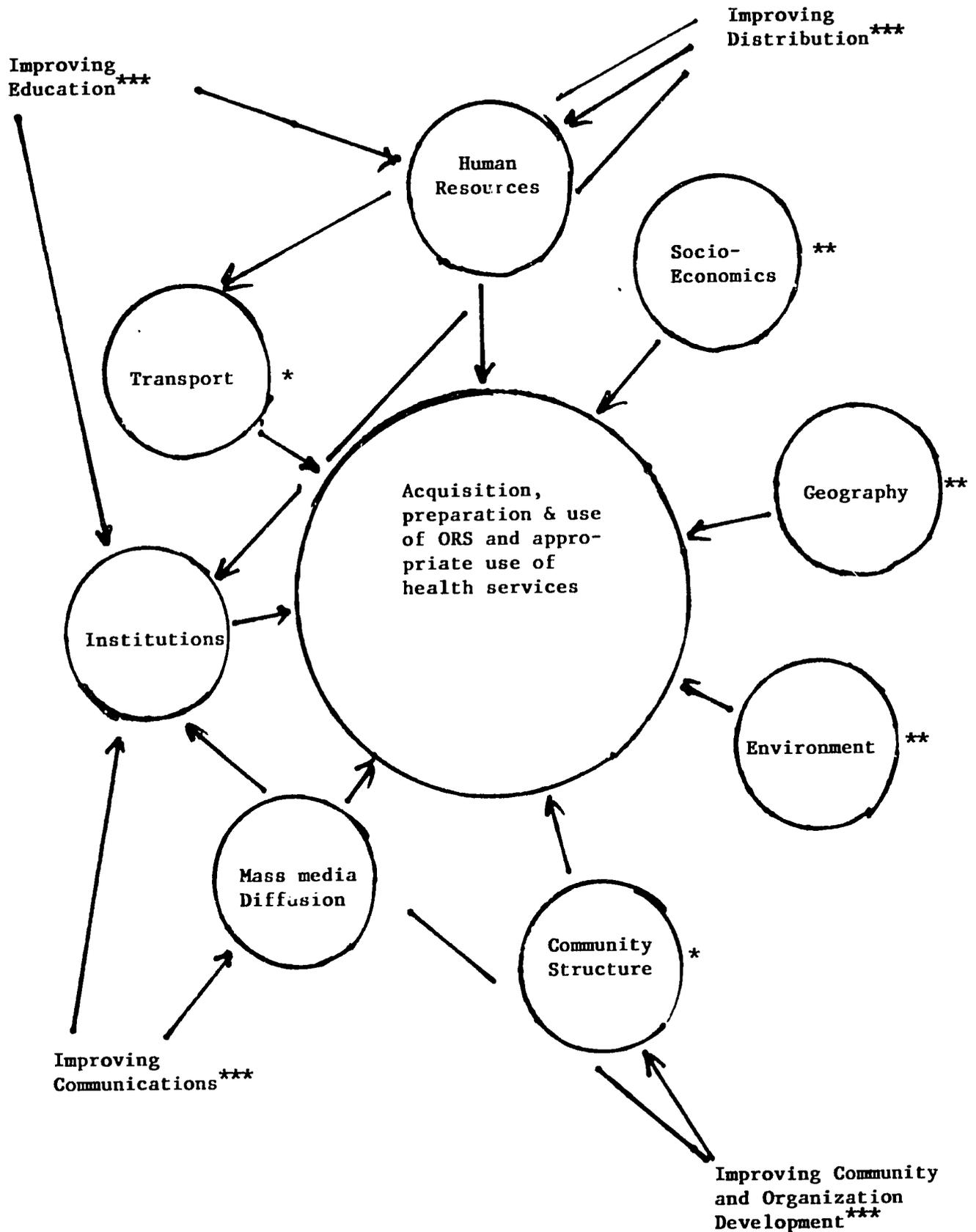
11h15 a 11h30. REVISION GENERALE.

11h30 a 12h. Organiser des petits groupes de 2 personnes. Demander de reflechir sur la maniere d'informer les gens sur le serum oral.

12h a 13h. JEUX.

Dans chaque groupe une personne expliquera l'utilisation du serum oral a l'autre personne qui jouera le role de la mere venue acheter un sachet de s.o. Inverser les roles et cette fois l'autre personne devra expliquer comment faire le serum a la maison n'ayant plus de stock de serum en sachet. Le dialogue s'effectuera entre deux personnes. Il sera indispensable de passer dans tous les groupes ecouter et intervenir que si cela est necessaire.

