

Childhood Diarrhea in Egypt

A Hopeful Case

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INTRODUCTION: AN UNENDING CONCERN

Childhood Diarrhea in Egypt & the World

For the past fifty years, childhood diarrhea has been widely recognized as a leading cause of childhood mortality. Many scholars, scientists, and health workers have devoted their lives to reducing the impact of this preventable yet deadly disease. Low-cost, low-tech treatment has been developed in the form of oral rehydration therapy (ORT), also known as oral rehydration salts (ORS). While these treatments are extremely effective, underfive childhood morbidity and mortality have not seen any significant decrease. Childhood diarrhea remains a devastating disease worldwide, causing 20% of all child deaths (Kinder).

Most deaths occur in low- and middle-income countries, such as Egypt. These countries often lack the resources in rural areas to combat the complications of diarrhea. Egypt pioneered a massive communications campaign in the 1980s, called the National Control of Diarrheal Disease Project (NCDDP), which brought attention to the disease, its prevention and treatment. The program was an immediate success that lowered the hospital admittance rates for children with complications from diarrhea, but rates of diarrhea again increased as soon as the decade-long project ceased. The program utilized the health belief model, which follows the belief that a person will alter their behavior with proper knowledge of the perceived severity, perceived susceptibility, perceived benefits, and perceived barriers. NCDDP successfully provided the necessary knowledge and resources to make this change, but the program failed in ensuring sustainability of

knowledge past the program's duration. Childhood diarrhea in Egypt once again rose in morbidity and mortality, with caregiver's knowledge of ORT falling.

Since the cessation of NCDDP in 1991, Egypt has not implemented any large-scale diarrhea reduction initiatives. Health workers have taken to calling the period since then the "Quiet Decades," as childhood diarrhea in Egypt has received no national or international attention. This paper aims to critically examine the current situation in Egypt and ultimately provide a new policy to reduce morbidity of childhood diarrhea. It will examine the health communication successes and failures of NCDDP, as well as five international case studies. These studies, drawn from India, the US, Ghana, Mali and Nigeria, provide a wide range of health communication strategies aimed at addressing high rates of childhood diarrhea.

Causes, Symptoms and Treatment

The World Health Organization (WHO) defines diarrhea as "the passage of 3 or more loose or liquid stools per day, or more frequently than is normal for the individual" (Diarrhoeal). It is caused by a variety of bacteria, protozoa, and viruses, most commonly rotavirus (Kinder). However, there are no cost-effective vaccines for diarrhea. Because it is so easily transmitted and treated, reduction efforts have focused on communication of disease prevention and quick, accurate treatment. Prevention efforts include household sanitation, washing hands before preparing food and eating, and using clean water.

Treatment includes quickly recognizing the signs of diarrhea and attending to children before they suffer additionally from dehydration or other complications. WHO recommends treatment with ORT, proper feeding, zinc supplements, and a healthcare consultation if the condition persists or worsens (Diarrhoeal). Zinc, given in conjunction

with ORT, has been proven to reduce the length of diarrheal episodes. The success of this initiative will be discussed in greater depth in the case study on Mali's diarrheal management program.

Diarrhea itself does not directly cause death. Complications from diarrhea, such as dehydration and susceptibility to other diseases, raise the mortality rates (Omotade 140). Diarrhea weakens the immune system and makes it much more vulnerable to other prevalent diseases in the area. Most often, children are brought into health care facilities only after these more dangerous conditions arise (Omotade 141). For this reason, it is extremely important for treatment to occur as soon as symptoms are recognized. However, cultural beliefs limit the perceived severity of the disease. Certain types of diarrhea are seen as common childhood sicknesses that simply play out regularly with minimal impact on the child (Omotade 141, Winch 152). Any program that seeks to reduce the morbidity of childhood diarrhea must address this cultural belief in the disease's severity.

MATERIALS & METHODS

Study inclusion and characteristics

This review examined case studies and previous health communication strategies to evaluate their effectiveness in reducing morbidity of childhood diarrhea. Five countries other than Egypt were chosen for review due to their unique programs, similar situations, and their applicability to Egypt. The studies chosen were an education intervention among community groups in India, an educational intervention among childcare centers in the US, a sanitation study in Ghana, an increase in treatment availability in Mali, and community outreach in Nigeria.

