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COMMUNICATION AND DEVELOPMENT

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COMMUNICATION AND DEVELOPMENT

The Application of Mass Media to Health and Nutrition Education in Lesser Developed Countries

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Communications and Development

The Application of Mass Media to Health and Nutrition Education in Developing Countries

Introduction

The purpose of this paper is to review the applications of development communication to health and nutrition education programs in less developed countries. It draws upon several areas of expertise including

- a) health and nutrition education experience;
- b) applications of development communication, particularly radio, to health programs;
- c) social marketing and social advertising theory, as well as
- d) behavioral modification strategies

Health and nutrition will be discussed separately because, even though they are linked logically, they are separated by administrative custom. Health programs have generally been addressed as problems of human disease, while nutrition has focussed on human diet. As will be pointed out, however, the relationship between diet and disease, particularly in a developing country, is very close.

I. HEALTH AND NUTRITION

A. Malnourishment: The Infrastructure of Disease

While nutrition statistics are not totally reliable, estimates made at the World Food Conference in 1977 place one-eighth of the world's population in the malnourished category. Community examinations have shown that 1 to 7 percent of preschool-age children in poor countries weigh less than 60 percent of their expected weights. Pan American Health Organization (PAHO) studies suggest that from 10 to 30 percent of the children in most Latin American countries suffer at least moderate degrees of undernutrition. While malnutrition is extensive, undernutrition and its debilitating effects are even more widespread. Infants and young children, who require twice as much protein and energy per body weight as adults, are most vulnerable.

Global nutrition problems are complex. They are affected by more than the biological operation of the human body. In large part, they are dependent upon political and social decisions relating to income levels and the availability and distribution of food. Small-scale, often costly, intervention experiments are inadequate to meet the desperate needs of the world's 500 million undernourished people.

Only lately has the importance given to international agriculture and education programs been shared with nutrition development. Nutrition activity has traditionally focused on feeding programs, many of which are administered by private agencies such as CARE and CARITAS. The past two years have witnessed major efforts to look at nutrition as a distinct sector, with its own internal planning, research, outreach and evaluation activities.

Nutrition education has taken a variety of forms since its early beginning 30 years ago. Formal education and nutrition have traditionally been closely allied. Early efforts, particularly in the United States and Europe, stressed the use of trained nutritionists, classroom settings, and food-group content. These same tools applied to a developing context have been less effective. Trained nutritionists are scarce, LDC classrooms reach those least in need, and food-group explanations may be unrelated to local diets and food resources.

In less developed countries, nutrition offices are generally located within ministries of health. Some operate on a semi-autonomous basis, often with only token support. Nutrition is yet to be recognized as a national priority in most developing countries. A ten-year effort in the Phillipines is only now resulting in a significant commitment to national nutrition programs here.

Nutrition is playing a larger role in over-all development planning, as planners come to realize the interdependence of health and nutrition factors. Several of the world's most critical health problems have their roots in malnourishment. Weanling diarrhea, for example, which takes the lives of thousands of children each year, demonstrates the important synergistic relationship between health and nutritional status. As infants from poor families

move from safe breastmilk to solid foods they come in contact with contaminating bacteria and viruses in the environment. In children suffering from malnutrition this contact results in more severe cases of diarrhea than in children with healthy, resistant bodies. Diarrhea itself is debilitating to the nutritional status of the body and increased debilitation makes normal recovery even more difficult. Traditional treatments--purges and starvation diets--serve only to further reduce the nutritional state of the individual and consequently increase the seriousness of the disease. These practices lead to dehydration and often death.

Is weaning diarrhea then a health or a nutrition problem? The answer is largely academic. Both types of intervention have complementary potential impact on the problem, bringing valuable insight toward its treatment and elimination.

B. The Delivery Problem

Health systems in developing countries often serve the needs of a few while neglecting those of the large majority. The 1978 World Bank Health Sector Policy Statement points out that in Guatemala, for example, the patient/doctor ratio in urban areas is 875:1, while in the rural areas, where the majority of the population lives, it is 22,600:1.