STUDY VARIABLES IN SOLUTION DEVELOPMENT



\*Control variables  
 \*\*Constraints  
 \*\*\*Decision variables

**HOUSEHOLDS WITH AT LEAST ONE REPORTED CASE OF DIARRHEA  
AMONG UNDER-FIVES WITHIN PAST TWO WEEKS**

	<b>PRETEST</b>	<b>POST TEST</b>
<b>Intervention Villages</b>	32.2% N = 183	27.8% N = 176
<b>Control Villages</b>	37.8% N = 227	28.5% N = 228

## APPENDIX F

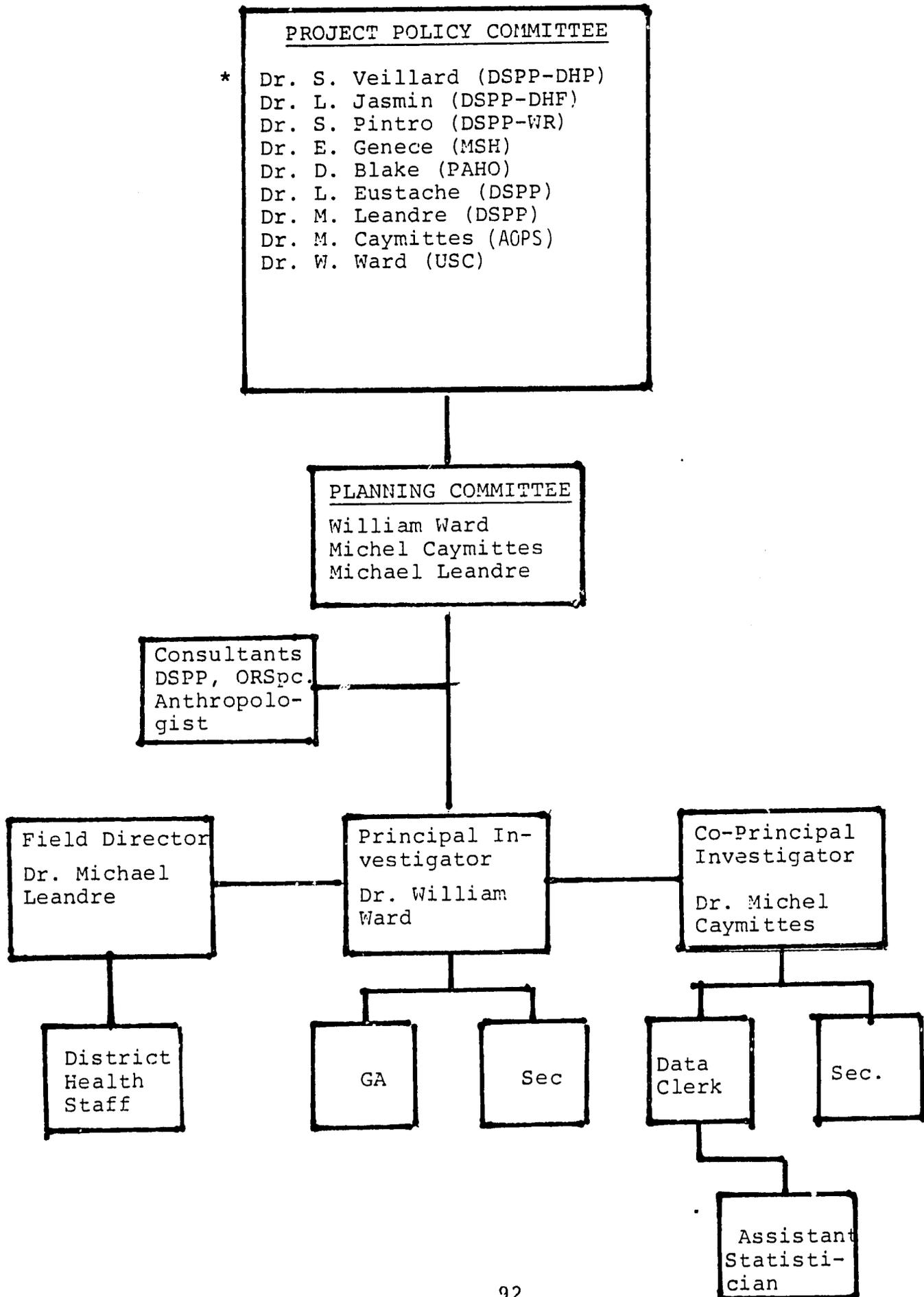
### PROJECT ADMINISTRATION

The administrative chart of the project can be found on page 92. The project was overseen by the Project Policy Committee made up of representatives of four agencies and four branches within the Ministry of Public Health and Population. This group was identified by the Project Planning Committee consisting of the District Director for Health in Petit goave, Dr. Michael Leandre, who also served as project field director, Dr. Michel Cayemittes of the Association des Oeuvres Privees de Sante, who served as Project Co-Principal Investigator, and Dr. William Ward of the School of Public Health at the University of South Carolina, who served as Principal Investigator. Dr. Cayemittes was responsible for the day to day decisions in the field. There was constant telephone communication between Columbia, South Carolina and Port-au-Prince and Petit Goave. Dr. Ward made numerous trips to Haiti in order to work with the other two members of the Planning Committee. Dr. Cayemittes spent almost a week in Columbia, SC working on the final report. Dr. Leandre was responsible for the coordination of resources other than the field survey team within the Petit Goave District.

