PN-ABJ-481

INTERNATIONAL PEDIATRICS

April-June 1986
Vol. 1, No. 2

Journal of the Miami Children's Hospital

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International Pediatrics, the Journal of the Miami Children's Hospital (ISSN-0885-6265), is published quarterly by Miami Children's Hospital Medical Journal, Inc., 6125 S.W. 31st Street, Miami, Florida 33155. Editorial and Sales Offices - telephone (305) 666-0781.

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ISN 73877

The Role of Communication in Reducing Infant Mortality Due to Diarrhea-Related Dehydration

WILLIAM A. SMITH[1] AND BARBARA G. FURST[2]

A social marketing campaign, aimed at promoting the correct use of oral rehydration therapy and other methods for controlling diarrhea-related morbidity, is described. The research techniques used in defining the problems, and determining what information is both needed and likely to have the greatest impact, are reviewed. Comparative data is provided on the correct use of oral rehydration therapy before and after the project was initiated.

Key words: Social marketing, health communications, oral rehydration therapy. (Int. Pediatr./Vol. 1/120-122)

Introduction

About four million children die each year from diarrhea related causes, with as many as 30% of all infant deaths worldwide being caused by the dehydration and malnutrition associated with diarrhea. Virtually no drugs are available which effectively combat the bacterial and viral organisms responsible for most cases of diarrhea. However, oral rehydration therapy (ORT) is an effective weapon against diarrheal dehydration and a practical means of saving thousands of lives each year.

The key to effective ORT is correct preparation and administration of an oral glucose-electrolyte solution, which may consist of either the simple home solution of water, salt, and sugar, or the more complex prepackaged formula containing sodium, glucose, potassium, and bicarbonate. While ORT represents a major improvement over intravenous therapy in the treatment of diarrheal dehydration, certain minimum criteria must be met before it can be effective. The ingredients must be easily available to isolated populations, and mothers, community health workers, and others must be taught how to mix the solution correctly to avoid ineffective or even potentially dangerous concentrations of sodium. They must also learn to administer the solution slowly, over a 24-hour period, continuing to give the solution even if the child vomits or refuses the liquid.

The proper treatment of diarrheal diseases necessitates a complex set of educational tasks. These include providing information about ORT, as well as about the need to continue breastfeeding infants, to feed solids and other liquids to older children with diarrhea, and to avoid the often improper use of other medications. Since ORT has proven an effective technique, increasing attention is being given to delivery systems and educational messages concerning the correct preparation and administration of the solution and related child care. Communications, as a field, is working with physicians to ensure the widespread, correct, and safe use of ORT among those most in need.

The HEALTHCOM Program

The Communication for Child Survival (HEALTHCOM) Program, formerly known as the Mass Media and Health Practices Project, is administered by the Academy for Educational Development, a private, non-profit organization, and is sponsored by the U.S. Agency for International Development. The program will work with governments in some 17 countries to develop comprehensive communication strategies in support of child survival. The particular communications strategy developed by the project is part of a growing genre of health education activities referred to generally as social marketing or health communications. In the past, social marketing campaigns have focused on such problems as smoking cessation, seat belt use, and alcoholism reduction, and have attempted to inform, motivate, and change the behavior of a large audience in a short period of time. Early HEALTHCOM programs focused on oral rehydration, and have recently expanded to include immunization, improved infant nutrition, malaria control, and family planning.

In groundbreaking projects in Honduras and The Gambia, HEALTHCOM worked with local professionals to provide health care information about those most at risk, children under the age of five. Using mass media, simple printed materials, and health worker training, rural women were taught what oral rehydration therapy is, how they could use it at home, and how to monitor their children's progress during episodes of diarrhea. Special emphasis was

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given to feeding advice in an effort to break the vicious cycle of diarrhea and malnutrition. In Swaziland, a standardized homemade oral rehydration solution formula was developed and popularized, and infant feeding and child care advice was disseminated. In Ecuador, HEALTHCOM assisted the government with an integrated rural development project, and created radio messages, health worker training programs, and printed materials on recognizing dehydration, promoting Suero Oral (the locally produced World Health Organization formula rehydration salts), administering and correctly mixing these salts, and on related child care and hygienic practices. In Peru, HEALTHCOM worked with the Ministry of Health and a local advertising firm, Forum, to develop a media campaign that included phased radio and television broadcasts and printed materials on diarrhea, immunization, and child spacing.

