

Use and Safety of Home-Made Oral Rehydration Solutions: An Epidemiological Evaluation from Bangladesh

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Chowdhury A M R (Bangladesh Rural Advancement Committee, 66 Mohakhali C/A, Dhaka 12, Bangladesh), Vaughan J P and Abed F H. Use and safety of home-made oral rehydration solutions: an epidemiological evaluation from Bangladesh. *International Journal of Epidemiology* 1988, 17: 655–665.

Home-made oral rehydration solutions (ORS) have been promoted in developing countries for preventing dehydration due to diarrhoea. Evaluations of this method must take into account the effective usage rates achieved and the safety of the solutions used. A community programme organized by the Bangladesh Rural Advancement Committee (BRAC) has visited over a third of all the households in Bangladesh and taught the preparation and use of an oral rehydration solution made from lobon (common salt) and gur (unrefined sugar)—abbreviated to LGS. An evaluation study based on over 7000 households enabled different usage rates to be calculated for four different diarrhoea types. The overall usage of LGS for all diarrhoea episodes was around 5–10% but for what the people called 'Severe Diarrhoeas' or cholera it was found to be between 25% and 52%. The mother's ability to prepare a safe Lobon-gur solution appeared to deteriorate about six months after training and it was significantly poorer in the Second Phase than the First Phase of the BRAC programme.

Programmes promoting the widescale use of oral rehydration solutions (ORS) have recently been started in many developing countries¹ and usage and safety of ORS are important and popular indicators for evaluating their success.² However, there are considerable problems in defining usage and safety.

In general definitions of usage based on assessing whether an individual or household have ever used ORS are unsatisfactory due to poor memory recall and the lack of a time period. Even definitions of 'ever use' based on diarrhoeal episodes² or on the question 'what did you do last time you had diarrhoea?'³ can be unsatisfactory, mainly because such definitions are not specific about which people or episodes and when the ORS was used. To overcome some of these difficulties preference is now given to defining usage as the proportion of all diarrhoea episodes in a given time period which were given ORS. This definition still has several methodological problems inherent in its measurement.

The first problem is how to define a diarrhoea epi-

sode. Various research definitions have been used, such as more than two watery or loose motions in 24 hours in a study in Bangladesh.⁴ A more complex one was used in Guatemala: for children less than one year old, five or more liquid stools per 24 hours and for those people one year or older, three or more liquid or semi-liquid stools preceded by two weeks of normal stools.⁵ Health planners have tended to use simpler, more operational definitions such as one or more watery stools per day.⁶ However, few studies have analysed usage according to the people's own perceptions of diarrhoeal illnesses. For instance, it has recently been found that in rural Bangladesh people recognize four different illnesses which have similarities to diarrhoea.⁷ One is locally called 'Severe Diarrhoea' which means to the Bengali people severe watery diarrhoea or cholera. Thus, the use of the word 'diarrhoea' for programme planning or evaluation purposes could be misleading and result in a serious under-reporting of the total number of diarrhoeal episodes.

The second problem relates to memory recall and what reference period is used. For the retrospective collection of information one week is theoretically acceptable but this requires large sample sizes, whereas periods longer than two weeks are more unreliable due to poor memory recall. The third problem concerns from whom to obtain the information on

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diarrhoea episodes and ORS use, since questioning everyone is not feasible. Mothers are probably the best choice but, proxy reporting may lead to underreporting of both episodes and usage. The fourth problem is that only approximately a half of all diarrhoea episodes receive some form of treatment⁸ and these are the episodes that tend to get reported. As well as usage of ORS being based on all the episodes, should it also be expressed as a percentage of all the episodes that receive some form of treatment?

Even when all these problems⁹ are taken into account, there remains the most formidable problem about measuring the actual effective usage. Was the solution safe and effective, taken in an appropriate quantity and started soon after the first watery stool? So far very little research has been carried out into these questions. This paper mainly tackles the problem of measuring safety.

How these methodological problems in measuring usage are solved obviously affects the results obtained in evaluation studies. Most of the major evaluations carried out so far have not used standardized definitions or methods and this has rendered comparability very difficult.² This paper presents the evaluation of a community based ORS programme which attempted to overcome these problems and to measure usage according to a number of different definitions.

Measurement of the safety of the oral rehydration solutions prepared by mothers also presents problems. Although the collection of a sample from the actual solution used in an episode is difficult, proxy samples can be collected by asking mothers to prepare a sample solution, which can then be tested for sodium concentrations and the water volume used. However, what is lacking is information on possible variation between oral rehydration solutions made by mothers at different times. The taking of proxy samples presumes that the variation is not significant, which it may well be.