Developing regions around the world share many problems in the delivery of health care to their rural sectors. Among these are:

- Shortage of personnel. Most developing countries face a critical shortage of trained medical workers at all levels. However, national statistics are likely to be meaningless for rural areas because doctors and support staff tend to cluster in the cities.
- Imbalance of personnel. In some regions the emphasis on professional education, particularly overseas, has resulted in an inverted pyramid of health workers, with proportionately more physicians than support personnel.
- Population growth. High rates of population growth make catching up with needs for social services an almost impossible task. The population of many Third World Countries are expected to double by the end of the century.
- Lack of adequate transportation and communication. These problems are exacerbated by lack of an infrastructure for delivering health and other services. Without these links, health care services cannot be developed as a system, and access to providers and medical supplies remains severely limited.
- Poor environmental conditions. Health problems are critical in areas with inadequate housing, contaminated water, and limited food supplies.

C. New Health Priorities

World health planners are seeking new ways to serve the most needy in developing countries. Funding priorities are shifting away from doctor-oriented and hospital-based systems towards large-scale rural disease prevention and provision of basic health services to rural areas. Investment in infrastructure programs such as water and latrine construction, along with informal campaigns for the general public, are characteristically prevention-oriented. Development of health-delivery systems with para-professional health workers, rural clinic operations, and increased self-diagnostic capacity among rural communities are typical programs aimed at provision of basic services.

One highly discussed alternative to salaried health workers is village-level health agents. These people from local communities, who have received only a few weeks or months of instruction, have fewer communication problems and are able to provide consistent, long-term contact with the community. The Promotoras of Colombia, the Nutrition Scouts of Uganda, the Baranque Nutrition Scholar program of the Philippines, and the Public Health Service "native health aides" program in Alaska suggest interesting models to be explored. The health-agent approach requires specialized training systems adapted to meet the learning requirements of the community health agents. It demands targeting of health skills and clear definition of critical health problems. Health agents can play a diagnostic, educational and limited-treatment role. Their contribution can be particularly powerful if they are accepted as sources of information and understanding of the local health culture, rather than simply the last line in a top-to-bottom decision-making system.

These programs seem to be more cost-effective than center-based programs and more effective than general education or feeding programs by themselves.

Some additional examples include the Rural Health Service Development Project in Mali which uses "health promoters," the Integration of Health Services project in Nepal which fosters "house visitors," the El Salvador Rural Health Delivery System projects which trains rural health "aides." China's barefoot doctors, medicins africains in Africa, and native health aides in Alaska must be added to this growing list. In each case, the emphasis has shifted from doctor-oriented health care to local provision of basic health services with paraprofessional personnel.

Among the functions of these workers are:

- first-line diagnosis and treatment;
- early identification of serious problems;
- local preventive care (e.g., inoculations, contraceptive dispensing, pre-natal clinics, well-baby clinics); and,
- community health education.

Among the advantages of training local people as health workers are:

- reduced cost in time and facilities for training, compared to other approaches;
- understanding of local culture and language problems;
- willingness to stay in rural areas; and,
- development of skills in the rural population.

Thus, paramedical staff can improve health care at minimal cost while contributing to the goal of developing skills and self-sufficiency among rural populations.

Little education is required. Alaskan health aides may have five years or less of formal schooling. In Australia, medicines in kits are coded by number so that the dispenser need not master pharmaceutical terminology. In Brazil, illiterate women administer intravenous injections and transfusions to children at "rehydration centers."

The support of cost-effective, practical and replicable models of health care is now being considered by health planners as an important new priority. Sophisticated health systems, while appealing as technical achievements, are not practical alternatives for LDCs, where health budgets are unlikely to increase significantly over the next decade. Whatever model is developed must be convincing to LDC government planners and decision makers, who recognize the limitations of their resources and are unable to consider extensive new investments in health care.

A final aspect of the world's overall health policy includes the support of integrated development programs. Health and nutrition are affected by availability of food supply, by planning decisions, and by public works investments. Cooperative efforts among LDC Ministries, while difficult, are rationally attractive. Rather than parceling out scarce resources to several competing sectors multi-sectoral planning and integration is an appealing alternative. Successful experience in multi-ministerial programs has been limited, however. Bureaucratic inertia and ministerial jealousy often defeat efforts at collaboration, reducing integrated programs to little more than coordinating committee meetings.

In summary, we can point to six new priorities of the world's overall health development program:

- a. Reach the poor majority, especially those in isolated rural areas;
- b. Support the development of trained paraprofessional personnel;
- c. Emphasize prevention over treatment;

- d. Promote the active participation of recipients in health program development and implementation;
- e. Integrate the planning and implementation of allied sectors to promote improved health status;
- f. Develop models which are cost-effective and replicable within existing LDC resource limitations.