These studies represent a spectrum of approaches to management of childhood diarrhea. Each case employs a different health communication strategy, except for the two educational outreach programs in India and the United States. Despite that similarity, the two studies took place with drastically different backgrounds and represent different ways to apply the same communication theory. The theories discussed include the theories of self-efficacy, social cognitive, diffusion of innovation, and the health belief model.

All studies were readily found in peer-reviewed journals. They were funded by mixed sources, from governments and NGOs to private organizations. Each study was authored by academics who have been well-published in their fields, providing solid credibility to their research.

Data extraction and synthesis

After each case study was chosen, it was analyzed using several criteria. These include: Time Frame, Target Group, Overview of Approach, Health Communication Theory, Success (y/n), Successful Initiatives, Unsuccessful Initiatives, Unique Aspects, and Applicability to Egypt (budget, political situation, development levels, societal structure). The criteria was compiled in a chart to compare the various studies side by side, allowing streamlined analysis of each program (Appendix A). A column in the chart allowed for comparisons to the current Egyptian situation, but the structure also allowed for comparisons between programs to highlight common factors between each case study. These were noted along with their degree of success to understand which programs were best suitable to each situation.

The commonalities between studies were noted, along with unique aspects of each study. In order to provide the best health communication strategy for future work in Egypt,

each plan was deconstructed for the basic models and methods. The successful models and methods were analyzed to evaluate compatibility and pieced together as a new strategy to reduce morbidity of childhood diarrhea in Egypt.

Results

Educational Interventions

India

Diarrhea kills about 14% of children under the age of 4 in India (Bhatnagar 215). Technological advances in ORS and zinc supplementation are widely recognized by certified health care practitioners, yet diarrhea remains one of the top 10 causes of death among this age group in India. India has embraced WHO's recommendations on ORS and zinc supplementation, yet this information has been slow to spread.

An educational intervention was carried out in a slum of Bangalore, Karnataka from April 1995 to June 1996, in the field practice area of M.S. Ramaiah Medical College (Mangala 393). The study, led by S. Mangala, D. Gopinath, N.S. Narasimhamurthy and C. Shirvaram, was conducted in three stages. They first polled the targeted participants, mothers with underfive children, about their knowledge and practices involving diarrhea. The mothers were then educated about the disease using various audiovisuals such as flashcards, pictures, and live demonstrations in an interpersonal one-to-one setting. The third stage evaluated mothers' ability to recall and perform diarrhea treatment and prevention both 2 months and 2 years after the intervention.

The intervention led by S. Mangala, et. al. found positive results. Though mothers were initially unaware of warning signs such as sunken eyes, dry mouth and tongue, and

fast breathing, their ability to recognize these signs increased by 87% after two months and remained 26% higher after two years. Awareness of ORT remained highest after two years, as the initial 68% knowledge jumped and remained at 100% after both 2 months and 2 years. Knowledge of correct ORS preparation also greatly and steadily increased, while rational drug therapy increased after 2 months, then fell after 2 years. Table 1, below, illustrates the changes of knowledge. This study is important in marking which areas of the intervention were successful, and which need different approaches.

TABLE 2. Knowledge Regarding Diarrhoea and its Management Before and After Educational Intervention

Item	Baseline knowledge (%) (n=227)	2 months after intervention (%) (n=213)	2 months after intervention (%) (n=146)	Proportion of reduction in knowledge (%) (n=146)
1. Definition of diarrhoea	46.0	87.8	75.5	12.3
2. Signs of dehydration	13.1	100.0	38.8	61.2
3. Awareness of ORS solution	68.1	100.0	100.0	0.00
4. Correct preparation of ORS solution	08.5	61.0	41.5	19.5
5. Shelf life of ORS solution	62.9	92.0	85.7	06.3
6. Seeking health care	82.2	98.1	96.6	01.5
7. Rational drug therapy	00.5	24.9	09.5	15.4

TABLE 2 from S. Mangala

This Indian approach to reducing morbidity of childhood diarrhea focused on the health communication model of self efficacy. It focused on mastery experiences through demonstration and trial, as well as verbal and social persuasion to build confidence. The personal persuasion was critical in building the confidence needed for mothers to believe they can prevent and care for their child's diarrhea. The theory of self efficacy also relies on emotional responses, which were not addressed in this study.

