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DIARRHEA AND THE SOCIAL MARKETING OF ORAL REHYDRATION SALTS IN BANGLADESH

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Abstract—An anthropological study of knowledge, attitudes and practices relating to child diarrhea and specifically to ORS was carried out in Bangladesh. The purpose of the study was to help design a culturally-sensitive social marketing program. Information was gathered on indigenous classification of diarrheas, patterns of therapy recourse and diarrhea management, and understanding of dehydration symptoms as well as use and attitudes regarding ORS. Among the findings were that 58% of households sampled had tried ORS at least once; ORS was perceived as a medicine with several positive attributes; literacy was positively related to ORS use; and there were no significant cultural barriers to ORS adoption.

Key words—diarrhea, oral rehydration, Bangladesh, social marketing

INTRODUCTION

Anthropological studies have become fairly common adjuncts to the planning of diarrheal disease programs that emphasize oral rehydration salts (ORS) and operate in developing countries [1]. Yet in a special and relatively new type of diarrhea/ORS program that shows considerable promise, namely social marketing, anthropology has yet to become established in the planning process. Social marketing attempts to use commercial marketing techniques to promote products desirable from a public health viewpoint, such as contraceptives or ORS [2]. The basic idea is to market a product through existing retail channels in order to reach the maximum number of 'consumers.' The product tends to be sold at a relatively low, subsidized price at first but some degree of program self-sufficiency is usually sought. The growing interest in social marketing on the part of the U.S. Agency for International Development (AID) is reflected in the recent awarding of a 21 million dollar contract for a worldwide contraceptive social marketing project.

In January, 1985 the AID mission in Bangladesh requested assistance from Primary Health Care Technology, an AID project implemented by a consortium of private consulting firms, to assist in the planning of both an anthopological study and a marketing research study in order to develop an ORS social marketing plan. The program is to be implemented by the on-going, AID funded Social Marketing Project of Bangladesh.

Social marketing programs often rely on preliminary marketing research, but generally not as much as a commercial firm would in launching a new product [3]. In the present case, AID requested a marketing research study to help determine the price, packaging and brand name of ORS to be marketed in Bangladesh. Due to its recognition of the value of anthropological studies in diarrheal disease programs generally, as well as the value of behavioral and attitudinal studies in various types of family planning programs, the AID mission also requested an anthropological study or operations research that would complement the marketing research study in both methodology and focus. The anthropological study was to be an essentially qualitative study that would reveal knowledge, attitudes, and practices related to diarrhea and ORS. Approximately 3 months were allocated for the study [4]. The anthropologist was to be personally involved in all stages of research design, data gathering, and analysis. Assistance in fieldwork as well as in other aspects of the study was to be provided by a local research firm, Market Research Consultants of Bangladesh.

The study was carried out as planned except that the starting date was delayed until May instead of March 1985 as originally planned. This paper is a summary of the study's findings and implications.

RELATIONSHIP TO OTHER STUDIES

AID and Primary Health Care Technology were concerned that the anthropological study did not duplicate the work of previous ongoing research on diarrhea or ORS, but instead focus on topics relevant to the social marketing of ORS that were not well researched. Of most relevance to the ORS social marketing program was the ongoing evaluation of the National Oral Rehydration Program carried out by Mehta Currey and her associates at the International Center for Diarrheal Disease Research, Bangladesh (ICDDR,B). I was able to read a draft of this Research Report toward the end of my field research. Another ICDDR,B study headed by Najma Risvi included observation of the management of diarrhea cases over a period of many months in several Tangail district villages. It was not expected that data from this study would be analyzed in time for the development of the ORS social marketing plan.

Relevant previous studies in Banglandesh included one by Shahid *et al.* [5] that found among other things that some mothers were not using ORS for diarrhea accompanying measles in children because ORS was believed to stop diarrhea, while in the case of measles, diarrhea was thought to purge the body of harmful wastes. Another study by Faruque *et al.* [6] in north-east Bangladesh found that 71% of respondents attributed the cause of diarrhea to dirty

water and smaller majorities cited food, worms and dirty environment. 69% of this sample knew about some sort of oral rehydration therapy and 42% of this group believed ORS stops diarrhea. Only 3% thought ORS replaces lost fluids. Herbal medicines and dietary remedies for diarrheal diseases were documented in a five-village study in Bangladesh by Ashraf [7]. Improper food intake was the only specific cause attributed to diarrhea, although interviewers also mentioned the will of God, evil spirits and evil eye as causative factors. No negative beliefs, attitudes or practices relating to ORS were found in this study. Other studies in Bangladesh have shed light on the variety of indigenous health practitioners available in Bangladesh, and on recourse to therapy during various illnesses including diarrheal diseases [8] and on the importance of diet in disease management [9].

Elsewhere on the subcontinent, Bentley [10] combined quantitative methods with a year-long ethnographic study of household management of child diarrhea in three villages near Delhi. Findings from this study are referred to elsewhere in this report. In another north India study Kuman *et al.* [11] found that while most mothers recognized symptoms of dehydration, these were not associated with diarrhea. Likewise Lozoff *et al.* [12] in a south Indian study found that dehydration symptoms were called dosham and were seen as life-threatening, but were not associated with diarrhea by most. This study also described local classification of diarrheal diseases. 'Continuous green diarrhea,' for example, was believed to be pollution-related (in the Hindu sense) and therefore required family and ritualistic treatment rather than cosmopolitan or biomedical medicine. A study in Goa [13] found that only 5% of a sample of mothers of under-5 yr children believed dehydration symptoms to be related to fluid loss in the body. The various Indian studies also described food restrictions during child diarrheas, home remedies such as herbal infusions and special drinks or porridges and the importance of the 'hot–cold' dichotomy in local perceptions of disease and in therapies.

Among the topics relevant to ORS social marketing not adequately researched in Bangladesh were indigenous perceptions of dehydration symptoms; local classification of, or differentiation between, diarrheal diseases; and local perceptions of ORS and its effects on children. The present study was designed in part to shed light in these areas.