THE BRACORT PROGRAMME IN BANGLADESH

The Bangladesh Rural Advancement Committee (BRAC), a Bangladeshi non-governmental organization, developed a ten-point health message which included a technique for preparing an oral rehydration solution using a three finger pinch of household *lobon* (common table salt), a fistful of *gur* (unrefined sugar), and half a seer (a local measure of 467 cc) of water, based on the 'pinch-and-scoop method'.^{10,11} A female health worker trained as an oral replacement worker (ORW) taught mothers 'the ten points to remember' about diarrhoeas and their treatment, including the

preparation of the *lobon-gur* solution.⁶ One mother in each rural household was taught and then supervised while she made the *lobon-gur* solution (LGS) herself during a face-to-face session lasting about 25–30 minutes. One month later a second group of workers—programme monitors—visited a random 10% of the 'taught' households and assessed the quality of teaching and the ability of mothers to prepare a solution of LGS. This programme monitoring showed that over 90% of mothers prepared a 'safe and effective' solution which had a sodium concentration of 30–99 mmol/L¹⁰ one month after the training.⁶ This definition is based on a lower level of sodium in an attempt to prevent hypernatraemia from the LGS but other reports have given the safe and effective range for sodium as 40–120 mmol/L and the current World Health Organization recommended level for sodium is 90 mmol/L.^{12,13}

During the First Phase, from July 1980 to September 1983, the BRAC programme visited 2.5 million households. In the Second Phase, from October 1983 to September 1986, in addition to the usual programme there was an experimental 'concentrated reinforcement programme' (CRP), which covered approximately 10% of households. For the CRP, the ORW team stayed in one area for six months, instead of the usual one month, carrying out additional promotional and other health education activities. However, the standard one month approach (non-CRP) continued in the remaining 90% of households involved in the Second Phase. The Ten-Point message was redefined and was now taught as the 'Seven Points to Remember'.

EVALUATION METHODS

The evaluation was carried out during July to December 1984 with the objective of determining the usage and safety of home-made LGS. The evaluation comprised two separate but interrelated approaches, with a village case study using qualitative research methods followed by a large-scale random household community survey. For evaluation purposes the BRAC programme definition of an episode of diarrhoea was used, which was one or more watery stools per day. This was done to retain comparability with the BRAC programme monitoring results, even though it was realized that such a broad definition might include mild episodes for which ORS would not be used. This could tend to lead to an apparently lower usage rate for LGS.

Village Case Study

A major objective of the village case study was to determine people's perceptions, beliefs and customs

concerning diarrhoea and its treatment, and to find out how these affected the use of the lophon-gur solution.

The study was carried out during July–September 1984 in two villages (with 178 and 422 households), in Comilla district, which are close to a typical Bangladeshi river system and situated approximately 30 miles upstream of Matlab, the treatment and field research centre of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B).

Information was collected using a structured survey of all households for basic information on all residents, weekly surveillance of all households for diarrhoeal episodes and any treatments used and 35 unstructured in-depth interviews with a range of selected villagers, including users and non-users of LGS, villagers of different socioeconomic groups, influential people and local traditional practitioners. In addition, a series of seven focus group discussions¹⁴ were held with landless male villagers, landless mothers, older mothers-in-law, local élites and government health workers. Each group had 8–10 participants. The research approach relied on accumulating evidence from the different methods, the so-called convergent method. Weekly surveillance information was used to identify village subjects for in-depth interviews and information and ideas arising from such interviews were explored in subsequent interviews. Conclusions were then further checked for convergence or divergence through informal and focus group discussions. Information found true for one village was then tested in the other for its replicability. The first author (MC) was present throughout the period of the study. More details about the methodology are available elsewhere.⁹

The village study revealed that there are four types of illness which resemble diarrhoea⁷ which are:

'Dud haga': Diarrhoea in children caused by sucking 'polluted' breastmilk.

'Ajirno': Diarrhoea caused by indigestion and food poisoning.

'Amasha': Diarrhoea with a mucousy stool but of unknown cause.

'Severe Diarrhoea' or 'cholera': Severe diarrhoea is recognized to be dangerous and that it can result in dehydration and death.

This classification was confirmed for other areas of Bangladesh and by its use in the subsequent community survey. The village study was also used to field test the household survey methods and questionnaire and to undertake the initial training of the survey teams.