D. New Priorities in the Nutritional Sector

Changes in nutrition planning are also taking place. The widespread belief of the 1960s that protein deficiency alone constituted the most critical nutritional problem led to large-scale feeding programs of synthesized and fortified food. Studies conducted in India by Reutlinger and Selowsky in 1976, however, have shown the importance of protein-caloried malnutrition. Indeed many nutrition specialists now believe calories and not protein alone to be the key to nutritional improvement. Because calories depend upon the quantity rather than the quality of food intake, nutritionists who lack control over national food supply have turned to addressing nutrition problems which they can influence. Rather than addressing the overall problem of malnourishment, which is sensitive to changes in food supply, some nutrition programs have focussed upon particularly vulnerable populations such as malnourished infants and nursing mothers.

E. But the Problem Continues

Taken as a whole, nutrition programs designed specifically for developing countries have had limited success. The applied nutrition programs sponsored by UNICEF in the 1950s were expensive and stressed protein foods which are now considered secondary to caloric intake. In-school feeding programs, promoted by CARE and others, do not reach the majority of the malnourished, who are unable to attend schools. Feeding centers like the Poshak Project experience in India have demonstrated serious internal flaws which made effective evaluation of this model impossible. Rehabilitation programs such as the mothercraft centers in Haiti and its adaption in the Philippines have been long-term efforts to teach child care principles to rural mothers. Many have argued that they are too costly, and sparse evidence exists that the education component has been effective.

Dr. Eugene Engel, the field coordinator for the ten-year-old Philippine Nutrition Project, stated recently that he felt Operation Timbau, which sponsored consistent weight monitoring of rural infants, to be the single most

effective aspect of the Philippine Project. ^{1/} More than anything else, he said, the regular presence of a health worker, who weighed the baby and demonstrated to mothers that someone outside really cared, consequently stimulated changes in feeding practices. This same finding was supported by the Kenyan Danfa Project, where weight monitoring also proved an effective means of motivating positive contact between health personnel and rural mothers.

Field workers programs are plagued with serious problems, however. Salaried health workers are often over-burdened with administrative tasks, reducing their effective contact time with rural people. Inadequate transportation, low health worker motivation, and/or linguistic differences between worker and mother have made contact with rural people difficult and often impossible. The administrative price of organizing large-scale national health campaigns which rely on face-to-face contact is too high for most developing countries. The most publicized efforts at large-scale national health mobilization have occurred in socialist countries - Cuba, Tanzania, the Soviet Union and China - where large-scale regimentation is possible and the establishment of national priorities is centrally controlled.

We are left with a dilemma. Our goal of reaching the poorest of the poor implies reaching tens of thousands, perhaps tens of millions. Sophisticated health technology is too expensive and becoming increasingly more expensive. Effective face-to-face contact with these millions by even paraprofessional health aids is administratively complex and also expensive in real terms. Village health aids offer an alternative, but large-scale mobilization of such workers requires extensive and often unrealistic national commitment of already over-extended LDC resources. The transfer of priorities from curative to preventative health measures alleviates some of the cost pressure, but prevention implies mass education which is also beyond the capacity of face-to-face interventions alone.

II. RADIO TO THE RESCUE?.....MAYBE!

A. A Long Standing Promise

Development communication is a field that proposes to study, analyze, promote, and evaluate the application of communication technology to all sectors of development. It is based upon the premise that development problems, particularly as they touch the lives of poor people, are massive in scale, requiring more than experimental or costly, unreplicable solutions. Some of the first applications were in the education field, where concern that schooling was reaching so few children in developing countries made the use of radio and television an appealing

^{1/} Stated during Seminar on Nutrition Education at Clearinghouse on Development Communication, August 15, 1978.

alternative. Currently, applications have been extended to agriculture, population, health, and nutrition. In each case, the objective is the extension of the educational impact of specific development programs by adding a communication component to an existing program or by addressing a development problem directly through a communication strategy.

A wide variety of technologies are involved in development communications, ranging from the application of satellites to the use of flip charts and low-cost print media. The most popular and widely supported technology has been broadcast radio. The penetration of radio into the village has been particularly impressive over the past 50 years. It is estimated that some 6,000 radio stations now exist in the developing world. In Latin America, for example, 35 of every 100 people own radio receivers.