Evaluation of Programs

HEALTHCOM's programs in Honduras and The Gambia were evaluated by Stanford University and Applied Communication Technology[1,2] while their program in Swaziland was evaluated by the University of Pennsylvania.[3]

In Honduras, the number of diarrhea-associated deaths in children under five dropped by 40 as a result of this program. In the two years prior to the program the diarrhea-related death rate had been 39.8%, but dropped to 24.4% in the two years after the program started. After two years, over one third of all episodes of diarrhea were being treated with Litrosol, the locally produced rehydration salts. Over 95% of those who said they used Litrosol at the end of the campaign knew how to mix it properly, and an average of more than 80% reported giving the correct daily amount.

A detailed examination of mixing data from an in-home observational study of 36 children in the Honduras project established the basic safety of the home-prepared solution. As shown in table 1, the home-prepared Litrosol solution was well within safe ranges for all major variables.

The Gambian program focused on teaching mothers to prepare and administer a water/sugar/salt solution to children at the earliest sign of diarrhea. The Stanford University study results, presented on table 2, showed knowledge about mixing the correct formula increased significantly during the project. Similar results were found with actual mixing trials during an observational study in The Gambia.

Table 1
PERCENTAGE OF STUDY POPULATION PREPARING CORRECT LITROSOL SOLUTION

	Optimal	Study results
Mean volume of water	1000 ml	948 ml*
Used boiled water	Recommended	97%
Used entire packet	Required	94%
Dissolved by shaking	Required	97%
Adds other substance	Not recommended	0%

*Standard deviation: 156.3

Table 2
ORT USE BEFORE AND AFTER PROJECT

	% Mothers Using Correct Formula	
	Before Campaign	After Campaign
Water volume	8.2%	94.1%
Sugar	1.4%	59.7%
Salt	3.6%	56.7%

In its report on the Swaziland study, the University of Pennsylvania noted that: "Of the children coming to clinics at the start of the campaign about 43% had been treated with oral rehydration therapy before coming to the clinic, according to the person who brought in the child; by the second month of the campaign about 52% of the children had been treated and by the third month 60% had been treated with sugar/salt solution or ORS, and that was the level at which treatment incidence stayed for the rest of the campaign, within a few percent."[3]

HEALTHCOM Strategy

The three components of HEALTHCOM's stragety are: 1) Preprogram planning and development; 2) Educational intervention; and 3) Monitoring and evaluating knowledge, attitudes, and behavior during and after the campaign. During the planning and development stage, we collect the information needed to prepare an effective program and to answer such questions as: Who in the total population should be selected as the principal audience? What communication channels are most appropriate for these people? What behavior should be promoted? What resources are needed to implement the program?

Behavioral analysis and anthropological techniques are the "market research" methods used in answering these questions. For example, the key instructional issues in Honduras were:

1) Willingness of rural mothers to accept a remedy associated with diarrhea which does not in fact stop the diarrhea.
2) Early determination by the mother of when the ORT solution is needed, and timely access to the packets.
3) Difficulty in mixing ORT solutions in the rural home, such as availability of a liter container and the use of the correct volume of water in relation to salts.
4) Sufficient administration of the solution, giving the entire liter slowly over 24 hours, in spite of vomiting.
5) Willingness to continue feeding, especially breastfeeding, during episodes of diarrhea.
6) Identification of a cluster of prevention behaviors which were practical in rural terms and which also served as a salient inhibitor of diarrheal morbidity.