Community Household Survey. The objective was to

determine the usage and safety of the lophon-gur solution (LGS) in the First Phase and Second Phase for both the non-CRP and CRP areas. This required three independent samples from the First Phase, non-CRP and CRP programme areas. These samples were drawn from areas covered two years previously in the First Phase and one year before in non-CRP and CRP areas of the Second Phase. The areas selected are shown in Figure 1.

Sample size and selection. The household, defined as a group of people eating from the same kitchen and sharing a common living place, was the ultimate sampling unit. The sampling process is given in Table 1, with households selected randomly proportional to size in three stages by union, village and households.⁹ Previous studies by BRAC found that a diarrhoea episode was reported in approximately 20% of households when the reference period was fixed at two weeks and that the usage rate of LGS was about 20% of all episodes.⁸ Based on these estimates, at least 2500 households were required in each of the three areas to provide a minimum of approximately 100 users per study area. The final number of households actually interviewed were 2329, 2289 and 2292 respectively, giving a non-response rate of about 8%.

Questionnaire. The questionnaire was tested and modified during the village study and contained sections on individual household members, household assets, and information on the episodes of diarrhoea of the four types, treatments used and additional information on LGS users. The questionnaire was administered to one mother from each household.

Survey teams. Twenty-five female interviewers collected the information from mothers. The interviewers were young adults who had at least 12 years of schooling. Four male staff acted as supervisors for the four teams. The teams were trained in interviewing techniques using role-playing exercises and had practised these in non-sampled villages.

Supervision and Repeatability Checks. Direct supervision of data collection was provided by each team supervisor, who conducted re-interviews on a sample basis. The first author and his colleagues from the Research and Evaluation Division of BRAC visited the 23 sample unions when the data collection was underway, without the prior knowledge of the field teams.

Repeat interviews were carried out on households reporting a diarrhoea episode to check information on

TABLE 1 Stages in the sampling process for selecting the 2500 households for each programme area

Selection stages	First phase	Second phase	
		Non-CRP	CRP
<i>Selection of unions</i>			
No. of unions included in programmes	59	62	24
No. selected into sample	7	8	8
f	0.12	0.13	0.33
<i>Selection of villages</i>			
No. of villages in selected unions	106	123	122
No. selected into sample	35	40	40
f	0.33	0.33	0.33
<i>Selection of households</i>			
Total number of households in selected unions	17 185	27 673	27 790
No. selected from sample villages	2 500	2 500	2 500
f	0.15	0.09	0.09

in 78.6% of episodes in First Phase, 47.8% in non-CRP and 54.6% in CRP, out of which 91%, 91% and 84% respectively agreed with each other. In many cases repeatability interviews were not done due to transport and other logistical difficulties.⁹

Sample Lobon-gur Solutions. A random sample of households, 5% at the beginning and then raised to 10% to give a sufficient total number, were selected and the previously interviewed mothers were requested to prepare a lobon-gur solution in front of the interviewer. The volume was measured and a sample saved in a vial and sent for electrolyte analysis at the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), in Dhaka.

Seasonality. The survey was carried out during October–December 1984. However, the incidence of diarrhoea is very seasonal, with a small peak in December–January and a larger one in August–September. The availability of gur is also seasonal: this survey took place just before the winter months when gur is much more widely available and it was found in approximately 10% of households; a later BRAC survey during the main gur season (January–February) found that up to 50% of households possessed gur.¹⁵ Since the non-availability of gur was found to be one of the reasons for the infrequent use of LGS,⁷ our survey results may show a lower figure for LGS usage than that which might occur during the peak diarrhoea and gur seasons in January and February.

RESULTS

The overall household response rates for the three programme areas were all above 92%. About 45% of the study population were under 15 years old and the

age structure was very comparable to that for Bangladesh.¹⁶ The male–female sex ratio was 101.5 to 100 and three-quarters of the population aged five years and older did not know how to read or write a letter.

Diarrhoeal Episodes and Estimated Annual Incidence

The denominators for estimating usage of LGS used in this analysis are the total number of diarrhoeal episodes, as well as the total numbers for each diarrhoea type, reported over the two weeks prior to the household interview. Based on the findings from the village case study separate questions were asked about the four types of diarrhoea: 'Dud haga', 'Ajirno', 'Amasha' and 'Severe Diarrhoea'. A total of 4547 episodes of diarrhoea were reported, made up of 1023, 1534 and 1940 episodes reported respectively from First Phase, non-CRP and CRP areas. By extrapolation the overall annual incidence for all episodes per person were found to be 1.8, 2.9 and 3.8 respectively for the three areas (Tables 2 and 3). The overall annual incidence of episodes per person varies twofold between First Phase and CRP areas. Caution is needed in interpreting these rates as they are only based on a two-week recall period. However, as the survey was conducted between the peak diarrhoea seasons in December–January and August–September, the rates may approximate to the average for a whole year. The apparent differences in incidence between the study areas were further analysed and it was concluded that these represent true differences in incidence as well as apparent differences due to the techniques of the interviewing teams.⁹