However, useful lessons can be learned from this study. The interpersonal approach with multimedia communication appealed to the Indian mothers, many of who were

illiterate. The drastic fall in knowledge about rational drug therapy highlights the need to clear all misconceptions about drugs on the market that claim to treat diarrhea, many of which have high price tags for their minimal impact. Future programs should focus on encouraging personable interactions between health communicators and their students to engage emotions to help with recalling important information at later dates.

Overall, the Indian example provides great insight into a diarrheal reduction program in a similarly developed country. Many of the survey and educational tools can be adopted and applied in Egypt, and many of the standardized equations and statistics would likely be applicable there as well. This is a good format for use in piloting an effort in self efficacy.

United States

While the United States isn't typically considered a concern when addressing childhood diarrhea, the disease causes about 10 percent of annual childhood hospitalizations (Winnail 231). Childhood diarrhea is a problem nationwide, but a large portion of the cases come from impoverished, southern African American communities with limited access to clean water. This study provided an educational intervention in licensed childcare centers in rural Alabama, except for a control group in a wealthier area.

The intervention program involved an hour-long workshop with childcare center workers and the parents of underfive children. Mixed media, one-to-one interaction and demonstrations, and take-home pamphlets were used. Intake and exit surveys were used for quantitative analysis of knowledge gained. These surveys found an increase in knowledge of diarrheal care, and many of the participants stated that they'd like to see

more workshops like the one offered (Winnail 234). Overall, the average test scores saw a 61-percentage point increase after the intervention (Winnail 233).

This program shows the success of a well-organized and funded educational intervention program. It provided information about the causes, symptoms, and treatment of diarrhea. Caregivers left the session feeling much more informed and better prepared to handle their child's illness. With the success of this pilot program, the approach could spread across the United States. It is easily modified for regional areas within the country. By altering the education aspect to take into account the local lifestyles, water availability, and cultural norms, it could be applied to Egypt as well. Though Egypt may not have the resources of the US, it can learn from the educational intervention's success.

Sanitation in Ghana

This case study in the Accra Metropolitan Area of Ghana focused on sanitation practices, namely solid waste handling and disposal. Led by Kwasi Owusu Boadi and Markku Kuitunen, it surveyed the female heads of households in the slums of the city for quantitative data on their waste disposal habits. This data included solid waste disposal habits as well as self-reported incidences of adult respiratory infection and childhood diarrhea. Results of the study support previously published studies showing a direct correlation between household sanitation and childhood diarrhea.

Boadi and Kuitunen's study found that a higher incidence of houseflies in the kitchen resulted in more frequent cases of childhood diarrhea (Boadi 34). Statistical analysis showed that this association was significant, as well as the association between flies in the toilet area in relation to frequency of childhood diarrhea (Boadi 34). These

findings have a strong impact on the health communication world, as the vectors of the disease—flies—can be greatly reduced with simple hygiene practices. This study showed that closed toilets, closed trash storage, and solid waste storage away from the house greatly reduce the number of reported household flies, which reduces the disease rates.

One of the major limitations to effective sanitation practices in these slums of Ghana is access to efficient solid waste management systems. Currently, over 80 percent of the population does not have home collection services, which include door-to-door collection and commercial collection points (Boadi 32). Secondly, additional recycling programs are recommended to legalize and expand the informal recycling programs, enabling the recyclers to more quickly and efficiently recycle, reducing the frequency of childhood diarrhea through product removal. Third, Boadi and Kuitunen recommended community composting programs, which would ideally be spaced away from homes and further reduce the waste collection inside homes.

These suggestions are highly practical and require an effective government with a solid budget to implement the plan and hire new workers. While this is an ideal situation, health communication can play an equally important and much cheaper role in improving sanitary conditions. As diarrhea is still spread mainly through contaminated food and drink, person-to-person contact, and contact with contaminated objects including flies, health communication can be used to spread information about proper hygiene. Safe practices would reduce the threat of contamination, and would only be complimented by the more top-down approach of improving solid waste collection management.

A similar study in Zimbabwe led by Graham P.M. Root found that simple practices, such as outdoor trash pits and covered toilet systems, greatly reduced risk of diarrhea. He

compared rates of diarrhea in two communities, whose main differences were population density and sanitation, finding that the community with higher population density and poorer sanitation experienced roughly three times as many episodes of diarrhea as the other community (Root 75). He noted how household practices such as sleeping arrangements, water storage and food hygiene play a role in frequency and severity of childhood diarrhea. The community with stronger health communication about proper habits saw significantly lower rates of diarrhea, at only 3.4 episodes per annum compared to 7.9 episodes (Root 78). This community had two village community workers (VCWs) for health promotion and minimal treatment, while the denser community only had one VCW. Proper community education, lower population density, and access to sanitation appear to greatly influence diarrheal morbidity in these African villages.