A six-month field investigation included focus group interviews, direct observation of child care during diarrhea, and individual interviews with rural mothers, fathers, siblings, and grandparents. Village-based mixing trials and a physician/health provider survey were also done. The

investigation focused on issues related to both treatment and prevention of diarrhea in the village and included research on vocabulary and local beliefs which would be useful in the development of specific campaign messages.

One of the initial results of the investigation was a list of 104 treatment activities that were relevant for campaign messages. The principal treatment themes included diagnosis, acceptance of ORT, procurement of information, mixing, administration, seeking external help, and recovery. The prevention-related activities covered included breastfeeding, improved feeding practices, improved food preparation and storage, improved personal hygiene, improved household hygiene, and enabling concepts.

No campaign could promote 104 messages successfully. Indeed, it would be impossible to successful impart even one message from each of the above themes. It was therefore necessary to determine which of the potential messages had the best chance for acceptance given the nature of the target audience and the charateristics of the message delivery system. We also had to determine which message would produce the most change with significance for reducing diarrheal mortality.

Five criteria were used in answering these questions. The availability of ORT ingredients was the first criteria. The second was skills or knowledge needed by the mothers. For example, rural mothers may know that boiling water is good, but may not understand that it actually kills the parasites they fear. The third critera was finding a positive incentive, such as the immediate improvement in their child's health, while the fourth was finding incentives for doing the "wrong" thing, such as giving kaolin or purges. We also had to consider factors which would discourage the desired behavior. For example, a child on ORT may vomit, or his diarrhea may appear to increase.

After a rigorous selection process, we decided that breastfeeding, reheating foods, washing hands, and boiling water could be associated with a specific focus, infant care. Mothers would not be asked to do specific things, but to recognize that an infant requires special care, and special care means breastfeeding, clean water, fresh foods, clean hands, and so on.

Treatment of diarrhea presented a different set of problems. Field research indicated that mothers wanted five things from a diarrhea treatment. These included: 1)The cessation of diarrhea; 2) Avoidance of vomiting; 3) A readily available remedy; 4) A simple remedy; and 5) A remedy that was respected. Availability and respectability of the remedies had more to do with distribution systems and were therefore secondary concerns. The other three concerns — diarrhea cessation, no vomiting, and simplicity — were far more problematic. Oral rehydration solution does not halt diarrhea and may increase its volume. In addition, if given too rapidly it may also induce vomiting. Furthermore, it must be administered over a long period of time, 24 hours, to be effective.

We finally decided to construct the treatment theme around the simple concept: "children with diarrhea need liquids." Specific treatment advice was built around the theme: "give liquids during diarrhea." This was repeated over and over again. Litrosol became a special remedy for dehydration, the loss of liquid during diarrhea.

These basic messages were then transformed into appealing language, structured into a sequenced dissemination plan, and divided into those which would be delivered by the media, in printed materials, and through trained health workers. The whole process of message selection, the critical first step, took more than seven months. Each step of the way was guided by the latest developments in behavior analysis, and by a set of criteria which raised practical consumer-oriented questions and forced a systematic challenging of prejudices and anecdotal assertions acquired during the field investigation.

Conclusion

Message development for mass media was only one part of a three-pronged approach to health communications. The training of physicians and other health service providers was an equally important part of the program, as was the careful design of printed materials including the package of the Litrosol salts themselves.

The effectiveness of this program and other similar programs is the result of a partnership between service providers and communications specialists, a partnership which applies the latest thinking in communications, behavioral psychology, anthropology, social marketing, and health education in the service of consumer education. Extensive audience research in developing program activities and constant monitoring and refinement of campaign messages during actual implementation have allowed program planners to address child health problems within a framework defined and understood by physicians, health workers, and parents. The program provides information which is used correctly and in a timely manner to improve the health of children.

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HEALTHCOM is a project of the Academy for Educational Development and is sponsored by the Office of Health and Office of Education of the Bureau for Science and Technology, U.S. Agency for International Development. HEALTHCOM is funded through USAID Contract No. DPE-1018-C-00-5063-00.