Table 3 shows the total number of episodes for children under five as a percentage of all diarrhoea episodes in the First Phase, non-CRP and CRP areas to be

TABLE 2 *Estimated two-week and annual incidence of all diarrhoea episodes per person, by age groups*

Age group (years)	Estimated incidence					
	First Phase		Non-CRP		CRP	
	Two-week	Annual	Two-week	Annual	Two-week	Annual
0-4	0.13	3.28	0.23	5.92	0.28	7.18
5-14	0.05	1.39	0.10	2.63	0.14	3.55
15-44	0.06	1.50	0.07	1.95	0.10	2.60
45+	0.07	1.79	0.09	2.45	0.13	3.40
Total	0.07	1.80	0.11	2.90	0.14	3.80

TABLE 3 *Usage (%) of LGS amongst all diarrhoeal episodes by age group and sex of users and study areas*

Age group (years)	First Phase			Non-CRP			CRP		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-4	5.7	1.0	3.3	9.5	11.0	10.9	13.0	10.8	11.8
No. of episodes	139	135	274	242	217	459	253	223	476
5-14	3.9	6.2	5.1	7.8	6.8	7.3	13.6	10.6	12.1
No. of episodes	102	113	215	193	177	370	221	216	437
15-44	7.1	3.4	5.2	7.6	8.2	8.0	8.3	6.9	7.5
No. of episodes	140	185	325	157	231	388	192	290	482
45+	2.4	0.0	1.5	4.7	5.7	5.1	6.4	6.8	6.6
No. of episodes	82	50	132	106	70	176	110	117	227
All	5.2	3.1	4.1	7.9	8.5	8.2	10.9	8.9	9.9
No. of episodes	463	483	946	698	695	1393	776	846	1622

29%, 33% and 29% respectively. In general males had more episodes, except in the 15-44 age group where episodes among females were consistently higher in all study areas.

The percentage of diarrhoea episodes by type are presented in Figure 2, which shows a good agreement between study areas. About a half of all reported diarrhoeas were of the 'Ajirno' type, one-third were 'Amasha' and only 5%, or 1 in 20 episodes, were classified as 'Severe Diarrhoea'. 'Dud haga' occurred as expected in children under five years of age and represented approximately 12% of all episodes.

Usage of Lobon-gur Solution (LGS)

In agreement with earlier research findings,⁸ this evaluation showed that over a half of all the diarrhoeal episodes had received some form of treatment, with 53%, 62% and 58% of episodes receiving some treatment in the First Phase, non-CRP and CRP areas respectively.

When considering the various treatment methods used, LGS was third in popularity after allopathic (or western) drugs and Boneji, a household remedy based on different herbs and supplied by older women. How-

ever, LGS was found to have been used 4 to 13 times (First Phase and CRP areas respectively) more frequently than ORS packets.

Table 3 gives the overall usage rates and those for each main age and sex group. This shows that the overall usage for LGS amongst all episodes of diarrhoea was low at 4.1, 8.2 and 9.9% respectively for First Phase, non-CRP and CRP areas. (Episodes which did not 'match' with the second interview in repeatability checks have been excluded from this and subsequent analyses.) It should be remembered that the First Phase households were taught the use of LGS two years prior to the evaluation survey and non-CRP and CRP households had been taught one year previously.

The usage rates for age-sex groups show no clear overall pattern, although there does appear to be higher usage reported for males than females. Children 0-4 years are reported to have been given LGS about twice as frequently as those adults aged 45 years or more. However, there is no clear difference in usage rates between the 5-14 years and 15-44 years age groups for the First Phase and non-CRP, but for CRP

