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Urban FP/MCH Working Paper No. 4

The Prevention and Treatment of Diarrhoea in Dhaka Urban Slums

Abdullah Hel Baqui
Ngudup Paljor
Diana R. Silimperi

Urban Health Extension Project



**International Centre for Diarrhoeal
Disease Research, Bangladesh**

May 1993



The International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) is an autonomous, non-profit organisation for research, education, training and clinical service. It was established in December 1978 as the successor to the Cholera Research laboratory, which began in 1959 in response to the cholera pandemic in southeast Asia.

The mandate of the ICDDR,B is to undertake and promote research on diarrhoeal diseases and the related subjects of acute respiratory infections, nutrition and fertility, with the aim of preventing and controlling diarrhoeal diseases and improving health care. The ICDDR,B has also been given the mandate to disseminate knowledge in these fields of research, to provide training to people of all nationalities, and to collaborate with other institutions in its fields of research.

The Centre, as it is known, has its headquarters in Dhaka, the capital of Bangladesh, and operates a field station in Matlab thana of Chandpur District which has a large rural area under regular surveillance. A smaller rural and a large surveyed urban population also provide targets for research activities. The Centre is organised into four scientific divisions: Population Science and Extension, Clinical Sciences, Community Health, and Laboratory Science. At the head of each Division is an Associate Director; the Associate Directors are responsible to the Director who in turn answers to an international Board of Trustees consisting of eminent scientists and physicians and representatives of the Government of Bangladesh.

The **Urban Health Extension Project (UHEP)** is a follow-on activity of the Urban Volunteer Program (UVP). In 1981, the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) began training women volunteers in urban Dhaka in the use of ORS packets for diarrhoeal disease on the assumption that community women could play an important role in teaching others about the home treatment of diarrhoea with ORS. The United States Agency for International Development (USAID) began funding the project in 1986 with a mandate to provide primary health care services to the urban slums and conduct research on child survival related issues. UHEP continues to focus on health and family planning issues of the urban slums with an overall goal to strengthen the ability of the government and non-governmental agencies to provide effective and affordable family planning and selected maternal and child health services to the urban poor through research, technical assistance, and dissemination of its research findings.

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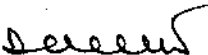
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Foreword

I am pleased to release these reports on urban health and family planning issues which are based on the activities of the Urban Health Extension Project (UHEP). UHEP is a follow-on activity of the former Urban Volunteer Program, a pilot project funded by the United States Agency for International Development (USAID).

The poor health status and the health needs of the urban poor continues to be an important emerging public health issue in the Developing World. Bangladesh is no exception. Despite the constraints of poverty and illiteracy, there are proven strategies to provide basic health and family planning services to the urban poor. In Dhaka alone, aside from the Government health care facilities, there are numerous NGOs and private sector providers giving needed services to the urban population. The Centre's own Urban Health Extension Project continues to focus on the urban poor, especially the slum populations, in providing basic family planning and health services through outreach activities (viz. health education, ORS distribution and referral services to service points).

However, enormous challenges remain in providing an optimum level of services to the urban poor. The UHEP, with the support of the USAID, will focus on health and family planning services delivery strategies in reaching the needed services to the urban poor. We certainly look forward to learning more about the health and family planning needs of the urban poor, testing sustainable strategies and applying these proven strategies in collaboration with other partners in government, NGOs and the private sector.



Demissie Habte, MD
Director

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This Working Paper is from the baseline information of the Urban Surveillance System (USS) of the Urban Health Extension Project (UHEP). The USS is a comprehensive health and demographic longitudinal surveillance of the slum populations of Dhaka. Numerous project staff are involved in the functioning and maintenance of the USS. Sincere acknowledgement is extended for the hard work and dedication of the USS staff, both the field-based staff and the data management and the project management support side of the USS.