But.....this cliché must also be challenged. Radio's presence in the village varies from one country to another. In a recent Project Support Communications Newsletter, ^{2/} UNICEF experts report that radio ownership in Lesotho, for example, is largely limited to the literate population. They explain that radios capable of receiving the weak Radio Lesotho signal are expensive, costing as much as a good blanket which is badly needed in this cold climate. UNESCO statistics published in 1975 also support the thesis that radio's penetration is unequally distributed among Third World Countries. While Latin America has some 35 receivers per 100 people, Africa has only 8 and Asia only ⁴.

What most communications experts do agree upon is that radio, of all modern technologies, has most successfully penetrated the poverty barrier. Television, computers, lasers, satellites, cameras, tape recorders and even print materials all remain tools of the wealthy. While applications of these technologies have been sought for the poor, only radio can be found consistently in the homes of urban ghettos and rural villages alike.

B. Radio

The development experience with radio has been extensive. Since its introduction in the 1920s and especially since its popularization in the 1950s, radio has been used in a variety of ways to promote development. Each additional experience has provided new insight into how it can best be applied. From massive programs like the Radio Schools of Colombia to sporadic open broadcast of helpful information, radio has played a role in development.

Few of these experiences have been scientifically evaluated. Those that have been evaluated suffer, to some degree, from flawed research design and treatment contamination. This experience does provide us with some guidelines, however.

Several recent reviews of radio in development have been completed, including the World Bank's Radio for Education and Development: Case Studies,

^{2/} Project Support Communications, Newsletter, UNICEF, Volume 2 No. 3.

and the AID-supported series of Project Profiles, produced by the Academy's Clearinghouse on Development Communication. Important recent programs are discussed in each of these documents. Particular examples include the Nicaragua Radio/Mathematics Project, Teacher Training through Radio and Correspondence in Kenya, Radio Santa Maria in the Dominican Republic and its formal and non-formal use of radio for education, Interactive Radio for Health Care and Education in Alaska, and the Community Use of Radio in Canada. Each analysis of these programs makes an important additional contribution to our overall understanding of how radio can best be used to support educational and informational programs.

Radio can be used to train and to educate, to administer and to inform. It has assumed the major teaching burden in formal school programs, has been the vehicle for in-service training of paramedical and agricultural extension workers has informed its target audience and incidental listeners regarding specific skills or innovations, and has, in concert with other strategies, mobilized large scale populations to change their behaviors.

C. Applications in Health/Nutrition

The Tanzania "Man Is Health" Campaign was designed to provide villagers with basic information on disease, disease control, and the relationship between environment and health. The campaign was to be action-oriented; new knowledge was to be accompanied by projects to reduce environmentally-caused diseases. A variety of strategies was used, including radio programs, messages on audio cassettes, printed materials, flipcharts, and interpersonal communication. One outcome of the project was the construction of an estimated 750,000 latrines as part of the community work projects undertaken by the villages.

Thailand has concentrated on training rural health workers. Mobile audiovisual vans have been used in rural areas to train selected residents who will in turn train others using materials supplied by the project. The Thai project has presented uniform high quality instruction through films showing expert instructors. The local trainers in turn use interpersonal and group techniques to reinforce the messages and build esprit.

The Pila Project in Guatemala reached women on a plantation directly through audio cassettes played while they carried out their daily chores at the community laundry. An increase in their information levels and some changes in behavior, such as using new, more nutritional recipes and getting vaccinations, were attributed to the project.

In Guatemala, the Quiche network consisted of a base station at the Ministry of Health linked to radios in community health centers and a health post. This network is used for consultation with rural health technicians to assist them in

carrying out their field projects and for coordination of movement of people and supplies. The two-way radio system in Quirigua is used for supervising the training of rural health workers. Students of the INDAPS training center spend six months in villages surrounding the town of Quirigua. As part of the supervision of the trainees, those in the radio-equipped villages are required to report in daily.

In Nicaragua, the two-way radio is also used in support of rural health services. VHF/FM radios are located in Managua, in community health offices, and in vehicles. The network is used primarily for data transmission and administrative purposes. A second Nicaraguan radio network uses HF radio to link clinics in seven isolated communities staffed by auxiliary nurses with a regional medical complex. Radio is used primarily to ask questions about medical problems, to request shipment of equipment and medicines, and to stay in touch with others working in the region.