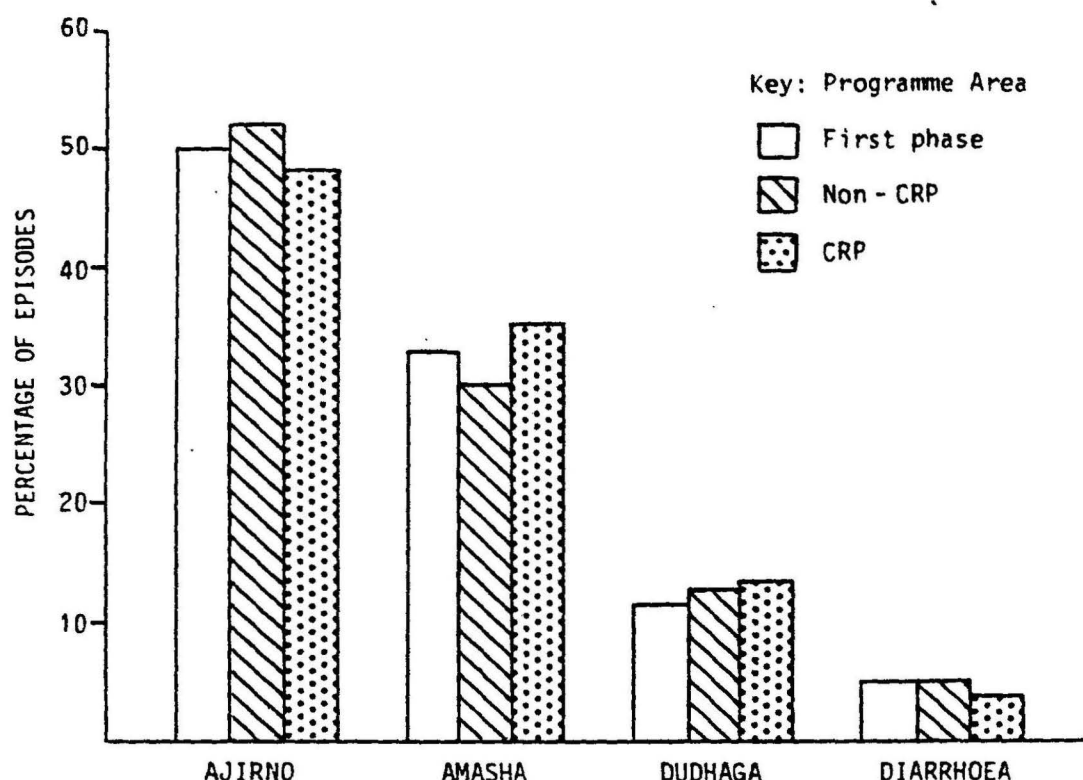


FIGURE 2 Percentage distribution of the four types of reported diarrhoea episodes by programme areas.

there do appear to be higher rates amongst 5–14 year olds.

Table 4 gives the LGS usage for different types of diarrhoea, with the highest usage for LGS occurring in 'Severe Diarrhoeas', varying from 25.6% in First Phase to 52.2% in CRP. LGS use in other types of diarrhoea was lower, but the lowest was in 'Amasha', which has very little fluid loss. Similar results for 'Severe Diarrhoea' emerge when only diarrhoea episodes which received some treatment are considered. There was only a marginal improvement in the percentage of 'Severe Diarrhoea' episodes that received LGS which suggests that most of these diarrhoeas were receiving at least one or another method of treatment.

LGS was used in about one-quarter, one-third and one-half of all 'Severe Diarrhoea' episodes in First Phase, non-CRP and CRP areas respectively. Figure 3 shows the popularity of LGS for treating 'Severe Diarrhoea' in the First Phase, where households had been taught two years prior to the evaluation.

'Ever Use'

When the number of current users is too small for analysis, an alternative is to base the analysis on all previous users, that is the concept of 'ever users'. This concept has been more widely applied in family planning studies, when current users includes those who are presently using a family planning method at the

TABLE 4 Usage (%) of LGS according to the main diarrhoea types by study areas

Diarrhoea type	First phase		Non-CRP		CRP	
	Total episodes	% using LGS	Total episodes	% using LGS	Total episodes	% using LGS
'Dud haga'	101	2.0	164	12.2	203	12.3
'Ajirno'	477	4.0	735	7.9	778	9.8
'Amasha'	317	1.6	418	2.9	572	4.0
'Severe diarrhoea'	51	25.6	76	31.6	69	52.2