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Summary

This report uses baseline information from a probability sample of the urban slums of five *thana* of Dhaka city to describe mothers' knowledge of diarrhoea prevention and management, diarrhoea prevalence and oral rehydration therapy (ORT) use. The data indicate that mothers' correct knowledge of how to prevent diarrhoea was low. Keeping the household clean (45%) and food hygiene (33%) were considered the two most important means of preventing diarrhoea. Only about 12% of mothers considered hand washing a means of diarrhoea prevention. Two-week prevalence and point prevalence of diarrhoea were high. The highest diarrhoeal prevalence was observed in infants 6 - 11 months of age. Children of younger mothers experienced significantly higher diarrhoea rates. Mothers' general awareness about ORT, knowledge of when to start ORT and how long it should be continued was high. However, correct knowledge of the function of ORT was low. There was a major gap between ORT knowledge and ORT practice. Health education programs that aim to improve mothers' knowledge of diarrhoea prevention and the function of ORT may prove to be useful. Qualitative research should attempt to explain the large gap between ORT knowledge and ORT use.

Introduction

The Urban Volunteer Program (UVP), the predecessor of the Urban Health Extension Project (UHEP) of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), was conceived as an operations research and service delivery pilot project to test the feasibility and impact of using women from slum communities to provide preventive health care and referral services to slum residents of Dhaka city. Special attention was paid to the health needs of women and children under five years of age. The program's original focus was on diarrhoea prevention and management through health education and distribution of oral rehydration solutions (ORS). Over time, the program's focus appropriately expanded to nutrition, immunization, and family planning.

The program recruited health volunteers from its catchment communities, which included the slum communities of five *thana* of Dhaka city. Nearly all of these volunteers were illiterate slum mothers. After recruitment, the volunteers received basic health training on diarrhoea, nutrition, immunization, and family planning of two weeks' duration. They also received refresher training for four days every four months. On average, each volunteer covered about forty households.

In 1990, to address the lack of reliable slum-specific data and to evaluate the effectiveness of its volunteer service delivery system, the program developed a comprehensive health and demographic surveillance system known as the Urban Surveillance System (USS). Sample households were registered, and a baseline survey carried out to assess mothers' health knowledge, health practices and selected health status indicators in the areas of diarrhoea, immunization, nutrition, and family planning. This report presents the findings of the diarrhoea component of the survey.

Methodology

Sampling Procedure

The USS is comprised of a probability sample of the slum communities of five *thana* of Dhaka city (UVP's catchment communities). It is based on multi-stage areal sampling and the ultimate sampling units are clusters of around 30 households. A sampling frame was created by mapping all the slums in the catchment communities. The population was then divided into primary sampling units (PSUs). A PSU was either a slum or segment of a large slum in the range of 20 to 200 households. Slums below this size were excluded and above this size were segmented.

The PSUs were then divided into eight strata based on aggregate water and sanitation conditions. This information was collected from a random sample of households in each PSU. The estimated sample size required was 168 clusters to allow detection of a 2% difference in infant mortality rates with a 95% confidence limit between the intervention and non-intervention communities over a three-year period. The total first stage sample of 168 PSUs was allocated to strata approximately proportionate to their population. This allocation was subject to the provision that the number of PSUs in each stratum was a multiple of four, and did not exceed one quarter of the total number of PSUs in the stratum. Each PSU was assigned a "measure of size" equal to its number of nominal clusters. This number was determined as the smallest integer that divides the PSU's total number of households into clusters of 20 to 50 house-

holds. PSUs were then selected with probability proportional to their size using the "PPS sequential method".¹ This method has the advantages of simplicity, unbiased variance estimation² and capability of being updated.³ Each selected PSU was then divided, on the ground, by the mapping teams into the number of clusters assigned prior to PSU selection. Finally, one cluster was randomly selected from each selected PSU yielding 168 clusters.