METHODS

There are strengths, weaknesses and advantage trade-offs for each of the research methods commonly used to gather data for the development of social marketing programs, namely direct observation, focus group interviews, in-depth interviews and surveys [14]. Given the needs of the Social Marketing Project and the plan for a complementary marketing research study, it was decided that an anthropological study of diarrhea and ORS could combine aspects if not advantages of both survey and in-depth interviewing methods. Survey questions were therefore all designed as open-ended and probing techniques were developed to ensure greater depth in answers. National representativeness was approximated by selecting respondents in five widely-separated districts of Bangladesh. 240 Bangladeshis, of whom some 66% were women and 85% lived in rural areas, were interviewed in five districts with a distribution as follows: 45 in Khulna, 47 in Syhlet, 53 in Chittagong, 48 in Tangail and 47 in Rangpur. 68% of respondents were non-literate.

Purposive rather than random sampling was used in order to ensure an adequate number of interviewees who had experience with, and opinions about, ORS. Those selected were most often parents of children under the age of 5 although older respondents were also selected. Typically, one male and two female interviewees were interviewed in each village section. Sometimes interviewers would choose as respondents the first people encountered; other times protocol required that a senior male family head nominate respondents. All respondents were over 18. There was a selection bias in favor of the somewhat better off and not-so-remotely situated because time limitations prevented us from interviewing in homes situated more than a half-hour walk from the nearest road. Although time and budgetary limitations did not afford us the luxury of following random sampling procedures, our findings proved to be within 4–16% of certain key findings of the National Oral Rehydration Program study (see below) such as the percentage of respondents which had heard of or which had ever used ORS. The divergence in findings between the two studies were entirely predictable: the incrementally better off and less remote respondents in our sample were likelier to have ever tried ORS than the generally poorer and remoter respondents in the larger, national survey. The purpose of the anthropological study was not to compete in accuracy of measurement with other surveys but to complement the findings of these by illuminating or discovering beliefs, attitudes and behavior.

Interviewers consisted of the anthropologist, a full-time male interviewer assistant and sometimes interpreter for the anthropologist and 10 part-time female interviewers who were already residing in the districts selected for interviewing. The interviewer assistant had a masters degree in geography and the interviewers were all medical or other students at district universities, except for two who were recently qualified physicians. Interviewers had had previous experience in social and/or marketing research; they were trained in this study's interview schedule by the anthropologist and the interviewer assistant. All local staff was recruited by Market Research Consultants of Bangladesh. Quantifiable data from the anthropological study were tabulated by hand calculators rather than by computer.

It should be noted that private, one-to-one interviews in the villages proved all but impossible. Kinsmen and neighbors gathered around the place of interview—whether or not the foreign anthropologist was present—and sometimes made comments influencing the interviewee. Of course their very presence exerted an influence. Some of the advantages of focus group interviewing can be realized in such circumstances, i.e. feelings, values and attitudes can emerge spontaneously and in a natural context. On the other hand, standard analysis of data based

on respondent characteristics becomes invalid to the extent that responses are influenced by others. Since standard, statistical data analysis was not part of the study plan, the fact that interviews were non-private was not much of a problem.

Interviews took an averge of 40 min to conduct. Answers were recorded verbatim and were subsequently grouped in inductively-derived categories for frequency tabulations. Interviews were conducted between May 29 and July 25, 1985.

TYPES OF DIARRHEA RECOGNIZED

Diarrhea is defined by Bangladeshis as the passing of loose, watery stools. There are several Bangla terms for diarrhea of which dasto may be the most commonly used general term. The English term diarrhea has also found its way into fairly common usage.

When asked to name or describe the types of diarrhea recognized, 74% of respondents mentioned general, plain, ordinary or simple diarrhea; 63% mentioned diarrhea accompanied by continuous vomiting and weakness (5% of this group used the English term cholera for this type); 30% mentioned bloody diarrhea or bloody dysentery (amashaya in Bangla); and 28% mentioned greenish or yellowish diarrhea or diarrhea with mucus (sometimes called buniaga). (Multiple responses were allowed for all questions in which response categories were not mutually exclusive.) Less frequently cited were diarrhea with weakness (but no mention of vomiting) (12%); stomach ache (8%); diarrhea with fever (4%); diarrhea from worms (3%); and diarrhea associated with teething in young children (1%). When asked which types of diarrhea are dangerous, bloody dysentery (amashaya) was cited most frequently, followed by vomiting diarrhea or cholera. However, all types were cited with some regularity. Ordinary diarrhea was said to be dangerous if it continued for more than 3–4 days.

Very few respondents were able to attribute different causes or describe different treatments for various types of diarrhea recognized. Instead, respondents mentioned general causes and treatments for diarrhea. The most frequently attributed cause was bad, spoiled or indigestible food (60%) [15]; followed by dirty or contaminated water (23%), heat or hot weather (7%); flies or exposed food (7%); worms (6%), evil spirits, evil eye, bad air or God's will (4%); bad or spoiled breastmilk, or breastmilk unqualified (3%) [16]; and dirty hands or body (2%). 17% of respondents claimed they didn't know the cause of diarrhea.

It should be kept in mind that respondents may feel constrained to mention mystical causes to better-educated strangers in the context of an impersonal interview and that villagers tend to tell interviewers what they think the interviewers want to hear. Only the unqualified allopaths were able to specify causes and treatment for different types of diarrhea. They seemed to have a rough idea about the role of broad classes of microorganisms involved in diarrheal disease.

In a related and subsequent question respondents were asked if food or drink contributed to diarrhea: 90% said yes and 10% didn't know. Among the former, stale, spoiled or exposed food was mentioned by 40%; impure water by 34%; hard or hard-to-digest food by 22%; overeating by 13% jack-fruit, mangos and certain other fruits by 13%; meat and fish by 7%; and miscellaneous other answers (including breastmilk) by 5%.