Each of these programs uses communication in a different way. Programs like the national campaigns in Tanzania stressed the broadcast potential of radio, while the Quiche network in Guatemala emphasized in-service health care delivery via radio. In most cases programming was extensive. It called for broadcast programs ranging from 10-30 minutes, or open-channel communication between two parties. A new approach to broadcast radio in development was yet to be tested.

III. SOCIAL MARKETING THEORY

The concept of social marketing emerged in the academic literature with the publication of Kotler and Levy's article, "Broadening the Concept of Marketing," in the Journal of Marketing (1969). The authors suggest how commercial marketing theory can be applied to non-business organizations, individuals, and ideas. They argue that rather than limiting marketing principles solely to business, planners should be aware of the opportunity to apply marketing skills to a greater dimension of social activity.

After explanations of the core concept and logic of traditional marketing, Kotler gives the reader one definition of social marketing:

Social marketing is the design, implementation and control of programs seeking to increase the acceptability of a social idea or practice in a target group(s). It utilizes concepts of market segmentation, consumer research, idea configuration, communication, facilitation, incentives and exchange theory to maximize target group response.

The social marketing, or what has been called social advertising, approach has been applied in several different development programs, with varying results.

One of the first such programs was sponsored by CARE in India. ^{1/} This nutrition-information project was launched in 1972, after three years of research and preparation which was built upon two primary assumptions. The first was that the modern techniques used in urban mass-media campaigns and market research could be successfully brought to bear upon the problems and needs of the Third World villagers. The second was that a combination of carefully selected mass media would be more effective than any single medium in reaching diverse target groups within a given population.

Campaign evaluation results, based on a baseline survey (2,500 interviews) and a post-campaign survey (2,500 interviews), indicated that a mixed media campaign can successfully reach isolated rural audiences with new concepts and information. The evaluation of the effectiveness of the various media showed that people exposed solely to highly entertaining graphic media learned as much as people exposed to all media. In both the positive and negative campaigns, films and posters proved most memorable. Tabloids and radio spots were ineffective in both campaigns; fewer than 17 percent in Uttar Pradesh and fewer than 21 percent in Andhra Pradesh remembered either. Radio was found to be largely ineffective in the campaign because relatively few people in the target areas owned or had access to radio sets.

A second set of experiments was conducted in Ecuador by Manoff International from 1973 to 1976. Attempts to introduce iodized salt and water-boiling practices through open broadcast of short, repeated radio spots met with mixed results. Water-boiling behavior was not accepted largely due to the complexity, expense, and difficulty of water-boiling procedures in the target communities. Changes in use of iodized salt were greater, suggesting that further experiments with the procedure were warranted. Two subsequent experiments, one in the Philippines and one in Honduras, also illustrated the potential of the social advertising approach; but again, demonstrable results were limited to changes in knowledge and understanding. Specific changes in target behaviors were not shown conclusively in the study.

These four experiences suggest that social marketing has a role to play in over-all development communication planning, but leave undefined exactly what that role ought to be. The identification of specific target audiences, the development of short radio spot messages sensitive to the needs and values of that target audience, the systematic pre-testing of radio messages in real-life situations, and repeated scheduling and careful monitoring of broadcasts were shown to be critical elements in the effectiveness of educational radio broadcasts. But radio was also shown to have limitations. Alone it proved in-

^{1/} Project Profiles, "Nutrition Mass Communication Project: INDIA," Clearinghouse on Development Communication, Academy for Educational Development, 1977.

effective in changing people's traditional behavior.

IV. BEHAVIORAL MODIFICATION STRATEGIES

Behavioralists generally define learning as any change in behavior due to prior experience with the environment. Learning is the organization of environmental stimulations in such a way as to promote desired behaviors.

Incipient modification strategies which stress positive and negative reinforcement patterns have been applied by a new school of behavioralists who stress positive over negative reinforcement. Watson and Thart (1972) state:

The basic idea in self-modification is to arrange situations so that desirable behavior is positively reinforced and unwanted behavior is not reinforced.

An important contribution made by this school of learning theorists is the emphasis on self-help or self-modification. A system has been devised which assists individuals to modify their own behavior by the rearrangement of everyday situations. Sequential steps have been defined in this process of self-modification which include:

- Specify behavior within a specific situation;
- Observe how often a behavior occurs, and record behaviors which precede as well as the consequences which follow it;
- Form a self-administered intervention plan to reinforce desirable behavior;
- Maintain, revise, and terminate the intervention in a systematic fashion.