Data Collection

Household registration and a phase-I baseline survey which included information on socioeconomic status of the households, mothers' knowledge on immunization, and immunization coverage was carried out in the sampled clusters between January and April 1990. A phase-II baseline survey covering mothers' knowledge and practices in the areas of diarrhoea, nutrition and contraception was carried out between August and November 1990.

Data on the diarrhoea component of the survey included information on mothers' knowledge of causes and prevention of diarrhoea, mothers' knowledge on oral rehydration therapy (ORT), diarrhoea prevalence, ORT use rate, and other treatment of diarrhoea. Data on knowledge were collected from 2,059 mothers with children under five years of age. Data on diarrhoea morbidity and ORT use were collected from these mothers for all living children under five years of age. For diarrhoea, a recall period of two weeks was used. The survey questionnaire assessed diarrhoea prevalence as follows:

For each child under the age of five years, the survey respondent (in most circumstances, the respondent was the mother) was asked, "Has the child (name) had diarrhoea in the last two weeks?" This question refers to the period from the day of the survey to the fourteenth day (referred to as 1 - 14 days) before the interview. This provides an estimate of the period prevalence of diarrhoea in the last two weeks.

If there was diarrhoea in the last two weeks, the interviewer asked, "Has this child had diarrhoea in the last 24 hours?" The prevalence of diarrhoea in the last 24 hours is assumed to be equal to the proportion currently having diarrhoea or equal to the point prevalence on the day of interview. Since, on average, the interview is held in the middle of the day, the reference period includes 12 hours of the previous day.

Diarrhoea was not defined in this survey; it was left to the respondents to decide whether their child had diarrhoea or not.

If the child had diarrhoea within the previous two weeks, respondents were asked about the type of diarrhoea. An episode was considered bloody if blood was seen in the stools at least once during the period; it was considered mucoid if mucous was seen at least once. Further questions included the type of treatment given, with special emphasis on uses

of ORT. In addition, the survey included questions on whether the mother consulted a health worker and/or the child had been taken to a medical facility. All mothers of children under five years of age were also queried about their knowledge of ORT and how they prepared and used this therapy.

Data Management and Analysis

Data were entered twice (entry and verification) using a microcomputer. All necessary range and consistency checks were made. Feedback was sent to the field for corrections whenever necessary.

The data were analyzed to calculate the percentage of mothers who had knowledge of causes and prevention of diarrhoea and mothers who had knowledge on different aspects of ORT. Then the overall and age-specific prevalence rates of diarrhoea and overall and age-specific ORT use rates were calculated. To examine the differentials in diarrhoea prevalence and ORT use rates, their bivariate relationships with various sociodemographic variables were determined. Statistical significance was tested using Chi-square.

Although clusters of households were sampled, cluster adjustment was not made before evaluating for statistical significance. The data set was analyzed as if it was based on a simple random sample. This may have led to the overestimation of the statistical significance of differences.

Results

Mothers' Knowledge of Causes of Diarrhoea

Mothers' knowledge of causes of diarrhoea is shown in Table 1. About 12% of the mothers reported that they did not know the cause of diarrhoea. Only about 5% of the mothers reported germs as a cause of diarrhoea. Only about 12% of the mothers considered not washing hands as a cause of diarrhoea. About one-third (36.2%) of the mothers considered a dirty environment as a cause of diarrhoea, and about a third (36.0%) considered eating uncovered food as a cause. About 26% of the mothers considered flies as a cause of diarrhoea. Only 5% mothers considered contaminated water as a cause.

Table 1. Mothers' Unprompted Knowledge of Causes of Diarrhoea (n=2,059)

Mothers' Stated Causes of Diarrhoea	Number of Mothers	Percent of Mothers
Dirty environment	745	36.2
Eating uncovered food	741	36.0
Flies	532	25.8
Not washing hands before taking food	246	11.9
Not washing hands before giving food	231	11.2
Mosquitoes	208	10.1
Germs	108	5.2
Contaminated water	102	5.0
Evil spirit	98	4.8
Not washing hands after defecation	55	2.7
Others	1,322	64.2
Did not know	249	12.1

Note: Total adds to more than 100% as some mothers mentioned multiple causes.