Regarding treatment, 'doctors treatment' (usually from unqualified allopaths) was the most commonly mentioned recourse, cited by 53%. This was followed by ORS or homemade sugar-salt solution (48%); homeopathic medicines (14%); herbal treatments (10%); mystical or religious treatments (7%) and home remedies such as green coconut water and porridges (4%). Only 5% claimed they did not know how to treat diarrhea.

Answers to a single, direct question on diarrhea treatment can be misleading. For example, Bangladeshis appear not to think of the various gruels, porridges and special beverages given during diarrhea as treatments *per se*, therefore information on such home remedies—many of which have rehydrating effects—may be underreported. In the present survey, a good deal of information on home remedies emerged when questions were asked about appropriate diet during diarrhea episodes. This information is presented below.

Respondents were asked if they knew of any ways to prevent various types of diarrhea. Again, they preferred to answer about diarrhea in general and not about different types of diarrhea. If interviewers probed an answer such as "one should avoid bad foods" with the question, "what about bloody dysentery?" the respondent would typically then say he or she didn't know.

Regarding prevention, 42% of respondents said they knew of none for diarrhea; 31% said personal cleanliness and hygiene and avoiding contact with people who have diarrhea; 25% said avoiding bad, spoiled or cold foods; 24% said avoiding contaminated or unprotected water; 7% said avoiding food exposed to flies; 5% said taking 'doctors' medicines'; 4% said maintaining clean surroundings; and 3% or seven respondents said taking ORS or sugar-salt solution.

A few of the 'don't knows' made comments like, "only God can save one from diarrhea." And some of those who mentioned avoiding bad food made comments like the woman in Khulna who said "We know what foods to avoid but we are poor and so we can't be choosy in what we eat."

GENERAL PERCEPTIONS OF DIARRHEA

As we saw in the preceding section, at least four separate types of diarrhea can be distinguished by Bangladeshis, yet functionally (i.e. in terms of perceived etiology, treatments and preventions) the various diarrheas tend to be regarded as one general syndrome. The different types recognized may only be important in indicating the severity or danger of the diarrhea—and this is significant for ORS marketers and health educators.

A study by Shahid *et al.* [5] in Bangladesh suggested that at least one type of diarrhea, that associated with measles in children [17], was thought to purge harmful wastes from the body. Since it is

important to know if people regard diarrhea as having a positive function we asked a general question, "Can diarrhea ever cleanse the body or rid it of impurities?" 58% said yes, 24% didn't know and 18% said no. Several of the 'yes' respondents identified the impurities that are purged as things the body cannot digest, as well as 'bad blood' or poisons. There were also a few comments like, "unfortunately good elements are washed out of the body along with bad elements."

We then asked if diarrhea was ever good for the body. 42% said no and 16% didn't know. The remaining 42% thought that diarrhea might usefully purge bad elements from the body in cases of indigestion or gas, upset stomach, constipation, measles or teething in young children. Upon probing these answers, it seems that Bangladeshis feel it is better not to have diarrhea in the first place, but if one becomes afflicted with certain illnesses diarrhea may usefully serve to flush bad elements from the body. The significance of this for social marketing is that for at least certain types of illness, Bangladeshis may not always want to stop diarrhea, at least immediately.

In this connection it is significant that Bangladeshis seem not to use purgatives, as is common practice in other parts of the world where diarrhea is thought to flush impurities from the body [18]. This was determined by discussing purgatives with respondents who were indigenous practitioners.

UNDERSTANDING OF DEHYDRATION

Although numerous studies relating to diarrheal disease in Bangladesh exit, the question of indigenous perceptions of dehydration remained largely unexplored at the time of developing the questionnaire for the present study. In order to avoid influencing answers, we asked "What complications or symptoms do you see if diarrhea continues?" in the context of child diarrhea. 75% said weakness, immobility and/or fatigue [19]; 35% said the patient might die; 20% said fever or body heat; 17% said sunken eyes; 17% said weight loss; 15% said loss of appetite or decreased digestive ability; 11% said cold or clenched hands or feet; 6% said thirst or water loss; 4% said stomach pain; 3% said loose skin; and there were several infrequently cited answers such as weak pulse and dry skin. Only one of 240 respondents mentioned sunken fontanelles.

Respondents were then asked if they had ever seen the prominent symptoms associated with dehydration—associated by the medically trained, that is—although this and other questions referring to dehydration were devoid of terms that denote or connote dehydration. Instead, symptoms such as depressed fontanelles, sunken eyes and loose, dry skin were described to the respondent. 34% claimed they had seen all the symptoms; 34% had seen some of the symptoms; and 32% had not seen them or did not know. As with the answers to the previous question, sunken fontanelles seemed to be the least recognized symptom.

Next, respondents were asked the cause of the symptoms just described to them, as well as if the symptoms can be treated (cured) or prevented. Regarding cause, 33% didn't know; 33% thought the symptoms were caused by or related to diarrhea, cholera or dysentery; 6% said bad water; 6% said worms; 6% said bad food; 6% said the symptoms were evidence of evil spirits or evil air; 5% said the symptoms mean the child or older patient is getting worse and might even die, and there were miscellaneous answers such as heat or fever. Only 2% said the symptoms were due to water loss.

Regarding treatment of dehydration symptoms, 44% of respondents said only a 'doctor' knows. Perhaps surprisingly, 35% said ORS, home-made sugar–salt solution or glucose mixed in water is the treatment for dehydration symptoms. Another 8% mentioned gruels, coconut water or plain water as treatments; and 8% said treatment by mystical or religious practitioners was needed. Regarding prevention of dehydration symptoms, a clear majority (68%) didn't know or couldn't say; 8% said they would take a doctor's advice; 6% said they would use ORS or intravenous (i.v.) saline solution; and the remainder repeated the preventive measures they had mentioned for diarrhea such as maintaining personal hygiene and avoiding contaminated food and water.

