

A study on the effect of skill-based health education on management of acute diarrheal diseases

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Abstract

Background: Each year diarrheal disease, which is highly preventable, causes an estimated 1.5 million deaths worldwide in children under 5 years of age. Oral rehydration therapy is the cornerstone of global efforts to reduce mortality from acute diarrhea.

Objectives: (a) assessing baseline knowledge and skill regarding management of acute diarrheal diseases (ADDs) among mothers of children <5 years of age; (b) imparting knowledge and skill regarding management of ADD to the mothers; and (c) assessing the impact of education in the form of gain in knowledge and skills of these mothers in preparing oral rehydration salt (ORS).

Material and Methods: A quasi-experimental study was conducted among 56 randomly selected mothers of children up to 5 years in Thakkerbapanagar ward of Ahmedabad Municipal Corporation before and after imparting education about ADD. Baseline level of knowledge and skill regarding the management of ADD was assessed. Skill-based education including when to start ORS, how to prepare ORS, and other home-available fluids was imparted and improvement in knowledge and skill was assessed 6 months after the intervention.

Results: The mean age of women in the study was 24.9±3.3 years. Over 30% were illiterate and 12.5% had studied >10th standard. Only one woman had completed graduation. The majority (85.7%) were housewives. There was significant improvement in mothers' overall knowledge (mean score pre-intervention = 32.9%; post-intervention = 80.9%; Z = 8.4; p < 0.01). Improvement was also observed in knowledge related to when to start ORS (Z = 5.54; p < 0.01) and when to consult a doctor (Z = 5.89; p < 0.01) after education, and also in demonstration of how to prepare alternatives of ORS ($\chi^2 = 34.35$; p < 0.0001). Marked improvement in skill of making ORS was observed among mothers after giving skill-based education ($\chi^2 = 25.87$; p < 0.0001).

Conclusion: Repeated skill-based health education to mothers and mass educational programs are beneficial. Health-care providers should demonstrate preparation of ORS to mothers.

KEY WORDS: Acute diarrheal disease. health education. quasi-experimental study

Introduction

Acute diarrheal disease (ADD) is considered a public health problem because it is still one of the most frequent causes

of morbidity in children under 5 years of age, affecting their growth and development.^[1] ADD accounts for an estimated 1.5 million deaths globally every year, making it the second leading cause of childhood mortality.^[2]

ADDs were responsible for an estimated 9.9% of the 7.6 million deaths among children under 5 years of age in 2010. Children in developing countries are the worst affected, experiencing an average of 2.9 episodes of ADD per year, approximately one-third of which are moderate-to-severe and result in significant morbidity that extends beyond the diarrheal episode.^[3] Most deaths are caused by dehydration and are easily preventable by using oral rehydration therapy (ORT).^[4]

The number of these deaths can be substantially reduced by using simple remedies such as rehydration with oral rehydration salt (ORS) and home-available fluids (HAF),

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continued feeding during diarrheal episode, and breastfeeding. However, less than 40% of children with ADD in the developing countries receive the recommended treatment. As per the National Family Health Survey (NFHS) in India, 48% of children with ADD received ORT. Thus, ADD is one of the big public health challenges, particularly in the unhygienic environment of rapidly growing urban slums.^[5]

The goal of the World Health Organization, as with the objectives of the millennium, is to reduce morbidity due to ADD. In this sense, it promotes primary-attention policies and strategies to draw health-care services nearer and promote collective health. Health education is highlighted among the key measures to prevent ADD.^[1]

Health education is the first component in primary care. It is defined as “any combination of learning experiences designed to lead to a situation where people know how to attain health, do what they can individually and collectively to maintain health and seek help when needed.” Health education aims at changing of behavior and lifestyle.^[6]

In view of the above facts, a study was conducted in Ahmedabad to assess the effect of skill-based health education on the management of ADD among mothers of children <5 years of age.

Materials and Methods

A quasi-experimental educational intervention study was conducted in an urban slum of Thakkerbapanagar area of Ahmedabad, India, during August 2011 to March 2012 before and after imparting education about ADD. It consisted of imparting skill-based health education including when to start ORS, how to prepare ORS, and other HAF.

Study objectives: Following were the objectives of the study: (a) assessing baseline knowledge and skill regarding management of acute diarrheal diseases (ADDs) among mothers of children <5 years of age; (b) imparting knowledge and skill regarding management of ADD to the mothers; and (c) assessing the impact of education in the form of gain in knowledge and skills of these mothers in preparing oral rehydration salt (ORS).