Several possible applications of self-modification strategies can be made to health development programs. First, the concept defined in (b) above indicates the importance of observing behavior within a context of "reward culture." Too often, development programs focus only a single target behavior: "giving purges" or "washing hands." In fact, these behaviors exist within a reward culture that precedes and follows the behaviors with rewarding or punishing consequences. Any study of health related behavior should take the encompassing "reward culture" into account, developing a set of detailed protocol behaviors.

Secondly, the self-modification behavioralists argue that individuals can do a great deal to reinforce their own behavior. What is needed is a skillful arrangement of activity so that reinforcement follows desired behavior. The Penmark Principle goes further. It states that any behavior which is frequently

performed can be used to reinforce any less frequently occurring behavior. If, for example, we want rural mothers to wash their hands more frequently (Behavior A), we would identify some other behavior (Behavior B) which occurs more frequently. Let us assume that Behavior B is sitting quietly. A program would be developed for the mother in which every time she sat quietly, she would first agree to wash her hands. The Penmark Principle says that hand washing would increase. The important contribution of this idea is that the reinforcing behavior, in this case sitting quietly, does not have to be overly pleasurable. It should not be unpleasant, however.

A third important insight provided by the self-modification experience is the importance of individual record-keeping or monitoring of progress. Graphs, visuals, and other concrete representations of progress are important reinforcers for individuals adopting difficult new behaviors. Some self-modification programs have used privately monitored graphs, others suggest group displays. These devices may be particularly helpful to mothers unaccustomed to disciplined schedules in keeping control of agreed-upon behaviors. These decisions should be made in concert with the participants or after careful analysis of the reinforcing culture if individuals cannot participate directly. This technique has been applied with some success in the Cardiovascular Health Education Campaign and several weight control programs in the United States.

Finally, experience with self-modification techniques demonstrates that the decision when and how to terminate a behavior modification program should be systematic. Fading of reinforcement, the gradual withdrawal of accompanying behaviors in the general environment, and use of intermittent reinforcement schedules should all be considered.

The observation of reward systems adds an important new dimension to the community health investigations, and the use of self-modification strategies with difficult-to-contact rural people is appealing. This approach holds the promise of considerably increasing the impact of short, face-to-face contact, by providing a concrete tool such as a progress graph which a mother might take to her home and begin a self monitoring process. Short radio programs and periodic visits of health agents with the structured task of reviewing the chart and discussing progress with the mother could help reinforce change behavior.

V. PUTTING IT ALL TOGETHER

A. An Experience in California

In the health area, several important attempts have been made to combine media and face-to-face instruction. One example is the Cardiovascular Health Education Campaign, which was conducted by Stanford University from 1972 to 1975.

This program was built upon research previously done by Cartwright (1949), Griffiths and Kunson (1960), and Robertson (1974) which looked at the effects of media on consumer product behavior. Diet, smoking and physical activity programs which used face-to-face intervention were reviewed.

This campaign combined extensive mass media (150 radio and television spots, several hours of radio and television programming, weekly newspaper columns, billboards, poster, and direct mail of printed materials over two years) with a highly structured and systematic face-to-face intervention. The intervention included visits with physicians, smoking cessation counseling, and group meetings. Some of the most innovative aspects of the program emphasized behavior modification techniques such as self-monitoring, modeling and guided practice of alternative behavior, and gradual fading of face-to-face contact so that long-term maintenance might result. A reward system was established, and a wall chart associated with positive reinforcement from instructors proved to be particularly successful. A large range of enabling and antecedent behavior was identified and addressed in the campaign.

Three important elements were brought together in this campaign. Materials were targeted to specific behavioral skills. Behavioral change principles were included in both the media and face-to-face instruction procedures. Enabling behaviors such as knowledge deficits and media consumption patterns of the target audience were studied and used to build the campaign intervention.

Three conditions were compared: a control group which received neither the media treatment nor the intensive face-to-face intervention; a group which received only the media treatment, and a group which received both the media treatment and the face-to-face intervention. Results showed that the risk of cardiovascular disease increased in the control community over the two years of the study. The face-to-face intervention with the media proved more initially effective than the media alone in reducing cigarette smoking, but by the end of the two years, significant differences could not be found between the two groups. In an article published in The Lancet in June, 1977, the researchers point out:

Intensive face-to-face instruction and counseling seem important for changing refractory behavior such as cigarette smoking and for inducing rapid change of dietary behavior.... Mass media are potentially much more cost-effective than face-to-face education methods. Our results show that mass media can increase knowledge and change various health habits, but we believe that the power of this instrument could be considerably enhanced if we can find ways to use mass media to stimulate and coordinate programs of interpersonal instruction in natural communities (such as towns and factories) and to deliver forms of specialized training and counseling about weight-loss and smoking avoidance.