After respondents were offered opportunities to spontaneously make connections between dehydration symptoms and diarrhea, they were asked if the symptoms described earlier were related to diarrhea or to something else entirely. Interviewers were carefully instructed to refer only to the previously described symptoms and not to diarrhea, water loss or anything else. 58% of respondents said the symptoms were caused by, or somehow related to, diarrhea; 28% said the symptoms were unrelated to diarrhea; and 14% didn't know.

Finally, respondents were asked if any Bangla term describes the symptoms under discussion. Although researchers working in other parts of the subcontinent have found local terms to describe dehydration symptoms [20], evidence was strong even before the present study that no such term was in use among Bangla speakers. Nevertheless, it was felt that answers to such a question might provide insights into indigenous perceptions of dehydration. 48% said there was no term or they knew of none; 34% answered with various Bangla (and occasionally English terms) for diarrhea, dysentary, or cholera; 12% said kosha or constipation; and 6% said kamela rog which means jaundice or hepatitis.

Since indigenous perceptions of dehydration are of key importance in the social marketing of ORS, the significance of findings in this area should be summarized. First, the weakness, immobility and death cited by most respondents as symptoms or consequences of persistent diarrhea do not relate only to dehydration. Only a minority of respondents mentioned relatively unambiguous dehydration symptoms such as sunken eyes. On the other hand, some 68% of respondents claim they had seen all or some of the outstanding symptoms associated with dehydration that were described to them and about half the respondents associated the symptoms in some way with diarrhea or with causes of diarrhea. Even allowing that some proportion of answers may have been influenced by the context of the interview, there seems to be a basis for social marketers and health educators to assume that a significant proportion of

Bangladeshis see a connection between dehydration symptoms and diarrhea.

The findings that 35% of respondents believe ORS or sugar–salt solution to be appropriate treatment for dehydration symptoms was probably also influenced by the survey context, and possibly by the phrasing of the question by some interviewers, but the finding probably also reflects knowledge gained from the recent Bangladesh Rural Advancement Committee campaign to promote home-made sugar–salt solution.

DIARRHEA MANAGEMENT

Based on impressions gained during interviewing as well as on responses to certain questions, respondents appear to lack self-confidence in health matters. They seemed to exhibit a feeling of helplessness, perhaps even of fatalistic resignation, when illness occurs—as if they would rather have someone tell them what to do than to make decisions themselves and then take responsibility for treating illness. This should not be surprising since poverty and lack of education do not inspire self-confidence generally, and especially in an area such as health care where medical professionalism and mystique can be intimidating.

This feeling of helplessness is reflected to some degree in home treatments for child diarrhea. 42% of respondents claim they do nothing. Among the 140 respondents who do something, 53% claim they use home-made sugar–salt solution or packeted ORS; 24% use gruels, porridges or coconut water; 21% use herbal remedies such as the leaves of pineapple, spinach or cucumber; and the remainder rely on diet therapy (see below) or on mystical/religious treatment by practitioners who visit the home. As presented in the section to follow, 58% of all respondents claimed they had tried ORS at least once. Even allowing for a little exaggeration on the part of respondents, and allowing for respondents forgetting to mention ORS in response to a general question about diarrhea treatment, 58% is a significantly higher figure than the 31% of all respondents (53% of the 139 respondents who do something) who mentioned using ORS specifically for child diarrhea. This discrepancy could mean that there is a percentage of discontinuers, or people who have tried ORS once but then not continued. This may account for about 10%, since 48% of respondents mentioned ORS or home-made solution in response to a general question about diarrhea treatment. In fact, this is consistent with our finding presented in the section to follow that 11% of ORS users found results of ORS to range between fair and poor. The 58–31% discrepancy could also mean that ORS is less commonly used for children than for adults. There were two comments by respondents during the course of interviewing that suggest some parents may believe that ORS is not appropriate for small children. More research in this area is needed.

When asked about child diarrhea treatments outside the home or involving outside help, 80% of respondents said they sought allopathic practitioners (usually unqualified) or medicines; 36% said they consult mystical/religious practitioners; and 7% said they sought homeopathic treatment. In addition, 14% commented that they receive some sort of ORT and 5% said they receive i.v. treatment from practitioners.

It was difficult to establish a consistent pattern in recourse to therapy. It should be noted that mothers have most of the responsibility for management of their childrens' illness, although Islamic purdah (female seclusion) means that men tend to be the ones who travel away from home to buy medicines (including ORS) and initially consult practitioners. In any case, women tend to know more than men about home remedies and appropriate diet during illness and some women respondents described patterns in their own management of child diarrhea.

Virtually all mothers restrict certain foods and emphasize others—known collectively as pathya—thought to be appropriate for illnesses like diarrhea. Some give their child herbal remedies, then try ORS, then take the child to an unqualified allopath (daktar) and finally, if the condition persists, the mother or another person of influence might decide that evil spirits or other mystical causes are involved, and the child will be taken to a mystical/religious practitioner. A practitioner such as a moulana , kobiraj, fakir, ojha or mulla then gives 'holy water' and prays over the child, perhaps blowing on the child and perhaps preparing a special tablet (tabiz) containing a Koranic inscription to be worn by the child. Other women, but perhaps a minority, seek a mystical/religious practitioner before going to a doctor or unqualified allopath. Some mystical practitioners, notably the kobiraj, may give aryuvedic or yunani herbal medicines.