A number of individuals from the University of South Carolina were involved in trips to Haiti to carry out research. These included Nosa Obonor, Marion Clark, Marie Belot, and Drs. Kent Sidel, Zul Mandy, and Bassiouni Salem. Each played an important role in gathering, processing, and/or analyzing data.

The activities of the Project Policy Committee are described in detail under the section on Solution Development in the text of the report. the activities of Mr. Calixte Clerisme and other individuals working on the project on a part-time basis are discussed in the acknowledgement section. It is felt, however, that the close working relationship between the project researchers and representatives of the Ministry of Public Health and Population was, perhaps, the key factor in the measure of success that the project achieved.

PROJECT ORGANIZATIONAL CHART



\*Chair

APPENDIX G

THE BUDGET

The budget was developed so that there would be two components, one under the administration of the University of South Carolina (USC) and the second under the direction of the Association des Oeuvres Privees de Sante (AOPS). Page 93 is a summary of the budget for USC and 94 covers AOPS.

Several changes were made to the budget at USC during the course of the project. The summary below covers the initial contract, final changes approved, and actual expenditures made:

	INITIAL CONTRACT	FINAL CONTRACT	ACTUAL EXPENSES
1. PERSONNEL (DIRECT LABOR)	\$29,924	\$24,464	
2. FRINGE BENEFITS	5,313	3,800	
3. OTHER DIRECT COSTS	3,229	3,916	
4. TRAVEL AND PER DIEM	<u>6,355</u>	<u>12,641</u>	
TOTAL DIRECT COSTS	44,821	44,821	
5. INDIRECT COSTS	<u>18,539</u>	<u>18,539</u>	
TOTAL BUDGET (US DOLLARS)	63,360	63,360	

The major changes to be noted are a shifting of monies from the personnel and fringe benefits categories to travel and per diem as the need for funds in that area was severely underestimated. The reduction of monies in the personel area, however, does not represent a lessening of the time commitment of the USC personnel.

## AOPS BUDGET

The budget was developed so that there would be two components, one under the administration of the University of South Carolina (USC) and the second under the direction of the Association des Oeuvres Privees de Sante (AOPS). Page 93 is a summary of the budget for USC and 94 covers AOPS.

Several changes were made to the budget at AOPS during the course of the project. The summary below covers the initial contract, final changes approved, and actual expenditures made:

	INITIAL CONTRACT	FINAL CONTRACT	ACTUAL EXPENSES
1. PERSONNEL (DIRECT LABOR)			
2. FRINGE BENEFITS			
3. OTHER DIRECT COSTS			
4. TRAVEL AND PER DIEM			
TOTAL DIRECT COSTS			
5. INDIRECT COSTS			
TOTAL BUDGET (US DOLLARS)			

## STEPS IN THE SOLUTION DEVELOPMENT PROCESS

### Step 1.

The data in the form of a summary report and components identified as a part of the data analysis process including four components - acquisition, preparation of solution, administration, and appropriate care and referral will be presented to the policy committee.

### Step 2.

The policy committee will, based on existing information and their own previous experience, select the most important factors which to influence ac, prep, admin, and ref. There will be four separate meetings held on each of these issues. A nominal group approach will be used to eliminate certain factors, and to rank in order of importance others. At each successive meeting, consideration will be given to the extent to which the current decisions have an impact on discussions at the previous meetings. In this way, the solution development approach will evolve over the course of discussions. A final summary statement will result from the series of meetings.

### Step 3.

The solution development approach will then be presented to the Petit Goave district Health planning committee for their comments. The approach will be revised as a result of their suggestions.

### Step 4.

Lokalites will be separated into those receiving interventions and controls by a simple flip of the coin each each of the cells in the attached matrix.

### Step 5.

Leaders from the intervention lokalities who have been identified in a previous survey as being oriented toward promotion of ORS will be called together on a commune by commune basis to discuss the solution development approach and they will be asked to contribute suggestions as to how to implement activities which will address the factors previously identified as well as those which the leaders themselves have identified.