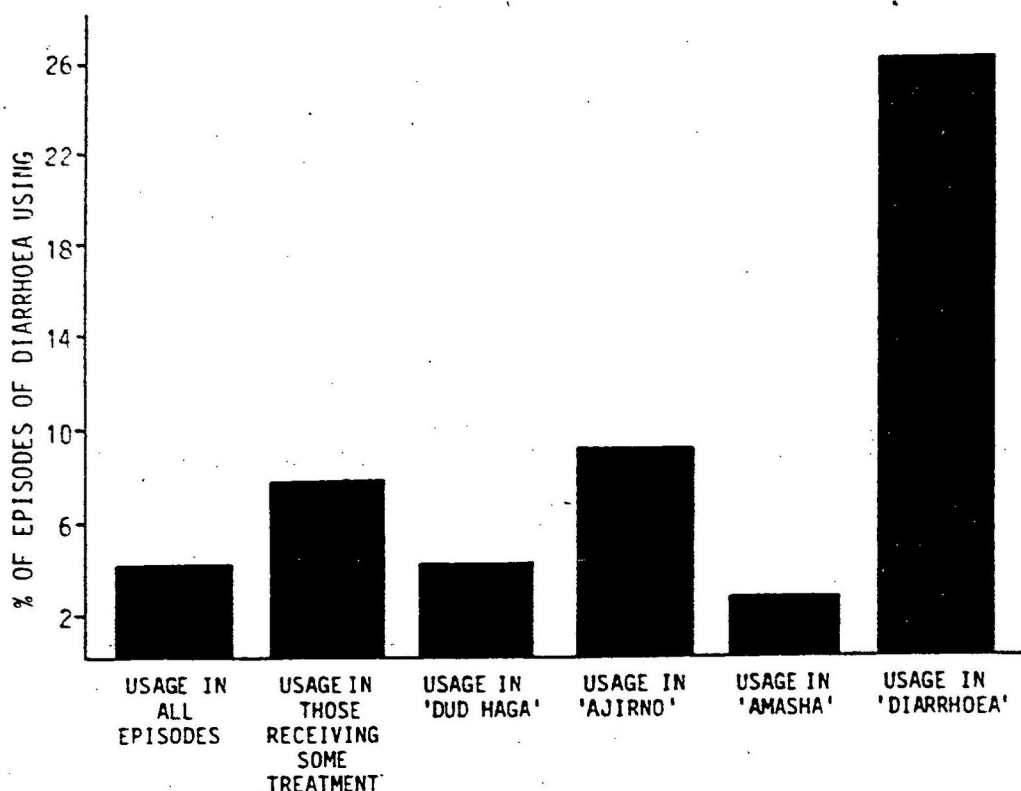


FIGURE 3 Percentage use of LGS 24 months after teaching households in the First Phase districts.

time of survey plus all those that had ever used it in the past. For LGS usage ever users would include those who have used LGS previously plus those who have used it in the previous two weeks. The extent of ever use for the First Phase was found to be about 50%, which means that one in two households had used LGS at least once over the previous two years. Analysis between ever use and household characteristics showed a strong association with the amount of land owned and possession of a radio ($p < 0.05$) and the availability of gur in the house ($p < 0.001$).

Safety of Lobon-gur Solutions

The 'safety and effectiveness' criteria are those previously used by BRAC in their programme monitoring.⁶ Table 5 shows the sodium concentration of the proxy LGS samples by study areas. Marked differences were found between study areas and an analysis of variance showed significant differences ($p < 0.01$). The difference between the mean sodium concentrations for the First Phase and non-CRP areas is significant ($p < 0.05$) but not that between non-CRP and CRP, where the sodium distributions are more

similar. Table 5 shows a surprisingly high proportion of samples in the 'dangerous' zone, with approximately 1 in 6 for First Phase, 1 in 5 for non-CRP and 1 in 4 for CRP.

To examine whether these high sodium concentrations could be due to the use of a small volume of water, the volumes of the sample solutions with a dangerously high level of sodium were analysed separately. The mean water volumes for these 'dangerous' samples from the three programme areas were close to the expected for half a seer of 467 cc. This suggests that too little water was not a major factor in the preparation of the 'dangerous' lobon-gur solutions and that the main factor was the addition of too much salt.

DISCUSSION

This is one of the first epidemiological evaluation studies to be carried out on a large-scale community-based oral rehydration programme using home ingredients⁹ and also to have based the analysis on the classification of diarrhoeal episodes as perceived by the people themselves.⁷ This use of social anthropological methods prior to the large household survey allowed

TABLE 5 Sodium concentrations in proxy samples of lobo-gur solutions prepared by mothers, according to 'safety effectiveness' criteria and by programme areas

Safety and effectiveness (Na in mmol/L)	First phase %	Non-CRP %	CRP %
Safe but less effective (<30)	4.4	2.5	1.8
Safe and effective (30-99)	71.4	63.3	50.4
Effective but potentially dangerous (100-119)	9.5	16.0	22.2
Dangerous (120+)	14.7	18.2	25.6
Total	100.0	100.0	100.0
No.	179	156	166
Mean	81.4	93.0	103.3
SD	44.9	49.9	67.6

TABLE 6 Summary of important lobo-gur solution usage rates expressed as a percentage of episodes in which LGS was used

	First phase	Non-CRP	CRP
a. Overall—all episodes	4.1	8.2	9.9
b. Children 0-4 years	3.3	13.0	11.8
c. For males	5.2	7.9	10.9
d. For females	3.1	8.5	8.9
e. For 'Dud haga'	2.0	12.2	12.3
f. For 'Ajirno'	4.0	7.9	9.8
g. For 'Amasha'	1.6	2.9	4.0
h. For 'Severe diarrhoea'	25.6	31.6	52.2

for a more detailed analysis to be made of the incidence of the different types of diarrhoeal episodes and for a wider range of LGS usage rates to be calculated, as summarized in Table 6.