Study location: Study was conducted at Thakkerbapanagar area, which is located in the north zone of the Ahmedabad Municipal Corporation area.

Target group: Target group for the study comprised mothers of children <5 years of age.

Inclusion and exclusion criteria: Mothers who were permanent residents of the area and were willing to participate were enrolled for the study whereas those likely to shift from the cluster either to some other places or back to their native villages or those working in out states were excluded.

Sampling: With the help of health functionaries of the area, a sketch of the area was made. Sampling units consisted of households with children <5 years of age. Sampling units were identified as per standard technique of identifying the point of random start by preparing a sketch of the study area. After the start of the survey as soon as the households

having children <5 years were identified, the purpose of the study was explained to mothers and other family members. Once they agreed, written consent in the local language was obtained; the mother was enrolled for the study; and the house was marked with an identification sign. A total of 56 mothers agreed to participate in the study.

Study design: The study was carried out in three phases: baseline survey, intervention, and end-line survey. During the baseline survey, pretested and semi-structured questionnaire was used for collecting information on knowledge and skills of mothers regarding ADD. With respect to ADD, the questionnaire included questions regarding the knowledge of mothers about importance and need of ORT during ADD; correct method of preparation, usage, and feeding of ORS available as packets and HAF; and continuation of breastfeeding during ADD. Knowledge related to management of ADD was assessed using three-point Likert scale. It had three categories of responses: complete knowledge (2 marks), some knowledge (1 mark), and no knowledge (0 mark).

After the completion of the baseline survey, key diarrhea-related issues that needed intervention were identified and the intervention was planned accordingly. For ADD, the main objectives were to sensitize mothers regarding the necessity of oral rehydration, the importance of continuing breastfeeding during ADD, and most importantly, how to prepare and use ORS from the packets available and HAF.

To impart skill-based health education, we held personal discussions with each mother and each session lasted for 30–45 min. It also included demonstrating how to prepare ORS and HAF for the management of ADD. Baseline survey and intervention phase lasted for 2 months.

After imparting skill-based health education, end-line survey was carried out after an interval of 6 months from the baseline survey.

Methods for imparting skill-based health education: Skill-based health education was imparted using demonstration and carrying out focus group discussions. In addition, available educational material, in the form of posters, flips charts, and flash cards, was used. The preparation of ORS was demonstrated, and the quantity required as per age of the child was explained. The usage of HAF as emphasized, and its preparation was demonstrated by involving the peripheral health worker (link worker) in the community.

Analysis of data: Data were entered in an MS Excel worksheet, cleaned, and analyzed in SPSS software, version 19.0. The results were expressed in mean, median, and percentages. Data during the pre- and post-intervention phases were compared to assess the effect of skill-based health education regarding management of ADD in mothers of children <5 years of age.

Ethical consideration: Before the start of the study, requisite permissions were obtained from the department as well as medical officer of Thakkerbapanagar ward. Informed written consent was obtained from all the participants, ensuring confidentiality.

Results

A total of 56 mothers participated in the study. Mean maternal age was 24.9±3.25 years. Out of the total study population, 68% mothers were illiterate. The majority of the mothers were housewives (86%).

The maximum number of children (57%) belonged to age group 0–24 months. More than one-third children were of birth order 3 or above. Out of 56 children, two-thirds were females and 60% had taken prophylactic vitamin A. Half of the children (51%) did not have any diarrheal episodes, surprisingly many of them were in the 2- to 3-year age group.

Of 49% children who had history of diarrheal illness, 14% of the parents had not taken any treatment of their children for ADD. Many of the treated children sought the help of private health-care providers who had prescribed them antibiotics instead of ORS.

Table 1 shows the impact of skill-based health education regarding the management of ADD in mothers. There is a significant improvement in mothers' knowledge after imparting health education in the form of teaching the right method of making ORS, how to give it, when to start it, when to consult the doctor, and how diarrhea can be prevented by simple household practices (Questions 2–9). There is a marked improvement in skill of making ORS among mothers after giving skill-based education (Question 10). Statistically, after applying appropriate test of significance, the result (*z* value) shows significant difference in maternal knowledge about ORS and ADD before imparting health education and following up after 6 months (Question 1).