Independent government researchers in Egypt have already tried to reduce the morbidity of childhood diarrhea in schools via a hand-washing program in Cairo. This study, sponsored by the US Naval medical Research Unit, US Centers for Disease Control and Prevention, and Egyptian Ministry of Health, showed that elementary school hand washing programs reduced absenteeism due to diarrhea by 33 percent over the 12-week study (Talaat). Though this rate reduction from intervention schools is not as high as those achieved in China and the US, it represents a significant improvement over the control schools, and it does offer a solid beginning to the program. The researchers note comparative weaknesses in the regular supply of soap and instant hand sanitizer. They also admit that the program was a short trial session, and the habits will not necessarily be sustainable based on the practices as applied.

Regardless, this successful intervention shows the power of attribution theory and social cognitive theory. The hand-washing program was introduced as an immediate success. With proper communication, caregivers could recognize that reduced diarrheal morbidity is directly connected to sanitation habits. Additionally, given constant supplies of soap and clean water, the theoretical idea is for children to bring the practice of hand sanitation back to their households, further reducing morbidity of the disease. This is an area in which health communication could play a large part, as prevention techniques simply require slight environmental adjustments in daily habits.

Community Health Workers (CHW) in Mali

The chosen case study in Mali is unique in its focus on the use of Community Health Workers (CHW) for diffusion of products and information. This study of the pilot introduction of zinc in the Boungouni District of Mali relied on the community influence of CHW almost exclusively for the success of the program. It is a unique application because its aim was to provide additional information and resources to existing community members, rather than create and sustain a new program in the community.

The CHW were able to work with researchers and policy makers to design the program, providing invaluable information regarding community perceptions of diarrhea and expectations of treatment. CHWs shared parental preference for zinc treatment over plain ORT, as the zinc tablets came in a blister pack, which to them represented modern medical treatment (Winch 152). Though parents rarely asked for zinc on their own, they were happy to use it when a CHW or unlicensed caregiver suggested the treatment. Another attractive aspect of zinc therapy in conjunction with ORT was its low cost, as the pills could be given out in the exact dosage needed, minimizing the cost (Winch 156). CHWs

reported that parents often visited the unlicensed health care workers since they sold smaller amounts of medication that the families could afford, even though the medication was often unnecessary and incorrect for diarrheal treatment.

This study highlights a few very important factors. First, CHW have respect in the community for providing health advice. Second, unlicensed health care workers account for a large percentage of care as they sell medications in smaller amounts, appropriate for treatment and limited budgets. Third, the people of this village in Mali view modern medicines as more effective, increasing the likelihood for the consumption of "fancy" zinc tablets or antibiotics over low-tech ORT.

The applicable health communication theories in this case are attribution theory and diffusion of innovation. Community members attributed health to modern medicines, of which ORT was not included. With the introduction of zinc, caregivers increased their use of ORT for treatment of childhood diarrhea. This represents a diffusion of innovation, as simple availability impacted use as much or more than the CHW's communication efforts. These lessons can be applied to the case in Egypt, where many people likely have the same conception that modern health care is better than traditional health care practices, as is often propagated by aid workers and the media.

Community Outreach in Nigeria

The chosen case study for Nigeria focused on community perceptions on identifying and treating diarrhea. Omotade, et. al. led a study centered around community focus groups to hear firsthand about recognition and care for diarrhea. Participant groups included men, women, and mixed groups. Each group, though they did not communicate with one another, agreed on the common beliefs and practices for treating diarrhea.

Most notably, the community identified twelve distinct terms to describe diarrhea. They ranged in severity, frequency, and associations with other conditions. The local terms fell into three main areas: "teething" diarrhea, diarrheal diseases, diarrhea associated with other conditions (Omotade 141). Teething diarrhea was seen as a natural part of growth, and thus treated with least concern of severity. The diarrheal diseases ranged in severity from almost identical, mild illnesses to the severe and potentially life-threatening *igbe igbalode* (Omotade 141). Caregiver responses to each of these diseases varied, reflecting how they are treated as separate illnesses by the community. Most often, only the severe and potentially life threatening varieties received care outside the home, and milder cases received varying degrees of household treatments.