Source: USS baseline survey (September-December 1990)

Mothers' Knowledge of Prevention of Diarrhoea

Table 2 shows mothers' knowledge of prevention of diarrhoea. Twenty three percent of the mothers reported that they did not know how to prevent diarrhoea. Keeping the household clean (44.8%) and food hygiene were considered as the two most important means of preventing diarrhoea. Few mothers (12.9%) believed hand washing was a means of diarrhoea prevention.

Table 2. Mothers' Unprompted Knowledge of Prevention of Diarrhoea (n=2,059)

Response Categories	Number of Mothers	Percent of Mothers
Keeping household clean	923	44.8
Not eating unwholesome food	819	39.8
Keeping food covered	683	33.2
Hand washing before eating food	265	12.9
Hand washing before giving food	258	12.5
Drinking uncontaminated water	112	5.4
Hand washing after defaecation	51	2.5
Others	463	22.5
Did not know	476	23.1

Note: Total adds to more than 100% as some mothers stated more than one ways of preventing diarrhoea.

Source: USS baseline survey (September-December 1990)

Prevalence Levels and Differentials of Diarrhoea

Information on prevalence of diarrhoea during the two weeks preceding the survey and on point prevalence of diarrhoea was collected from 2,872 children under five years of age. About 20% of the children had diarrhoea in the two weeks preceding the survey and about 10% had diarrhoea in the 24 hours preceding the survey (Table 3).

Table 3 also shows the age pattern of two-week prevalence and point prevalence of diarrhoea in the children surveyed. The highest prevalence rates were observed in children 6 - 35 months of age, with a peak in infants of 6 - 11 months coinciding with the weaning process. The prevalence rates were low in early infancy (0 - 5 months) and in older children.

Table 3. Two-week Prevalence and Point Prevalence of Diarrhoea by Age in Children <5 Years of Age in Dhaka Slums

	Age in Months						
	0-5 (n=240)	6-11 (n=346)	12-17 (n=255)	18-23 (n=347)	24-35 (n=541)	36+ (n=1143)	All (n=2872)
2-week prevalence	12.9	26.9	23.9	22.2	23.5	16.9	20.2
24-hour prevalence	7.5	14.2	12.2	10.1	10.7	7.7	9.7

Note: Data are percentages of children surveyed

Table 4 shows the clinical characteristics of prevalent diarrhoeal episodes by age. Overall, 21.3% of the episodes were reported to contain blood in the stools and 52.8% of the episodes were reported to contain mucous in the stools. There was no clear age pattern; however, bloody diarrhoea was more common in relatively older children and very young infants.

Table 4. Clinical Characteristics of Diarrhoeal Episodes by Age

	Age in Months						All (n=584)
	0-5 (n=31)	6-11 (n=93)	12-17 (n=61)	18-23 (n=78)	24-35 (n= 27)	36+ (n=190)	
Bloody	22.6	10.8	18.0	16.7	26.8	25.3	21.3
Mucoid	45.2	49.5	59.0	47.4	54.0	55.0	52.8

Note: Percentage of episodes with the characteristics

Sociodemographic Characteristics of Children with Diarrhoea

Table 5 shows the percentage of children with diarrhoea in the two weeks preceding the survey according to selected sociodemographic variables. Two socioeconomic variables, mothers' education and type of housing materials were considered. Type of housing material was used as a proxy measure of economic status. During the socioeconomic survey, information on the construction materials used for the roof and wall of the house was collected and coded using the following code scheme: *jhupri* (shack)=1, bamboo=2, wood=3, tin=4 and *pucca* (concrete)=5. The variable 'housing material' was created by adding the codes for roof and wall. This provided a score ranging from 2 - 10 for each household. Based on this score the population was divided into three housing categories: poor, medium, and good, subject to the provision that about a third of the population fell in each category. Diarrhoea rates were lower in households with better housing materials, but the association was not significant. The reported diarrhoea rate was slightly, but not significantly higher in male children. Diarrhoea rates were significantly higher in children of younger mothers (Chi-square test for a 3x2 table, $p < 0.05$). There was no significant association with mothers' education.