### Step 6.

Those individuals and institutions in control of resources needed

for the field test intervention phase will be contacted as to how best to utilize the resources or to develop them if need be.

Step 7.

A report of proceedings will be presented again to members of the policy committee for their final comments and approval prior to the field test.

INITIAL RESULTS OF A SURVEY OF SCHOOL CHILDREN  
KNOWLEDGE, ATTITUDES, AND PRACTICES WITH REGARD TO  
DIARRHEA, DEHYDRATION, AND ORAL REHYDRATION SOLUTION USE

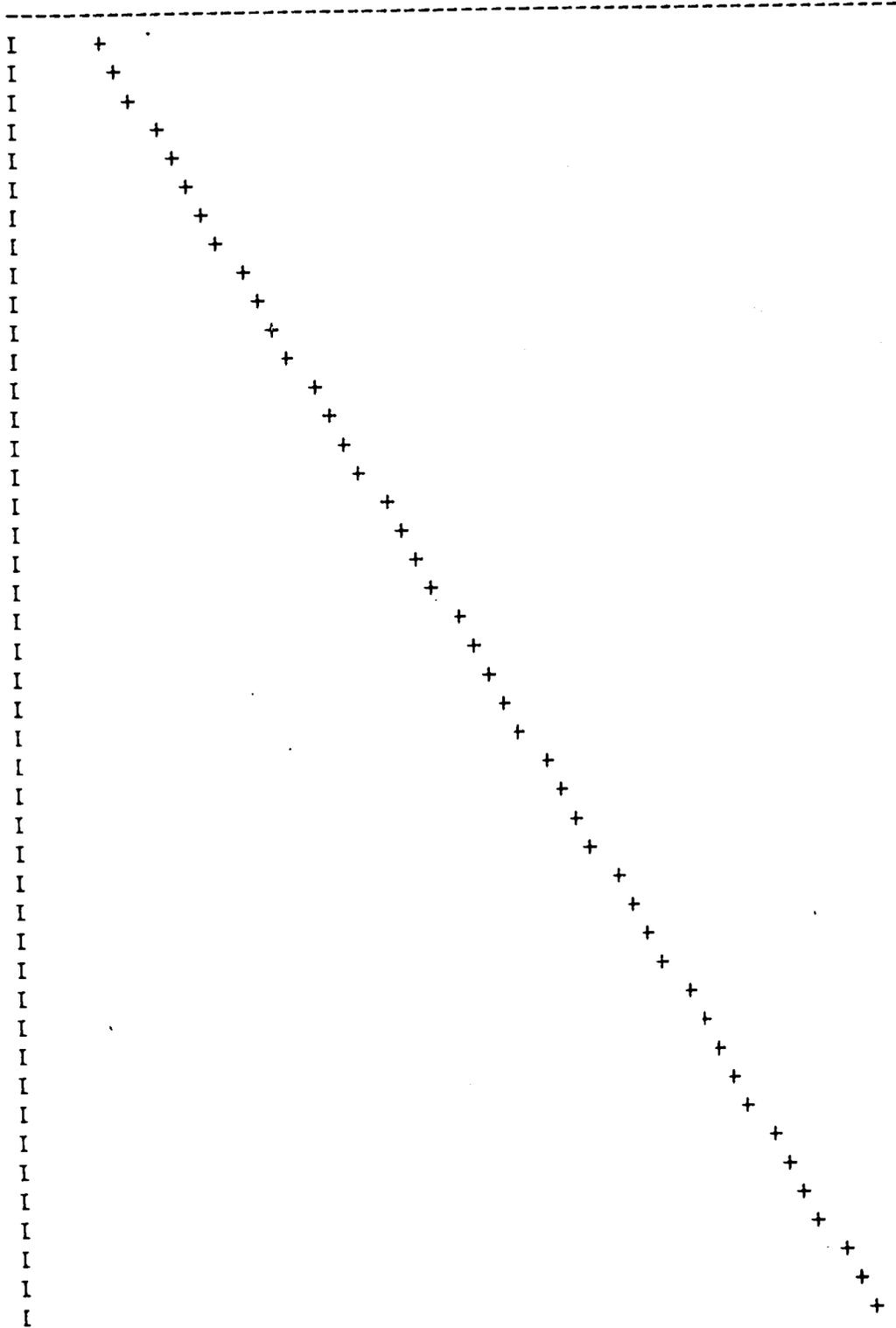
In order to establish a baseline to determine the level of understanding of diarrhea, dehydration, and the use of oral rehydration by children under five, a survey was carried out of ten students in each of 12 schools in the Petit Goave Health District. In addition, 10 surveys each were carried out in the households of children not attending school in 8 other villages which had no school. The purpose of the survey was to determine the nature of the need for an educational program to be developed within the schools. In addition to the study of school children, 51 teachers were interviewed to assess their beliefs and attitudes regarding the same subjects. Results of the teachers' responses are not included in this summary.