B. A New Voice in the Desert

One of the few attempts to systematically test the effectiveness of combined social marketing media and face-to-face instruction in a developing country is the recently completed Tunisian Health/Mass Media Project. This project, conducted by Synectics Corporation, the Tunisian National Institute of Nutrition, and the El Amouri Institute, sought to determine if the introduction of a limited face-to-face intervention would measurably increase the impact of a radio-education campaign.

Nutrition behaviors were developed, based on a National Nutrition Survey which showed that mother/infant care and feeding habits were negatively affecting the growth and nutritional status of young children. Several nutritional themes were developed, including exposure of children to sunlight, support of breastfeeding but earlier introduction of supplemental weaning foods, addition of fruits and green vegetables to mother and child diets, and increased use of eggs, milk, and milk products.

A series of 37 two-minute radio spots was developed using a fictitious Dr. Hakim in a short lecture format. A three-to-four hour, face-to-face training session was given to health workers at selected clinics prior to the six-month broadcast intervention to teach them to reinforce participating mothers with the nutritional advice being given over radio. Eight clinics, where only the radio messages would be received, and eight experimental clinics, where the short training of health workers would be added to the radio message coverage, were selected.

Statistical results of the project are not yet available, but initial indications suggested that little difference can be found between the control and experimental groups. A number of problems were encountered during the implementation phase of this project, which may account for the lack of measurable difference. A proliferation of new messages during the final weeks of the campaign, a limited pretesting of messages, and political criticism resulting from shortages of eggs on the open market represent some important problems. More importantly, however, the very limited nature and extent of the face-to-face intervention may argue against any significant difference between control and experimental groups.

Several important aspects of media were identified by this project. In a country with limited experience with media advertising, the creation of a media figure like Dr. Hakim can be very powerful. Dr. Hakim is now a nationally recognized personage in Tunisia, used by newspapers to poke fun at athletes, by teachers to control school children, and by mothers to make food choices. The Tunisian government has made a significant commitment to the continuation of the Dr. Hakim program, and neighboring countries who receive the broadcasts have expressed interest and support for the program's continuation.

VI. SUMMING UP

1. Past experience in health and nutrition education demonstrates that

- Para-professional community health workers can be particularly effective in bridging the communication gap between medical personnel and the community, and in performing important diagnostic functions.
- Long term adoption of any health intervention by a developing country is dependent upon:
 - extremely low levels of additional recurrent costs;
 - host-country involvement in each development phase to ensure understanding and commitment by local officials; and,
 - frequent and constant contact with decision-makers at the local and national levels, and identification of these levels with "ownership" of the project.

2. Application of social marketing techniques and mass media technologies have shown that knowledge and understanding can be affected positively, but evidence of behavior change is less convincing.

3. Systems for effective mass-media message development are elaborate and center upon five basic principles:

- In-depth understanding of the target situation;
- Targeting of behaviors to specific populations;
- Systematic pretesting and subsequent revision of messages;
- Sequential orientation of messages from general to specific, including incremental development of complexity where appropriate; and
- Repeated airing and monitoring of messages as systematically scheduled times to ensure target population reception.

4. Behavioral science research suggests that face-to-face interventions can be improved when target populations are allowed to practice the behaviors being introduced; when enabling behaviors as well as target behaviors are identified, studied, and addressed; when positive self and instructor - reinforcement systems are developed; and when fading of reinforcement is used to support long-term behavior maintenance.

5. Evidence exists which suggests the cost-effectiveness of radio programming in developing countries and the positive educational impact of face-to-face interventions. However, few efforts at combining these elements systematically have taken place within the sphere of health and nutrition.

Research evidence which now exists does not justify widespread claims of success. At the same time it must be realized that most media research in developing countries has been seriously flawed and research results, either positive or negative, are questionable. The continued experimentation with media, and particularly with the application of combined media and face-to-face intervention, is justified in the health sector, by successful application in other sectors such as education and agriculture. But perhaps the most convincing argument for continued research is the cost-effective outreach potential of the technology itself.