This study also found that the community members were careful with their choice of health facility when they decided to seek out additional help. The most-cited reasons for traveling further for a health care center included lack of equipment and drugs, delay in treatment time, weekend unavailability, and hostile attitude of health care staff (Omotade 142). This data is extremely important as it analyzes an aspect of health care not often studied in developing nations—the desire for best service and attitude. The preference for prompt, accurate, fully modern, and respectful service is universal throughout the developed and developing worlds.

This study also highlighted the importance of community input in dealing with childhood diarrhea, and in raising children in general. It recognizes that most programs have focused on the mother as the main caregiver, but found in the focus groups that fathers, grandmothers, and friends in the community often offered the mother advice on

dealing with illness. The study suggests that health communication must reach out to educate all, as "it takes a village" to raise children.

Finally, the Omotade study recommended flexible programs for health communication and promotion, as the developing area in Nigeria featured dozens of ethnic groups with slight variances in attitudes, cultures, and knowledge. Any health communication plan to reduce morbidity of childhood diarrhea must take into consideration the cultural norms and influential members of society.

This study falls perfectly in line with the health belief theory. Treatment for diarrhea varied greatly on the perceived severity of the illness, which was reflected in the many names of the disease. Perceived susceptibility also played a large part in action, as a social belief existed that mild cases of diarrhea were normal and needed no treatment. The perceived health benefits were also highly influential, as parents admitted to waiting until their child was dangerously ill to take them to a further health clinic, where they believed the care and respect were much greater. They did not perceive any benefits from going to a local clinic with a mildly ill child, as their experience was typically negative.

Finally, the health communication efforts in Nigeria must focus on the perceived barriers to change. The disease is currently treated as a normal occurrence that must only be dealt with in combination with other diseases or rare instances of severe cases. Health communication efforts must work to change these perceptions by slowly transforming societal norms to ones that would better serve the health of the community's children.

Discussion

Each of these case studies demonstrates a unique approach to reducing childhood diarrhea. The countries have used various health communication theories and styles of

implementation to different degrees of success in that region. This section aims to analyze each approach for the theoretical successes in application so that it can be restructured and applied to the situation in Egypt.

The theories utilized in the case studies include self efficacy theory, social cognitive behavior, attribution, diffusion of innovation, and the health belief model. These theories vary greatly in background and application, yet they saw nearly equal success in the cases. Self efficacy through educational intervention in US childcare centers saw roughly the same decline in morbidity of childhood diarrhea as diffusion of innovation through widespread availability of zinc.

The theory of self efficacy saw increases in knowledge about childhood diarrhea in both India and the US. Participants in the programs were able to identify and assess basic diarrhea after the one-to-one sessions which emphasized multimedia and demonstrations. The culturally tailored and situationally adaptable approach saw an immediate increase in knowledge. However, knowledge rates dropped drastically after a short time frame in India, and no data was collected for retained knowledge in the US. The direct educational intervention resulted in immediate interest and knowledge, but without regular contact the initiative was unsustainable. This is likely also the cause of Egypt's "Quiet Decades," as the period after NCDDP intervention was void of preventative efforts.

Social cognitive behavior is primarily applicable to the sanitation study in Ghana. This study recommended changing the management structure to allow for better solid waste management, which would ultimately result in fewer cases of childhood diarrhea. The study did not follow through with its suggestions, but this environmental change would allow access and change behavior. The theory relies on the assumption that people

will adapt to what is given to them. However, they often need a little push to make that initial change.

Health communication through the attribution theory aims to fill this gap. It focuses on educating the community about the scientific cause of the disease so that proper procedures can be taken to prevent and treat it. In Ghana, this technique would prove useful to inspire people to change their habits. While it is convenient to leave trash in the kitchen, connecting waste with their child's health may provide the inspiration needed to move the trash outside. Similarly, attribution can be applied in Egypt for the same impact.