Total scores of students on the 120 questionnaires completed in the 12 schools in the Petit goave Health District yielded a mean of 119 and a standard deviation of 16.1. This is compared iwth a mean and standard deviation of 89 and 9.2 for children not in school (see the figure on page 99). Whether or not the child was in school was highly related to the total score on the questionnaire items suggesting a relationship ( $R = .919$ ). There was also the finding of a high relationship between the scores of the interviews of school children and whether the child reported the use of ORS in

the home ( $R = .81$ ). this was higher than the relationship between school children scores and whether or not the teacher was reported to have presented, in the classroom, information on the problem of diarrhea and how to deal with it ( $R = .35$ ). Whether this suggests a greater home than school impact or whether the home measure is a proxy for level of community sophistication must be determined.

In general, students were not able to define the symptoms of dehydration (only 15 of 120 were able). A large number of students felt that liquids (87/120) and food (90/120) should be stopped at the onset of diarrhea, an incorrect response. About half (61/120) of the children were able to identify what ORS is. Surprisingly, a few more students were correct on the color of the powder (68/120) than on that response. 26 out of 120 students were able to indicate how to prepare ORS, a reasonably high ratio. 75% of the students felt that ORS would stop diarrhea, a misconception that must be changed. 64 of 120 students indicated that their mothers used ORS. Teachers held many of the same beliefs as did their students.

There was a reasonably wide range of scores across schools with the low being 85 and the high score being 146. This would suggest that there is a great potential for improvement within the schools with lower scores.