Further mention of the roles of indigenous health practitioners should be made at this juncture. Among the non-biomedically trained practitioners relied upon for various illnesses including diarrhea are:

1. Daktars (from the English 'doctor'), or allopaths who are not formally trained in medicine. They are essentially self-trained, or they learn through apprenticeship with another daktar. Some have undergone skill-upgrading in government sponsored or approved short courses. From interviews with and about daktars in the present survey, they appear to treat various diarrheas with ORS, i.v. saline solution, antidiarrheals, antibiotics and sometimes analgesics, depending on their diagnosis and perhaps on other factors.
2. Homeopaths, to whom 14% of the present sample turn in cases of diarrhea. Some homeopaths may advise patients to foresake all other medicines while taking homeopathic medicine for diarrhea, but on the whole they seem not to be opposed to ORS.
3. Religious faith healers including ascetics (fakirs), priests (moulanas) and those thought to possess spiritual healing powers gained through dreams, meditation, study or spirit possession. Faith healers prepare and administer "holy water" in cases of diarrhea. They also pray and blow over the patient as well as prepare the tablets (tabiz) described earlier.
4. Kobirajs and totkas, or herbalists whose knowledge derives from both the ayurvedic and yunani traditions and who may combine shamanistic elements in their treatments. A shamanistic healer

known as ojha and who seems to be best known for treating snake-bite, is also consulted for some diarrheas, according to respondents.

Rather striking differences in reliance on home treatments were found by region. For example 83% of Chittagong respondents claimed they used no home treatments (but see the analysis section for ORS usage by district). At the other extreme, only 2% of Rangpur respondents made such a claim. However, reliance on 'doctors'—usually unqualified—was consistent throughout the five districts surveyed.

Since diet proscriptions and prescriptions are determining factors in diarrhea and can influence the apparent effects of ORS, we asked which foods are restricted when a child has diarrhea. 75% of respondents claimed that all or most solid foods are restricted during diarrhea, although this may not reflect actual behavior [21]; 11% said they withhold rice, grains, pulses, bread and other non-meat staples (especially if spiced); 10% said they withhold spoiled or exposed food; 5% mentioned fruits believed to cause or exacerbate diarrhea such as jackfruit or mango; and miscellaneous answers referred to vegetables, milk, unsafe water and spicy foods. In response to a separate question about breastfeeding, 68% claimed that breastfeeding continues during infant diarrhea; 8% said it is discontinued and 14% (mostly men) did not know [22].

Suspecting that the use of potentially rehydrating gruels, drinks and porridges might be underreported in response to a question on treatments, we asked what foods are given during diarrhea. There was considerable variation in the answers by district, depending on the presence of certain crops. Overall, however, 27% said barley water (thin barley soup); 21% said a sago-based drink; 18% said glucose water, sugar water, sugar–salt solution or ORS (ORS use is underreported here because ORS is not usually thought of as a food); 3% said lemon water or juice; and 16% mentioned such foods as wheat porridge, soft rice, breastmilk and coriander gruel.

We next asked when normal diet is resumed after diarrhea symptoms stop. Of those 180 able to give an answer, 49% said in less than 2 days; 32% said between 2 and 3 days; 7% said between 4 and 5 days, and the remaining 12% gave answers ranging between 6 days and over 2 weeks. The later the resumption of normal diet, of course, the greater likelihood there is for malnutrition and related problems.

To shed further light on decision-making in the management of diarrhea, we asked, "Who in the family and/or immediate community can advise on the treatment of your child's diarrhea?" Male respondents often replied that they make their own decisions (23% of all respondents) and females often mentioned their husband's advice or decision-making first (37%). Also cited are parents or parents-in-law (25%); neighbors, friends or elders (18%); 'doctors' (15%); other family members (8%); indigenous health practitioners (4%); and local leaders (1%). Three people commented that they would take advice from anyone who gave it. A number of women mentioned that they would never make a decision on their own without guidance from their husbands and perhaps their husband's parents as well.

We next asked about other sources of information relating to diarrhea and its treatment. 60% mention radio (and occasionally television); 37% mentioned extension workers [23]; 35% mentioned 'doctors'; 7% mentioned friends and neighbors; 6% said they had no sources and therefore knew noithing about diarrhea; 3% (notably daktars and the better educated) mentioned print media; and 1% mentioned schools or school children. Since many of the radio citations came in response to a probe in which radio was mentioned, 60% is probably an inflated figure. However, the BRAC radio campaign promoting homemade ORT has reached people all over Bangladesh and it was clear from questioning that BRAC was the primary and perhaps even the sole source of respondents' radio-derived information on ORT. In fact, there is little competition on the airwaves; there has apparently been no promotion or advertising of packeted ORS on Bangladesh radio.

Ideally, a social marketing program makes use of all available channels of communication, each channel being developed to communicate that which it is best at communicating. However, in practice in developing countries with serious manpower and transportation constraints, radio often becomes the most important medium for communication. Although some respondents in the present survey noted that radio was their only source of information about treating diarrhea, there were other comments like, "I listen to the radio but I don't believe what they say."

ORS KNOWLEDGE, ATTITUDES AND USE

A variety of questions were asked about ORS and oral rehydration therapy (ORT). First we asked if respondents knew what ORS is. 92% claimed they knew. This parallels the finding of the ICDDR,B evaluation of the National Oral Rehydration Program (hereafter, NORP study) which found that 88% of respondents from a randomly-derived national sample of 2500 knew something about or were aware of ORS [24].

We next asked what ORS is used for. 86% said ORS cures or helps treat diarrhea, dysentary or cholera; 16% said it overcomes or prevents water loss in a person; 4% said it keeps the stomach or body 'cool' or it overcomes upset stomach; 2% said it prevents diarrhea; and 2% said it quenches thirst in a person with diarrhea. Some of the 16% that seemed aware of dehydration mentioned symptoms such as weakness and sunken eyes. The significance of the widely held belief that ORS cures diarrhea is discussed at the end of this section.

Respondents were then asked if ORS is a better treatment for diarrhea or for the symptoms of dehydration described to them earlier in the interview. Of the 131 who answered this (most of the rest simply said ORS was a good treatment), 73% said ORS is better for diarrhea and 27% said it is better for dehydration symptoms. Two women commented that ORS was better for older people whereas herbal remedies were better for children.

Respondents were asked if they or anyone in their immediate family have ever used the labon-gur

(sugar–salt) rehydration solution promoted by BRAC. 59% said yes and 42% said no. 127 of the 146 who had tried the ORT solution commented on their satisfaction. Of these, 92% said results were good or satisfactory in treating diarrhea; the remaining 8% were dissatisfied.