Diffusion of innovation was seen in the availability of zinc tablets through community health workers (CHWs) in Mali. The CHWs, respected in the community for their knowledge but with limited access to medical supplies, were given abundant supplies of zinc supplements to include with ORT for childhood diarrhea. The treatment proved effective, shortening the length of each episode and increasing ORT usage. However, it relied solely on supply. Zinc tablets were also supplied to the informal markets to ensure spread. This method was very effective in immediately increasing zinc supplements and ORT, yet its reliance on foreign aid for medication is not sustainable. The diffusion of innovation is incomplete until community members know to request the treatment or feel comfortable making their own ORT at home. In Egypt, a similar supply could be arranged via foreign donors, but it would likely experience the same time-limited success as NCDDP. Additionally effort is necessary to fully infuse each household with proper knowledge and treatment of childhood diarrhea.

Finally, the health belief model provided great insight in Nigeria. The community focus groups gave great detail about perceptions on health problems and local care.

Though the study's suggestions are very vague and simply encourage community participation in health care and communication decisions, it provides an important reality check. Health communication must work in consultation with the community, presenting the outsider's health knowledge in a manner that is applicable and sensitive to society. It calls attention to the informal and overlooked portions of society—street vendors, grandparents and family friends—and asks that they be included in care education and disease prevention. As regional groups in Egypt vary significantly in their beliefs and practices, this approach is ideal to ensure cultural adaptability. Community consultation and involvement would guarantee pertinent audiences and increase local ownership of the project.

Recommendations

Egypt should focus a childhood diarrhea reduction plan on the health belief model, but utilize other communication techniques as necessary for individual villages. Overall, however, the perceptions about severity of diarrhea and its treatment must be changed. Diarrhea is a serious and life threatening disease, yet many mothers and caregivers overlook the early signs. With regularly provided information about the low cost and ease of ORT, these responsible parties could begin to change their practices and save their children's lives.

An approach similar to a reapplication of the NCDDP would actually work well in Egypt. The mass media campaigns effectively communicated to the country and saw immediate results, but the program must be altered to provide a longer-lasting impact. The benefits cannot stop when the campaign does, but should live on through community application. An increase in sustainability could involve working with broadcasting

companies to push programs with positive attitudes towards diarrheal treatment and prevention and regularly posting signs encouraging proper hygiene.

The other health communication approaches could find small-scale application in Egypt, but the wider goal of changing perceptions would have the largest and most long-lasting impact. An influx of medicine, continued education, and structural changes are important to combating the problem, but they are only superficial changes. To fully prevent childhood diarrhea, communities must understand the severity and preventability of the disease.

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APPENDIX A

Country	Time Frame	Target Group	Overview of Approach
India	April 1995 - June 1996	mothers of underfive children, sample size of 250, located in slums	<i>Educational Intervention-</i> Stage I surveyed mothers for initial knowledge through a questionnaire addressing knowledge of diarrheal symptoms, ORS, fluid and food intake, when to seek help, if and how diarrheal is prevented; Stage II featured a 1-1 educational intervention supplemented with audiovisual like flash cards, pictures and boards, live demonstration in a session lasting 30-40 minutes; Stage III was data collection, assessing knowledge 2 months and 2 years after the intervention.
USA	Sometime between 1992 and 2001	Childcare center workers and parents of underfive children "in rural, underserved, and predominantly African American county in South-Central Alabama"	<i>Educational Intervention-</i> Hour-long educational workshop for parents and workers (mandatory) with practice mixing ORS, video summarization, take-home packet with brochure, magnet, measuring spoon, mixing/storage container and coloring book; lecture on signs and prevention
Ghana	June - August 2003	960 female heads of households from Acera, developing city with only 65% waste management. "The target population was female household heads since women are responsible for upkeep and general household environmental management. All respondents older than 20 years of age were included in the study." (33)	<i>Research on sanitation through surveys:</i> Local female college students with experience in surveying asked target group a set questionnaire about their solid waste storage and disposal, pest infestation, incidence of respiratory health symptoms and incidence of undersix diarrhea
Mali	October 2005 - February 2006	Bambara ethnic group in southern Mali, community health workers (CHW) and their constituents	<i>Product availability-</i> CHWs were given zinc and education about diarrheal case management, consultations with parents and relatives, and record keeping. CHWs spread knowledge in regular consultations and at community meetings, where they employed audiovisual assistance