Table 5. Percentage of Children with Diarrhoea in Two Weeks Preceding the Survey by Sex of Child, Mother's Age, Mother's Education and Type of Housing

Variables	Number of Children Observed	Percent Having Diarrhoea
Sex		
Male	1,498	21.3
Female	1,373	19.2
Mothers' age in years*		
<20	231	22.5
20-34	2,244	20.9
35+	394	15.2
Mothers' education		
None	2,478	20.3
1-5	333	20.4
6+	58	19.0
Housing material		
Poor	521	21.9
Medium	1,374	20.0
Good	676	17.6

* Chi-square test for a 3x2 table, $p < 0.05$

Relationship Between Diarrhoea and Water and Sanitation Conditions

Table 6 shows the two-week prevalence of diarrhoea by source of drinking water and use of toilet facilities. All the households were using either tap or tubewell water for drinking purposes. The diarrhoea rates were not significantly different between children in households who used tubewell and tap water. The diarrhoea rate was significantly lower in children of households who used sanitary latrines ($p < 0.01$); these are latrines either connected with the public sewerage system or with a septic tank.

Table 6. Percentage of Children with Diarrhoea in Two Weeks Preceding the Survey by Source of Drinking Water and Use of Toilet Facilities

Variables	Number of Children Observed	Percentage of Children with Diarrhoea
Drinking water source		
Tap	1,736	19.2
Tubewell	808	21.0
Toilet facilities used		
Sanitary	656	15.8*
Others	1,888	21.1

* Percentage of children with diarrhoea was significantly lower in households who had access to sanitary latrines, by Chi-square test, $p < 0.01$

Treatment Patterns

Knowledge of ORS Packets

The knowledge of prepackaged oral rehydration salts used in ORT is shown in Table 7. The respondents were mothers with at least one child under the age of five years. A mother was classified as knowing about ORS packets, if a) she had used a packet to treat one of her children in the two weeks preceding the survey, or b) she claimed to know about it. The general awareness about packet ORS was very high; virtually all women had heard about packet ORS and 96.7% had seen an ORS packet. Seventy nine percent of the mothers claimed that they prepared a packet of ORS at least once in the past.

Table 7. Mothers' Knowledge of Packet ORS (n=2,059)

Variable	Percent of Mothers
Heard of packet ORS	99.6
Seen a packet ORS	96.7
Ever prepared ORS	78.9

Mothers' Knowledge of Initiation, Continuation and Function of ORS

The majority of the mothers reported that ORS should be started after 1-3 loose stools; 5.5% reported that it should be started after one loose stool, 25.6% reported that it should be started after two loose stools and 40.3% reported that it should be started after three loose stools (Table 8). Another 12.4% of the mothers reported that ORS should be started after four loose stools. Only 7% mothers said they did not know when to start ORS.

Table 8. Mothers' Knowledge of Initiation of ORS (n=2,059)

Mothers' Response	Percent
After 1 loose stool	5.5
After 2 loose stools	25.6
After 3 loose stools	40.3
After 4 loose stools	12.4
After ≥ 5 loose stools	8.4
Others	0.6
Don't know	7.0

Mothers' knowledge of how long ORS should be continued is shown in Table 9. A high percentage of mothers (89.2%) replied correctly that ORS should be continued until stool returns to normal. Three percent of the mothers gave another answer, and 7.7% of the mothers reported that they did not know how long ORS should be continued.