X-AXIS = nonschool

RANGE = 70 TO 105

Y-AXIS = totscore

RANGE = 85 TO 146

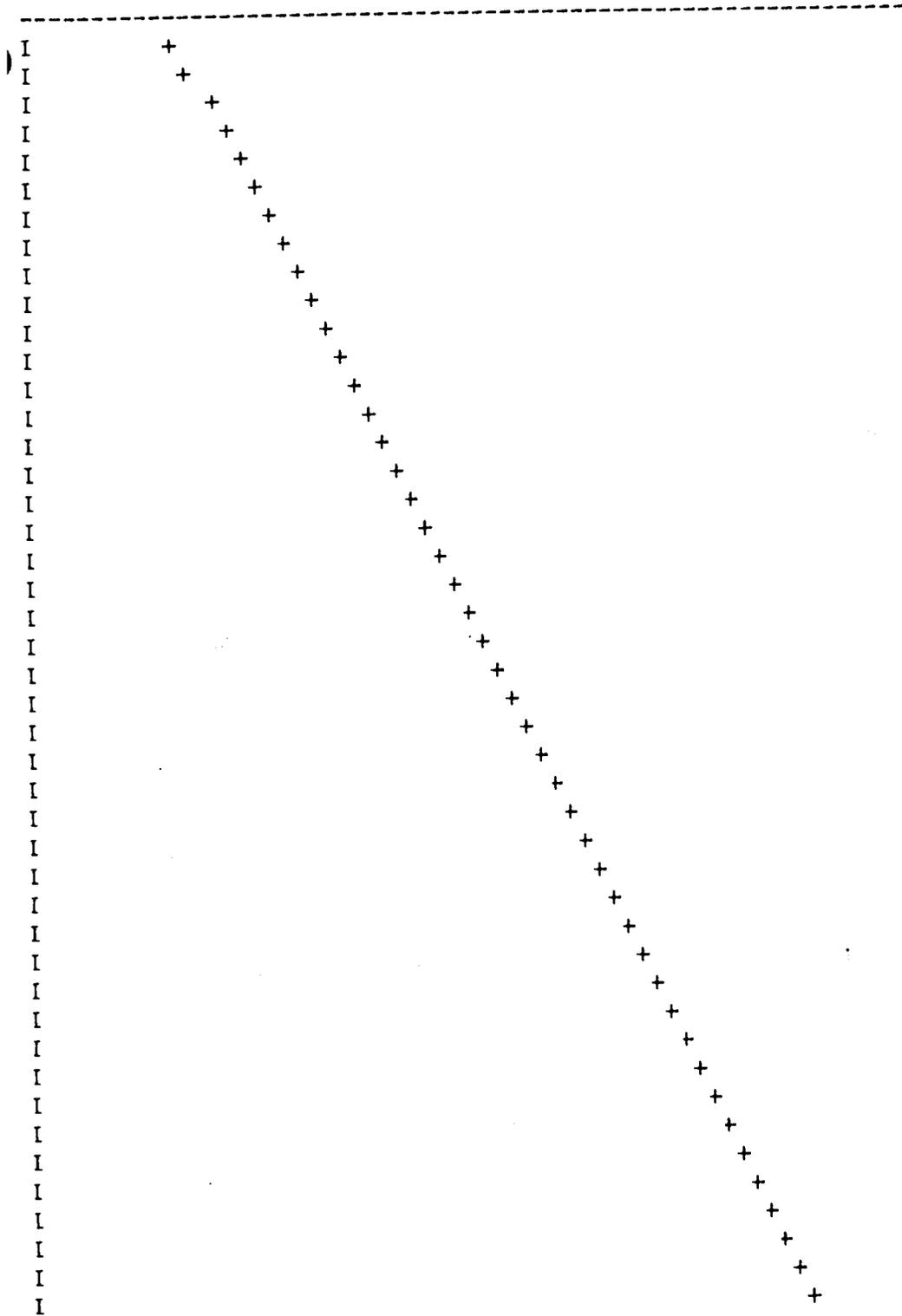
SLOPE = 1.61388

Y-INTERCEPT = -24.2189

CORREL = .919084

STD ERROR = 6.33503

99



X-AXIS = usebymoia            RANGE = 1 TO 9  
 Y-AXIS = totscore            RANGE = 85 TO 146  
 SLOPE = 5.8437                Y-INTERCEPT = 87.7633  
 CORREL = .812191              STD ERROR = 9.37877

Organization of Study variables by Sector  
For the Solution Development Phase of the Study of  
Community Participation in Oral Rehydration Therapy

1. Constraints (non-variable) by Sector

Environment

- Water quality
- Waste disposal patterns
- Quality of house construction
- Household size and age/sex distribution
- Type and extent of local health problems including diarrhea
- Breast and bottle feeding patterns

Diffusion Capabilities with 'Lokalites'

- Distribution of mass media communication channels - Radio, Newspapers
- Daily and weekly travel patterns of 'lokalite' residents
- Access to and availability of retail outlets

Socioeconomic Conditions of Respondents

- Nature and variety of household possessions
- Pattern and distribution of economic activities

Geographic characteristics of lokalite

- Topography (plain, mountain, plateau)
- Distance from other population centers

Human Resource Availability

- Existence of TBA, traditional healer, or fetish priest in lokalite
- Nurse or doctor who serves the lokalite
- Presence of agent de sante, etc.
- Access to and availability of external development agents
  - Agents SNEM
  - Agents de Sante
  - Agents Communautaire
  - Agents de ONAAC

Community Organization Structure

- Patterns of factions in lokalite
- Presence of planting and Mardi Gras bands, and others

2. Controls (under control of agency other than that of the program)

- Institutional support within 'Lokalite'

Access to and availability of schools  
Access to and availability of churches  
Access to and availability of health centers and other health facilities

Availability of transport in and out of lokalite  
Camionettes (tap taps),  
Commercial trucks (Camionnes),  
Private automobiles

### 3. Decision Variables (Potential program activities)

#### Education

Training of market sellers  
Training of school administrators/teachers  
Training of community leaders  
Training of external agents  
Continuing education of poste vendors

#### Communication channels

Increasing radio programming regarding dehydration and proper use of ORS  
Traditional drama and role playing by health workers, residents, school children  
Increasing visibility of ORS distribution points  
Contests to develop messages, plays, and art work promoting ORS  
Locally contributed incentives for ORS sale or use

#### ORS Distribution System

Improving poste de vente inventory system  
Improving marketing techniques of poste de vente  
Increasing and diffusing the location of distribution points  
Augmenting access to sugar/salt solution where packets not available  
Market sellers  
Village women's committees  
Other institutions in 'lokalite'

#### Community organization

Facilitating 'lokalite' leaders motivation skills  
Facilitating 'lokalite' organization monitoring of ORS  
Involving traditional health workers - TBA's, traditional healers, hougans - in the promotion of ORS

### 4. Program Activities

To be selected from decision variables and other findings and developed during second stage

## 5. Outputs (Intermediate factors influencing behavior change)

- Increasing individual participation in community council re ORS
- Increasing individual participation in cooperatives re ORS
- Increasing individual participation in other groups re ORS
- Increasing perceived disposition of lokalite members to collaborate in ORS project
- Expanding roles to be played by TBA, traditional healer and fetish priest regarding ORS promotion, distribution, and use
- Altering roles to be played by agent de sante regarding training of others in packet and home mix preparation
- Increasing roles to be played in promotion, distribution, preparation, and use of OPS to be played by market sellers
- Stimulating already defined roles to be played by the owners of the postes de vente
- Involving church clergy and lay workers
- Increasing understanding, commitment and involvement of 'lokalite's' defined leadership
- Increasing knowledge, attitudes, and skills of caretakers of under fives in the acquisition, preparation, and administration of ORS and appropriate use of health services
- Increasing the effectiveness of the distribution network with regard to supply, accessibility, and sales
- Increasing teachers' and students' skills in the production, preparation, and use of ORS