The estimated per person annual incidence of all diarrhoeal episodes varied from 1.8 in First Phase to 3.8 in CRP, which are higher figures than those found in Matlab, Bangladesh.¹⁷ The incidence varied for different diarrhoea types, with the highest being for the 'Ajirno' type. A good agreement appeared to exist between study areas on the proportion of episodes of each type, which suggests that this classification can be safely used in Bangladesh in future research. The lowest incidence was for the 'Severe Diarrhoea' type. All the 'Dud haga' occurred in children under five years of age, which is explained by the definition of 'Dud haga'. As this study was the first to use the 'four diarrhoeas' concept, there is no comparable data available. However, our experience suggests that similar classifications for different types probably do exist in other countries.

Approximately 30% of all diarrhoeas occurred in children under five years of age which is comparable to two other studies from Bangladesh. A longitudinal study found 39% of episodes in this age group¹⁷ while a retrospective survey found the figure to be 37%.⁸ Annual per person incidence in children under five

years of age varied from 3.3 in First Phase to 7.2 in CRP and, by comparison, an incidence of 4.0 was found in Matlab, Bangladesh.¹⁸

In general, males appeared to suffer more diarrhoea episodes except in the 15-44 age group where females consistently had higher rates across all study areas. An explanation for this differential that has long been postulated^{18,19} is that mothers of young children are at higher risk due to constant personal contact with young children.

The analysis also shows the overall importance of distinguishing 'Severe Diarrhoea' (severe watery diarrhoea or cholera) from all other forms since this is the one most likely to lead to dehydration and death. The danger of 'Severe Diarrhoea' is evidently perceived by the people themselves since most episodes received some form of treatment, shown by the usage rate for LGS being much higher.

The evaluation showed that the overall usage rates of LGS were low, but this can partly be explained by the programme definition used by BRAC for a diarrhoeal episode, which is one or more watery stools per day. The effect of using this definition might be to include in the denominator a higher proportion of mild diarrhoeas, which would be unlikely to receive any form of treatment. Programme evaluations which use a stricter definition for a diarrhoea episode, which there-

fore excludes mild episodes, could expect to achieve higher usage rates. Such problems only emphasize the need for greater standardization of definitions.

An interesting finding for BRAC was that the LGS usage rates were not so much higher in the CRP villages compared to the non-CRP villages in the Second Phase. Although usage was significantly higher in the CRP area, so too was the proportion of LGS proxy samples that were in the 'dangerous' range. In addition, the overall costs of CRP were almost ten times those for non-CRP, which made it much less cost-effective per user.

A comparison of these evaluation results with those from programme monitoring by BRAC suggests that there has been considerable deterioration over time in

the ability of mothers to prepare a safe and effective solution. For example, this is shown for the First Phase in Figure 4, a finding that has very serious implications for programme replanning. Although the coastal area showed a higher sodium level in drinking water, exclusion of these samples from the analysis did not significantly alter the results. It was concluded, therefore, that the level of sodium in drinking water was not an important factor leading to these dangerous LGS solutions.

A major remaining issue not answered by this study is how effective was the use of LGS? For LGS to be successful in reducing dehydration and thus mortality, the solution should be: (a) safe and effective; (b) should be taken in sufficient quantity to replenish the