Table 9. Mothers' Knowledge of Continuation of ORS (n=2,059)

Mothers' Response	Percentage of Mothers
Until stool returns to normal	89.2
Others	3.1
Don't know	7.7

Only about 21% of the mothers replied that ORS is used to prevent dehydration. The vast majority of the mothers (78.3%) incorrectly thought that ORS is used to stop diarrhoea (Table 10).

Table 10. Mothers' Knowledge of Function of ORS (n=2,050)

Function of ORS	Number	Percent
Stop diarrhoea	1,612	78.3
Prevent dehydration	430	20.9
Rehydrate	407	19.8
Stop vomiting	157	7.6
Others	154	7.5

Note: Totals add to more than 100% due to multiple responses.

ORT Use Rates in Dhaka Slums

Table 11 shows the percentage of children under five years of age who had diarrhoea in the past two weeks who were treated with ORT. A child was considered to have been treated with ORT if the child received either packet ORS or home fluid. ORT was used in less than half of the diarrhoea cases (46.0%). Only about one-third of the cases received oral rehydration solution prepared from ORS packets. Twenty percent received home fluid; 12.7% received lobon-gur solution (salt-molasses solution), 6.2% received salt-sugar solution, and only 0.7% received homemade rice-based therapy.

Table 11. ORT Use Rates for Children Having Diarrhoea in Two Weeks Preceding the Survey (n=584)

Type of ORT	Number	Percent
Packet ORS	203	34.8
Home-made fluid	116	19.9
Lobon-gur	75	12.7
Rice-ORS	4	0.7
Sugar salt	37	6.2
All types combined*	268	46.0

* Total adds to more than 268 as some patients received more than one type of fluid.

Table 12 shows how long after the onset of diarrhoea ORT was given. More than half (51.9%) of the mothers reported that they gave ORT on the day of onset of diarrhoea. About 14% reported that ORT was given on the second day, and another 16.9% reported that ORT was given on the third day. Few mothers started ORT after the fifth day.

Table 12. Time of Initiation of ORT Following Onset of Diarrhoea (n=266)

Days After Onset	Number	Percent
0	138	51.9
1	37	13.9
2	45	16.9
3	21	7.9
4	10	3.8
5+	12	4.5
Unknown	3	1.1

Differentials in ORT Use

Table 13 shows the differentials in ORT use rates by children's age and sex, mothers' age and education, and type of housing. The ORT use rate was higher in children between 6 - 23 months of age, than in early infancy and in children older than 23 months. ORT use peaked at the age of 6 - 11 months (60.2%). ORT use rate was slightly but not significantly higher in male children than in female children. Mothers' age and education were not significantly associated with ORT use. Type of housing was significantly associated with ORT use; mothers from households with medium housing were less likely to use ORT than mothers from households with poorer or better housing.

The ORT use rate was disaggregated into packet ORS use rates and home-fluid use rates, and differentials were examined by children's age and sex, mothers' age and education, and type of housing. A more or less similar pattern emerged as with overall ORT use rates.

Table 13. Percentage of Children with Diarrhoea in Two Weeks Preceding the Survey Who Were Treated with ORT by Child's Age and Sex, Mothers' Age and Education, and Type of Housing.

Variables	Number of Children With Diarrhoea	Percentage of Children Who Received ORT ¹	Percentage of Children Who Used ORS Packets	Percentage of Children Who Received Home-fluids
Age in months *				
0-5	23	34.8	26.1	21.7
6-11	98	60.2	52.0	26.5
12-17	56	51.8	33.9	25.0
18-23	80	51.2	40.5	22.5
24-35	131	42.8	33.6	16.0
36+	195	38.5	26.2	16.4
Sex				
Male	319	48.6	36.7	20.7
Female	263	42.8	32.7	18.9
Mothers' age				
<20	53	52.8	35.8	20.8
20-34	470	44.7	34.5	19.6
35+	60	50.0	36.7	21.7
Mothers' education				
None	504	45.0	34.2	18.6
1-5	68	54.4	41.2	29.4
6+	11	36.4	27.3	18.2
Type of housing *				
Poor	115	53.0	40.0	19.1
Medium	270	40.4	30.0	21.1
Good	119	52.1	44.5	16.0