We then asked about experience with packeted ORS. 58% of respondents had used ORS at least once. In the 1985 NORP study, 40% of respondents who had experienced a case of diarrhea in the family within 2 weeks of the interview (some 450 respondents) claimed they had used ORS. And of the entire NORP sample of approx. 2500 respondents, 42% were found to have used ORS at least once [24]. Thus our finding, based on a purposive sample biased somewhat in favor of the not-so-old, not-so-poor and not-so-remotely situated, is about what would be expected in terms of ORS usage.

Of the 144 from the present sample who had used ORS, 94% reported they used it for diarrhea, dysentery or cholera; 4% used it for water loss; and 1% could not say why they—or their wives—used ORS. Results were reported as good or satisfactory by 84% of respondents; poor or not good by 6%; fair by 5% and 4% said ORS seems to only quench thirst. In another question, respondents were asked if ORS stops or reduces diarrhea. 10% of all respondents said no; 10% had no opinion; and 3% said ORS does not stop diarrhea but it has other beneficial effects. Of the 77% who thought ORS does stop or reduce diarrhea, 38% said diarrhea is stopped within 1–2 days; 19% said within one day; 15% said within 3–4 days; 3% said within 5–6 days; 2% said within 1 week; and 18% could not say (perhaps because they had not used ORS) but they nevertheless believed ORS stops or reduces diarrhea.

We next asked if ORS has any bad effects. 80% of respondents said no; 14% didn't know; and 6% said yes or possibly. One of the 'yeses' said that intake of a watery remedy serves to increase the diarrhea; another said ORS "creates problems in the stomach;" another complained of taste, and others could not be specific although negative effects were sometimes mentioned in response to other questions.

It is perhaps surprising that such a high percentage of respondents, including many who have tried ORS, believe that ORS stops diarrhea. While there is evidence that rice-based ORS such as that used by the International Center for Diarrhea Disease Research, Bangladesh actually reduces stool output [25], and there is some evidence that the same may be true for ORS with trisodium citrate, there is no scientific evidence that the standard World Health Organization approved ORS formula used in most of Bangladesh has the effect of reducing stool output. It seems likely that since many diarrheas are self-limiting, ORS users believe that ORS contributes to the cessation of diarrhea. And it is to be expected that in the absence of clear understanding about dehydration, people would assume that a medicine to be used during diarrhea would do something for the diarrhea itself.

However, it is also surprising that those who have used ORS for diarrheas requiring antibiotic or anti-parasitic treatment did not express disillusionment with ORS. Some proportion of this group may have received appropriate drugs from daktars and then attributed relief from symptoms at least in part to ORS taken, but there must still be a fairly sizeable group for whom taking ORS did not stop diarrhea.

In response to a question on the local source for obtaining ORS, 31% of respondents said local 'doctors;' 26% said they bought ORS at bazaars or markets; 25% said pharmacies; and 18% said health centers or hospitals.

We next tried to uncover any negative perceptions of ORS. Aware of what has been called the 'Asian courtesy response,' namely villagers giving what they think are polite, positive responses to interviewers, we asked a variety of questions about possible negative perceptions of ORS, then probed answers when appropriate. The first was, "Are there any reasons not to use ORS?" 83% said no; 13% didn't know or say; 2% said their children refuse to swallow ORS; 2% said that their 'doctor' must prescribe ORS before using it (in only one case was an unqualified doctor described as opposing ORS); 2% said there are occasions when ORS should not be used (three respondents specified "when the patient has fever" and the other couldn't or wouldn't elaborate); and 2% said they don't like or understand ORS or they simply prefer other medicines. Only one person mentioned the expense of ORS.

Illustrating the pitfalls of expecting anything approaching complete and valid data from a single, direct question, a subsequent question on the convenience of obtaining ORS produced 23 respondents who volunteered that locally-available ORS was prohibitively expensive for them. Follow-up on these responses revealed that in some districts, notably in remoter areas of Chittagong, an ORS packet which sells for TK2.50 in cities can sell for between TK5.00 and 9.00 [26]. Thus, ORS can be a substantial expense for poor families who have several children susceptible to diarrhea and who must use several packets of ORS for each episode of diarrhea. A few respondents commented bitterly that pharmacists and local 'doctors' exploit the poor by raising prices of medicines like ORS. Others remarked with equal bitterness that although they had heard that ORS was supposed to be distributed free of charge from hospitals and local health centers, poor people had little chance of service let alone free products at such facilities.

Following up on the indication that babies may refuse to swallow ORS, we asked about this in a separate question. Of the 136 or 57% who provided an answer, 74% said babies in their family refuse or don't like ORS (36% of this group volunteered the comment that they nevertheless force-feed babies who refuse ORS); and 26% said babies accept ORS. It would seem from this evidence that taste might be a constraint to ORS use. Little is known about whether Bangladeshi mothers use effective and appropriate force-feeding techniques for ORS; research in this area is needed. The Social Marketing Project should consider training unqualified allopaths and other paramedicals in force-feeding techniques.

Following this we asked, "Is ORS incompatible with any foods, medicines or conditions associated with diarrhea?" 53% said no; 21% said they didn't know; 18% said ORS should only be given with

foods appropriate for diarrhea such as barley water; 17% further commented that regular diet should be restricted while taking ORS; 5% said that ORS is incompatible with certain porridges (such as the rice-based chira) or other home remedies for diarrhea; 2% said other medicines should be restricted while giving ORS; and one person said yes but couldn't be specific. In spite of some opinion to the contrary, most respondents saw no incompatibilities between ORS and traditional diarrhea remedies or foods, and many commented that ORS goes particularly well with porridges like chira or with drinks such as coconut water or lemon water.