Post-intervention mean score in illiterate mothers was 37.85%, and in literate mothers it was 81.42%. This difference was also statistically significant (*z* = 5.07; *p* < 0.05).

Percent gain in illiterate mothers was 123%. Percent gain in literate mothers was 246%. Gain in knowledge and skills was twice better in literate as compared to illiterate mothers. Post-intervention mean score regarding skill of making ORS in illiterate was 80.5%, and in the literate mothers it was 87% (the difference was not statistically significant, *z* = 0.86; *p* > 0.05). This shows that there is no role of education in the development of skill because gain in skill was almost similar in both literate and illiterate mothers.

Discussion

India accounts for more than half a million deaths due to ADD among under-5 children. ADDs are a major health problem among children in urban slums of the country. Poor environmental hygiene, coupled with low literacy level and poor awareness of residents, adversely affects the management of ADD in slum areas and contributes to the burden of the disease.^[5]

The Government of India has tried to address the issue since 1978 with its Diarrheal Diseases Control program. This was transformed into the National Oral Rehydration Therapy (ORT) program in 1985–1986 when it focused on strengthening the management of diarrhea in children under 5 years of age and improving maternal knowledge relating to the use of HAF, ORS, and continued feeding. Since 1992–1993, the program has become a part of the Child Survival and Safe Motherhood program.^[5]

The NFHS-3 revealed that, despite 63% of Indian mothers being aware of ORS, these packets are used only in 27% of cases of childhood diarrhea. These data reveal a wide gap between the knowledge of ORS and its usage. Baseline data in the present study also highlight this disparity. This indicates that superficial knowledge of ORS is

Table 1: Impact of skill-based health education regarding management of ADD among mothers

No.	Questions	Pre-intervention correct responses*	Post-intervention correct responses*	z-Value	p-Value
1.	Causes of diarrhea	18	33	3.72	< 0.05
2.	How to prevent diarrhea?	7	29	5.92	< 0.05
3.	What to do, if child suffers from diarrhea?	19	37	5.04	< 0.05
4.	When to start ORS?	11	32	5.54	< 0.05
5.	Do you know how to make ORS?	22	38	4.66	< 0.05
6.	If yes, do you know the method?	9	29	–	< 0.05
7.	If ORS is not available, what else can be given?	4	18	–	< 0.05
8.	If 7 is correct, do you know the method?	4	28	–	> 0.05
9.	When to consult the doctor?	9	31	5.89	< 0.05
10.	Skill of making ORS?	9	30	–	0.001

*Number of correct responses

not enough. Concentrated efforts are required to highlight the importance of ORT in tackling dehydration during diarrhea in children as they are more quickly dehydrated than adults and are, therefore, more likely to die.^[5] Thus, repeated skill-based health education should be given, so that mothers understand importance of each episode of ADD and prevent dehydration.

In this study, it was observed that gain in knowledge and skills was twice better in literate compared to illiterate mothers. It also shows there is no role of education in development of skill as the gain in skill was almost similar in both literate and illiterate mothers. Hence, skill of making ORS can be taught to each and every mother irrespective of their educational status, so mass educational programs along with personal educational programs should be arranged.

In this study, 49% children had diarrhea, out of which 86% had sought treatment. It was observed that they were prescribed antibiotics instead of ORS. In another study, which was conducted in Madhya Pradesh by Pathak *et al.*,^[7] the authors found low adherence to standard treatment guidelines for management of ADD with only 6 out of 843 practitioners prescribing ORS to children with diarrhea. Hence, health-care providers should be trained and motivated to prescribe ORS as it is a proven and cost-effective way of treating ADD in low-resource setting.

ADDs are the second most common cause of childhood mortality. Among these, viral diarrheas form an important cluster. Rotavirus is the most common identifiable viral cause of diarrhea in all children. Rotavirus infection affects 95% of children under the age of 5 years regardless of the socioeconomic or environmental conditions. In this study, only half of the children had had diarrhea.^[2] This may be due to increased practice of vaccinating children against rotavirus. Rotavirus vaccines are efficacious in reducing rotavirus-specific diarrhea by 72%–73% at 1 year and 62%–67% at 2 years following the vaccination.^[8]

Conclusion

Repeated skill-based health education to mothers and mass educational programs are beneficial. Health-care providers should demonstrate preparation of ORS to mothers.

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