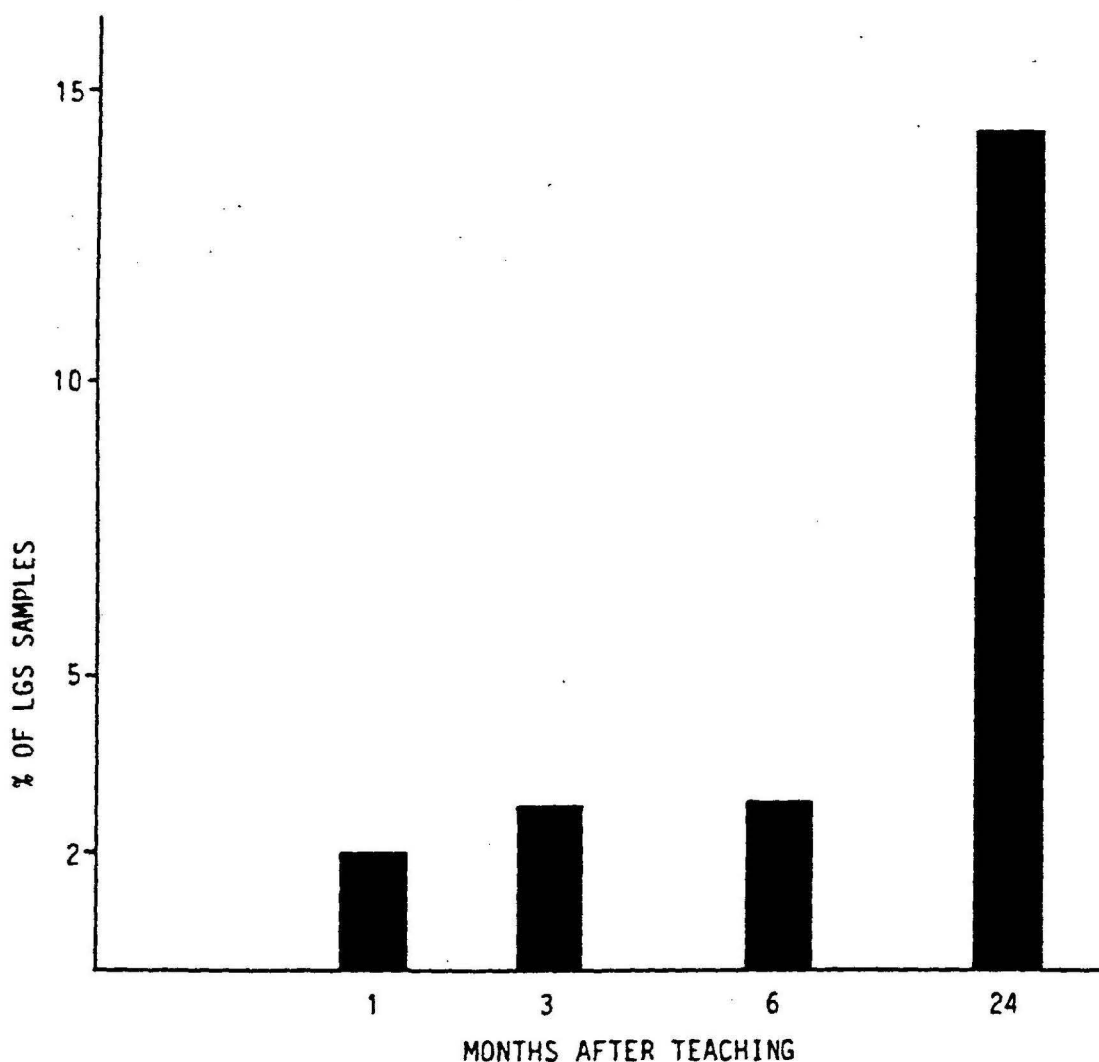


FIGURE 4 Percentage of LGS samples prepared by mothers with dangerous sodium concentrations (120 mmol per litre or more) at 1, 3, 6 and 24 months after teaching in the First Phase districts.

loss; and (c) should be started from the first very stool. This evaluation could not answer these questions adequately and to do so poses many methodological problems.²

In general terms, this evaluation has demonstrated the importance of using a classification of diarrhoeal episodes that is based upon what the people themselves perceive, because they appear to understand the importance of using lobon-gur solution for severe diarrhoea episodes and dehydration. However, although the Second Phase of the programme achieved much higher LGS usage rates than the First Phase, it also shows a poorer ability by the mothers to prepare safe and effective solutions. There is also good evidence which suggests this ability deteriorates over time. The experiment involving the Concentrated Reinforcement Programme (CRP) appears to achieve no substantially better results than the normal programme, even at ten times the cost of the latter per household tested. These evaluation results have been used by BRAC to reassess its health policies, leading to several modifications to its oral rehydration strategy and a broadening of its programme to include other child survival interventions.⁷

ACKNOWLEDGEMENTS

The evaluation studies presented in this paper are taken from the PhD thesis successfully presented by the first author to the University of London. The study was carried out with the other authors, who express their deep gratitude to the Swiss Development Cooperation, and particularly to Dr I Cornaz, for the financial support which made possible the field work for this evaluation.

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(Revised version received September 1987)