Country	Time Frame	Target Group	Overview of Approach
Nigeria	26 July 1993 - 15 February 1994	Parents of children aged less than 5 years; rural, lesser developed villages (no paved roads, electricity, or water supply to many)	<i>Community Outreach</i> - Focus group discussions with parents separated into male, female and mixed on knowledge and attitudes about diarrhea; mothers were randomly selected and interviewed in a structured questionnaire on education and occupation, distance from gov health care center, environmental hygiene and source of water supply- households were visited weekly and child's health monitored for diarrhea and treatment
Egypt	1981 - 1991	mothers of underfive children across Egypt	<i>Widespread behavior change</i> - NCDDP worked to educate mothers and health care workers while ensuring supply of ORT; massive social media (television and radio) campaigns to increase knowledge and awareness, strong branding of products and measuring cups given out as incentives for pharmacies to sell, extensive tracking system of ORT manufacture and distribution to ensure supply (subsidized by UNICEF and NCDDP), used local networks for distribution; trained health care professionals with focus on ORT as primary treatment for diarrhea; spread of knowledge to limit use of ineffective anti-diarrheal drugs and encourage continuation of feeding

Country	Health Communication Theory	Success?	Successful Initiatives	Unsuccessful Initiatives
India	Self-efficacy (mastery experiences, verbal and social persuasion to build confidence in ability to prevent and care for their child's diarrhea)	Mixed	Definition of diarrhea, ORS awareness, ORS prep, ORS shelf life, seeking health care all had high levels of improvement	Signs of dehydration, rational drug therapy improved slightly after 2 months but knowledge was not retained and fell drastically after 2 years
USA	self-efficacy	Yes	Brochures allowed participants to share information, measuring spoon and mixer gave low-cost solution	No long-term follow-up
Ghana	Social cognitive (alter behavior through environmental foundation change) / Attribution (connecting disease with sanitation)	n/a- mere study with suggestions	suggestions- more efficient solid waste management system with better access, recycling and composting programs	
Mali	Diffusion of Innovation (provide CHW with zinc and encourage their spread throughout society, including transmission of ideas through community discussion)	yes	CHWs gave zinc for treatment, community members responded positively to packaging and taste	Community members did not seek out zinc, but did use when CHW or unlicensed/informal sector vendors suggested

Country	Health Communication Theory	Success?	Successful Initiatives	Unsuccessful
Nigeria	Health Belief (severity, perceived susceptibility, perceived benefits, perceived barriers to change)	n/a- a study with suggestions for improvement	suggestions- incorporate perceptions and practices of people into education program; strengthen primary healthcare system to meet needs of community they serve, train informal healthcare workers in appropriate management of diarrhea, include wider family (beyond mothers) in education due to their	
Egypt	Social cognitive (alter personal, environmental and behavior)	yes, but not for long	nearly all goals met by 1991, with 99% of mothers knowing of ORT as a treatment, similar drops in childhood mortality (though still leading cause of	Not sustainable- cut cold turkey at end of program, followed by 'Quiet Decades' where ORT knowledge and use fell drastically and rates rose again

Country	Unique Aspects	Applicability to Egypt (Budget, political situation, development levels,
India	1-1 approached with multimedia presentation worked well in slums with low literacy; Rational drug therapy knowledge plummeted after 2 years; states that sigma weightiness can be used in other country applications	Similar development levels and budget; 1-1 approach would work well if used locals to approach locals; political situation has much more power to push certain models and practices
USA	Small-scale test saw positive improvement in care centers with low mentor-child numbers	Testing in US gave bigger budget, increased access to additional sources; stable political scene; pilot site wealthy while test sites impoverished (impoverished saw greater improvement)
Ghana	Study with suggested improvements, rather than actual case study	Rural areas of Egypt likely face the same disposal issues; communication could help spread knowledge of importance of proper sanitation through disposal and storage to better health
Mali	Found significant influence from informal vendors and community members; relied heavily on packaged medication because believed more effective (even if unnecessary); showed that few parents/caregivers found diarrhea alone was severe enough to justify a consultation (offered medications, which often were unnecessary, very expensive)	Similar beliefs in power of packaging and severity; similar development and community structure

Country	Unique Aspects	Applicability to Egypt (Budget, political situation, development levels, societal
Nigeria	Found significant influence from informal vendors and community members; flexible plan for wide application in various villages; different types of diarrhea have different names and not all are perceived as severe, various health care facilities preferred over others even if further from home	Similar beliefs in severity of diarrhea; similar influence of community members; similar cultural variances in villages; likely similar trust issues with health care facilities; similar development and political situation. VERY SIMILAR.
Egypt	Massive nationwide program proved highly successful intervention, but didn't last	