## 6. Outcomes (Behavior Change/Dependent Variables)

- Acquisition of ORS mixture by household/caretaker of under five
- Proper preparation of ORS by caretaker of under five
- Proper Use of ORS by caretaker of under five
- Appropriate use of health services by caretaker of under five

NOTES FOR THE QUARTERLY REPORT  
COVERING THE PERIOD OCT - DEC 85

ACTIVITIES

I) TRAINING OF PERSONNEL

Before starting the intervention, it was decided to train a serie of key people that will be involved in the community effort to promote ORT.

- i) The aim of the human ressources development was to train trainers of trainers specially:
- . Train teachers to teach children from Grades 3 - 6 in the localities where schools exist, in order to make those children promote ORT at home.
  - . Train TBAs to set clubs of mothers to promote ORT, and in the localities where, there was no school, and in those where schools exist to have those TBAs to help the local leaders in the promotion of ORT.
  - . Train different categories of leaders (community, religious and natural ones) in order to promote ORT in community councils, religious group and among people living in their vicinity.
  - . Train sellers to be able to sell ORS packets and promote this on an active basis.
  - . Train Health Agents to act as promoters of the community ORT program by working with the different categories of people above.
- ii) Specific educational objectives were set for the different categories of trainers. There were as follows for the different groups:

. Teachers

1. Recognition of dehydration signs.
2. Methods of preparing correctly ORS with packets and home ingredients.
3. Importance of oral rehydration
4. Schedule of proper administration of ORS
5. Importance of breast feeding and proper nutrition during diarrhoea episodes.

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. TBAs

1. Promotion of ORT (packets & H.M).
2. How to use correctly ORS.
3. Information on "PV" existence.
4. Signs of dehydration.
5. Organization of mothers' club.
6. Promotion of breast feeding and dangers of using bottle.
7. Opportunity of reference to health units.

. Leaders

1. Promotion of ORT.
2. Proper utilization of ORT.
3. Information on "PV" existence.
4. Signs of dehydration.

. Sellers

1. Promotion of ORT.
2. Proper utilization of ORT.
3. How to stock properly ORS packets.

. H A

1. Signs of diarrhoea & dehydration.
2. Promotion of ORS.
3. Proper use of ORS.
4. Information on "PV" existence.
5. Organization of mothers' club.
6. Supervision of teachers' session.

iii) Methodology of training

The following methodology was used:

1. Lecture discussion
2. Role play
3. Demonstration
4. Use of visual aids.

It should be noted that for the illiterate people emphasis was placed on role play and demonstration.

Pre - test and post tests evaluation (either formal or informal) were carried out.

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iv) Implementation

- From the 3rd of October until the 28th of November (most of the sessions took place in October),

114 people were trained namely:

- 11 teachers in 3 days
- 19 TBAs in 2 days
- 24 community leaders in 1 day
- 8 religious leaders in 1 day
- 4 natural leaders in 1 day
- 28 sellers in 1 day
- 20 mothers with TBAs in 1 day

- A refresher course was organized from the 17th to 19th of December for 94 people who previously attended the training sessions - except for 2 new people.

The missing people were 3 teachers, 15 sellers, 2 TBAs and 7 mothers.

The content of the refresher course was based on:

1. The post test evaluation
2. Observation visits carried out by the statistical assistants
3. Reports gathering from the health agents during their tours in the intervention localities.

v) Strengths of the training program

- The vast majority of the trained people were very interested in acquiring new knowledge and skills on ORT. The mothers specially enjoyed preparing the HMS.
- They did appreciate that we offer them a per diem and this has surely contributed to make many of them coming back at the refresher course and starting the promotion of ORT in their respective locality.

vi) Problems encountered

- Acquiring new knowledge on management of diarrhoea was not always an easy task for the oldest and illiterate people (specially the TBAs) as this knowledge was somewhat conflicting with their current belief.

- It was also difficult to make some people understand and remember:
  - . The exact quantity of ingredients to use for the preparation of ORS.
  - . The length of time for giving ORS to children
  - . The delay to keep ORS, once prepared
  - . The proper diet for children from diarrhoea.
- Getting all those people in rural areas to come at a specific day was sometimes difficult too.