Bangladeshis like other peoples of the subcontinent and elsewhere tend to think of foods, medicines and states of body as being either 'hot' or 'cool.' Since a hot (gorum) illness like diarrhea requires a cool (tanda) antidote, whether in medicine or food, we were interested in discovering how ORS is perceived in this regard. 67% of respondents believed ORS to be cool, 29% didn't know, and only 3% thought ORS to be hot. A few of the comments from the latter 3% ($n = 8$) belie the apparent significance of their answer. For example, one respondent observed that ORS warms the body but cools the stomach. Another said ORS overcomes the cold hands and feet associated with persistent diarrhea. We can probably conclude that there are no problems with ORS in terms of hot/cold perceptions.

We also felt it important to know whether or not ORS is considered a real medicine, one regarded as equivalent to, e.g. intravenous (i.v.) solution or antidiarrheal or other pills. Most (71%) said ORS is as good as or better than pills for diarrhea, although perhaps not as effective as i.v. solution; 22% didn't know; and only 7% thought ORS inferior to other medicines. Two respondents thought that i.v. solution is better because it costs more than ORS, and one said that ORS works slower than i.v.s [27].

Next we tried to determine what sort of reputation ORS has locally. 66% said ORS has a good or good enough reputation; 33% said they didn't know; and only 1% said ORS has a poor reputation. We further asked if there were any bad or negative rumors about ORS or any opposition to ORS on the part of indigenous practitioners or other local leaders. Of the 220 who answered the first question, 99% said no; and of the 230 who answered the second question, 99% again said no. The following negative comments were recorded:

(1) "I heard a rumor that a patient died from taking ORS."
(2) "Our Kobiraj (herbalist) doesn't allow ORS unless the condition is serious."
(3) "Our daktar discourages using packeted ORS."
(4) "There is a rumor that ORS is not good but our daktar or kobiraj has never advised against it."

Finally we asked what other effects ORS has on a child with diarrhea, and specifically whether or not ORS strengthens or nourishes a child. 49% of respondents said ORS strengthens or energizes a child; 34% said it nourishes; 5% said it helps digestion; 2% said it quenches thirst and 12% couldn't answer. 13% of the total said ORS doesn't strengthen and 5% said it doesn't nourish. There were also miscellaneous positive comments that ORS "normalizes the stomach," "normalizes excretion," "controls the stomach" and "improves health."

Summarizing ORS knowledge, attitudes and usage, it can be concluded from the findings that there are no significant cultural constraints to ORS use: ORS is not seen as incompatible with existing remedies or diets for diarrhea and there appears to be no substantial opposition to ORS from indigenous practitioners, religious leaders or local political leaders. 58% of our sample had used ORS at least once (although the 42% finding of the NORP study is more representative of Bangladesh as a whole) and users seem to be relatively happy with the product. The more important problems reported related to availability, cost and small children refusing to swallow ORS. A social marketing program can help ameliorate the first two problems and as suggested above, part of the program can involve the training of daktars in ORS force-feeding techniques.

A small minority of respondents believed that ORS does little more than quench thirst; or that giving ORS to a child actually increases diarrhea (which may be true); or that ORS is incompatible with existing diarrhea remedies; or that a local opinion leader opposes the use of ORS; or that ORS is bad or harmful. Most respondents seem to regard ORS as a medicine which gradually stops diarrhea and has other beneficial effects such as strengthening or nourishing a child.

ANALYSIS

This research effort was not designed as a quantitative study amenable to statistical analysis. However, relationships between certain variables did seem to emerge. Respondents who were more educated and less remotely situated in the hinterlands tended to know more about ORS. Regional variation in ORS usage (i.e. proportion of sampled population who had ever used ORS) was also noted: Chittagong district led with 85% usage, followed by Rangpur (57%), Tangail (50%), Khulna (49%) and Syhlet (45%). Without Chittagong, which in fact had slightly more respondents than any of the other districts sampled, overall usage would drop from 58 to 50%. It is not known why Chittagong has a significantly higher percentage of people who have tried ORS than other parts of Bangladesh surveyed.

Tangail district on the other hand had the highest percentage (92%) respondents who had tried homemade ORT at least once. This was possibly due to the influence of CARE, since extension workers from this organization were mentioned by a number of Tangail respondents as being active locally.

Chittagong respondents were also likeliest to express the opinion that ORS is as good or better a treatment for diarrhea as pills (85% of respondents), followed by Rangpur (70%), Tangail (65%), Syhlet (49%) and Khulna (44%). It would seem from this and from the regional variations in ORS usage that special ORS marketing, including supportive health education is needed in Syhlet and Khulna districts.

There did not appear to be significant differences in ORS usage by age or sex, probably because use within the immediate family rather than individual use was asked about. However, there was a slight

Table 1. Use or non-use of ORS, by literacy* ($n = 211$)

	Users	Non-user
Literate	40%	21%
	(48)	(19)
Non-literate	60%	79%
	(72)	(72)

Chi-square = 8.73 (1 *df*). Level of significance = 0.004. *Data incomplete on literacy.

Table 2. Use or non-use of ORS, by belief that ORS either strengthens or nourishes a child with diarrhea ($n = 221$)

	Users	Non-user
ORS strengthens or nourishes	67%	53%
	(85)	(50)
ORS does not strengthen or nourish	33%	47%
(including 'don't knows')	(42)	(44)

Chi-square = 4.29 (1 *df*). Level of significance = 0.04.

Table 3. Use or non-use of ORS, by belief that diarrhea rids the body of impurities* ($n = 205$)

	Users	Non-user
Diarrhea rids impurities	63%	74%
	(77)	(61)
Diarrhea does not rid impurities	37%	26%
	(46)	(21)

Chi-square = 3.11 (1 *df*). Level of significance = 0.08. *'Don't knows' not counted.

tendency for those reporting use to be younger although this may be because respondents under the age of 35 are likelier to have children and children tend to be especially susceptible to diarrhea.

Literacy, on the other hand, seems to be positively related to ORS use, or more accurately to having tried ORS at least once (Table 1). It should be borne in mind that in the absence of a random sample, no claims of national representativeness are made.