## II) TESTING OF SOLUTION

As soon as ended the training of the different categories of trainers, they were asked to start working in the field. Most of them have started working in November.

### i) Job Description

- The job description of the different categories of trainers was set as described in the first page (Re aim of training).

### ii) Areas of intervention and development of staff

- Ten localities were chosen by Randon for intervention of whom 5 with schools and 5 without schools.

One locality previously chosen for intervention (Ti Guinee) was exchanged with a control one (Fauche) as it was discovered later that most of the children in Ti Guinee were not attending the local school but going instead to Petit Goave. We then exchanged this locality for one where the children were attending the school located in their own locality.

- All the trained people were asked to work on a voluntary basis. Nevertheless we had to do an exception for the HA's as any of them were living in the localities of intervention. An amount of \$5.00 per day work was offered to them to cover expenses due to this change of their normal area of work in order to pay travelling, food, etc... It was agreed that they will work 2 days per week for the project. In the month of November because of a lack of coordination all did not start working at the same time, but in December 3 did 8 days and 2 did 7 days. Each H. A. was allocated 2 localities.

iii) Activities realised

- A rough qualitative assesment of the activities carried out - based on Reports submitted by the HA's and observation visits by the assistant statisticians - can be summarized as follows:

1. Establishment of New "P.V"

Efforts were made by the new sellers to exhibit in front of their house ORT signs and most of the time ORS packets were kept properly. But sellers were complaining of not selling so many packets as they would expect. It should be noted that many sellers and mothers in the localities reported a certain preference for the HMS which is cheaper and has a better taste according to the mothers.

2. Training of school children

The teachers had effectively started to educate the children about diarrhoea and ORT but it appears that they tended to give priority to ORS packet vs HM ORS. Some delivered the messages in French and in an archaic way (no use of visual aid, no demonstration).

Nevertheless a quick assesment of the knowledge of the children indicated some progress.

3. TBA's activities

The level of activity has been different from one locality to another. Generally it was a difficult group to work with. Their old age, their poor educational level and their beliefs in eroneous concepts about diarrhoea seem to constitute some real, limitation factors. Some motivated TBAs nevertheless have tried to set mother's Clubs.

4. Leaders' activities

The level of their activities is unequal. In many villages we found very dynamic people who really try to promote ORT and it appears that the use of ORS is becoming more familiar to people.

5. HA's activities

During the month of November 3 HAs carried out regularly their activities and 2 on an erratic basis, this because of a lack of coordination. During the month of december all did special efforts to achieve the objectives set and 95% of the planed visits were realized, more specially they devoted their time according this ranking order.

- 1 Visit to local leaders
- 2 Visit to mothers
- 3 Visit to schools
- 4 Visit to TBAs
- 5 Visit to sellers

At the beginning, they gave priority in teaching people about diarrhoea and specially ORT instead of organizing the activities.

iv) Corrective action

- Based on this quick evaluation, some corrective actions were taken:

- 1) Encourage the sellers to have a more aggressive marketing approach.
- 2) Ask the teachers to put emphasis on a more participative teaching approach.
- 3) Do more demonstration with the TBAs at the refresher course and during visits by HA's to start with the mother's club.
- 4) Ask the H.A s to enhance formation of mother's club by the TBAs and encourage teachers to do demonstration.

They were asked to verify the knowledge of the different community volunteers and correct weakness.

Also they were told to play a more active role as organizer instead of trainer. Two prizes of \$100.00 and \$50.00 will be offered to two HAs whose villages come first and second in improvement of ORT usage and community effort.

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III) PROCESSING OF DATA

The results of the pretest on the:

- Evaluation of the knowledge on Diarrhoea and ORT by the children in schools.
- Evaluation of ORT utilization in the community was processed and is ready now for analysis.

The results have been presented for the first questionnaire by question and by school.

Those on Utilization of ORT in the community were prepared in 3 formats:

- 1) Results for each question by localities grouped by their position in the stratification table.
- 2) Result for each question for all the intervention localities according the existence of schools or not.
- 3) Result for each question by 2 groups of localities : Intervention vs control.

IV) SCHEDULE FOR THE LAST TRIMESTER

1. Analysis of data on hands
2. Evaluation of level of community participation in ORT promotion
3. Post test survey in school
4. Post test survey in community
5. Pre-analysis of Data
6. Review with the Policy Committee
7. Writing of Report

	January	February	March
1. Analysis of data on hands	.....	.....	.....
2. Evaluation of level of community participation in ORT promotion	_____		
3. Post test survey in school		?	
4. Post test survey in community	.. _____	_____	.....
5. Pre-analysis of Data			_____
6. Review with the Policy Committee			_____
7. Writing of Report			_____