We also sought possible associations between use of non-use of ORS and: (1) the belief that ORS has negative effects; (2) the belief that ORS stops or reduces diarrhea; (3) the belief that ORS either strengthens or nourishes a child with diarrhea; (4) the belief that diarrhea rids the body of impurities. The associations, if any, seemed insignificant except that there was a somewhat greater tendency for ORS users [28], rather than non-users, to believe that ORS either strengthens or nourishes a child suffering from diarrhea (Table 2). There was also a slightly greater tendency for ORS non-users, compared to users, to believe that diarrhea rids the body of impurities (Table 3).

The association presented in Table 2 is to be expected: behavior tends to follow belief; in this case ORS use follows from a belief that ORS has positive benefits. The second association might also be expected: if one believes diarrhea can rid the body of harmful elements, and if ORS is believed to stop or reduce diarrhea (as 77% believe), then one may be hesitant to use ORS because it would inhibit the purging of harmful elements. However, the association is so slight that this belief—which has objective merit—seems not to inhibit ORS use significantly. Indeed this belief can be viewed as compatible with the fact—recognized by most respondents—that diarrhea tends to continue for several days even after taking ORS. To go a bit further, it may be that Bangladeshis are willing to take a product perceived as a diarrhea remedy, even though diarrhea will continue for some time after taking the product. Perhaps this helps explain why ORS usage is as high as 42% in a country where ORS has never been promoted over the potentially most effective mass medium, the radio.

Finally, although sex of respondents did not relate significantly to ORS use, women seemed to know more about dehydration symptoms—or to at least recognize them—than men. Women also knew more about home remedies and were likelier than men to talk about consulting mystical or religious practitioners. Men, on the other hand, emerged as more self-reliant in decision-making including choice of therapies for diarrhea. An ORS social marketing program aimed at child diarrhea must therefore target or address both mothers and fathers, but in somewhat different ways. Men need to be persuaded to make the decision to use ORS and then to actually buy or otherwise obtain ORS. Women are more familiar with the child's illness and are more directly involved in home-based therapies including the preparation and administration of ORS.

SOCIAL MARKETING IMPLICATIONS

The findings have several implications for a social marketing program. First, ORS can be promoted as a medicine that combats symptoms such as weakness, immobility, sunken eyes, weight loss and thirst in a child with diarrhea. These symptoms can further be related to water loss from diarrhea (consistent with the message of the Bangladesh Rural Advancement Committee sugar–salt solution campaign) and the existing belief that the symptoms signal danger can be reinforced. ORS can also be promoted as a medicine that can prevent the appearance of dehydration symptoms and that should be taken if diarrhea persists. The belief expressed by 44% of respondents that doctors know best about treating dehydration symptoms can be challenged to the extent that Bangladeshis, especially in rural areas, come to believe that they can and should mix and administer ORS themselves and not simply rely on outside professional help. On the other hand, people should be advised to consult medical or paramedical help—or the closest to this available—if diarrhea and/or dehydration symptoms persist.

ORS can also be marketed as a medicine which helps strengthen a child suffering from diarrhea. This conclusion was also reached by Shahid *et al.* [5] based on research in north-east Bangladesh. The marketing message regarding strengthening must be designed and pretested carefully so that ORS does not become regarded as a tonic that can be given to well children, although the salty taste of ORS should constrain such practice.

The marketing question arising from the findings that most respondents including ORS users believe that ORS stops diarrhea—albeit gradually over a period of days—is more problematic. Although it would be easier to reinforce an existing belief than to challenge this and instead attempt to teach a largely uneducated peasantry about dehydration, the fact is that standard, glucose-based ORS does not cut down on stool output. If the Social Marketing Project were

to switch to rice-based or trisodium citrate-added ORS in the future, the marketing message that ORS helps reduce diarrhea could be considered.

The advice and services of daktars seem to be sought more often than that of other practitioners, therefore it is important that their influence be taken into account in the development of an ORS social marketing program. Daktars are already moderately familiar with, and well disposed toward, ORS. The Social Marketing Project should therefore train daktars in use of ORS and develop them as links in the marketing chain—just as SMP has done in social marketing contraceptives. Teaching daktars about dehydration as well as the correct preparation and use of ORS could do much to educate the general public, since daktars are significant opinion leaders in health matters.

It is noteworthy that sugar and salt is added to flavor most drinks, gruels and porridges used in Bangladesh, thereby improving their potential for rehydration. The World Health Organization, recognizing the value of such traditional remedies, has recommended the promotion and encouragement of such home remedies in public health programs. The Social Marketing Project should also encourage the continued and increased use of such pathya (appropriate foods for illness) giving regional emphasis to foods commonly used in each region. At the same time, the practice of discontinuing solid, staple foods should be discouraged. Where food restrictions are severe, a child may die of malnutrition even while being given ORS.

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16. Some Bangladeshis believe that nursing mothers with diarrhea can pass the illness along to their infants through breastmilk.
17. We found in the present study that measles is not ordinarily thought of as a diarrheal disease, even though the associated symptom of diarrhea is recognized.
18. Green E. [Ref. 1].
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21. Anthropologists in Bangladesh and northern India who have directly observed management of diarrhea cases over periods of months have found that foods and fluids, including breastmilk, are not withheld from children with diarrhea to the extent usually reported to interviewers. Risvi N. personal communication 25/6/85; Bentley M. personal communication 15/7/85.
22. Direct observation in Tangail district also indicates that most mothers continue breastfeeding their children when the latter have diarrhea. However, breastfeeding may be discontinued when the mother was diarrhea since the illness is believed by many to be transmissable (Risvi, 1985).
23. Respondents were usually unable to tell where extension workers come from but many or most were said to be female. Again, this may refer to the Bangladesh Rural Advancement Committee oral rehydration therapy motivators, but occasionally an organization like CARE was mentioned by name and a number of women visitors were referred to as family planning workers. This can be taken as evidence that oral rehydration therapy and family planning programs can be integrated. In fact, improving the health and survival of children by ORS use should make parents more receptive to the idea of having fewer children.
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