1 Children who received either packet ORS or home-made solution.

* For overall ORT use and for packet ORS use, the distribution was significantly different by a Chi-square test, $p < 0.05$

Feeding During Diarrhoea

Information on mothers' response to breastfeeding and other feedings during diarrhoea was collected from mothers whose child(ren) had diarrhoea during the two weeks preceding the survey. About 75% of the mothers reported that they continued breastfeeding as usual. About 15% of the mothers reported that they reduced the frequency of breastfeeding, 9.5% reported that they increased the frequency of breastfeeding, and 1% of mothers stopped breastfeeding during diarrhoea (Table 14):

Table 14. Mothers' Response to Breastfeeding and Other Feedings During Diarrhoea.

Type of Feeding	Number	Percent
Breastfeeding (n=316)		
Same	236	74.7
Reduced	47	14.9
Increased	30	9.5
Stopped	3	0.9
Other feeding (n=584)		
Same	350	63.3
Reduced	140	25.3
Increased	42	7.6
Stopped	21	3.8

About 63% of the mothers did not make any change in other feedings during diarrhoea, 25.3% reduced the number of feeds, 7.6% increased the number of feeds, and the remaining 3.8% stopped feeding during diarrhoea.

Use of Medication and Home Remedies

About half (46.3%) of the cases of diarrhoea received a medication; 20.0% received an antibiotic and another 20.0% received some form of pills or syrup. Only 3.2% of the cases received some form of home remedy (Table 15).

Table 15 Use of Medication and Home Remedies Other Than ORT for Diarrhoea

Medication/ Home Remedies	Number	Percent
Any medication*	271	46.3
Antibiotic	117	20.0
Other pill/syrup	117	20.0
Home remedies/ herbal	19	3.2
Injection	2	0.3
Others	49	8.4

* Total adds to more than 271 as some patients received more than one medication.

Care-seeking Patterns for Diarrhoea

About 44% of the cases sought care from a health care provider or in a health facility. Twenty percent of the cases sought care from a qualified physician. Only 3.6% of the mothers consulted an ICDDR,B urban volunteer and 4.4% consulted a NGO worker. Four percent of the cases consulted a homeopath, 3.1% visited a health centre, and 3.6% sought care from a pharmacy. Few cases sought care from a traditional healer, such as Kabiraj or Fakir (Table 16).

Table 16. Advice Sought for Treatment of Diarrhoea

Who was Consulted	Number	Percent
All sources combined*	257	43.9
Doctor	118	20.1
Other NGO	26	4.4
Homeopath	25	4.3
UVP volunteer	21	3.6
Pharmacy	21	3.6
Health centre	18	3.1
Hospital	14	2.4
Others	38	6.5
Fakir	12	2.0
Neighbour	9	1.5
Friends/relatives	7	1.2
Kabiraj	8	1.2

* Total adds to more than 257 because some patients consulted more than one source.

Conclusion

Even though the majority of the mothers (87.9%) claimed they knew the causes of diarrhoea and how to prevent diarrhoea, some of them offered responses that were incorrect. Among the correct responses, the most commonly cited ones were the importance of a clean environment and food hygiene. These are important, but may not be affordable for slum residents. Although hand washing is a proven intervention and may be amenable to change, mothers' knowledge of the importance of hand washing was extremely low. Similarly, mothers' knowledge of the role of contaminated water was also extremely low. Health education programs to improve mothers' knowledge of diarrhoea prevention may prove to be useful.

Two-week prevalence and point prevalence rates of diarrhoea were high; these rates were similar to rates observed earlier in rural and urban Bangladesh.⁴ The highest diarrhoeal prevalence was observed in infants of 6 - 11 months of age which coincides with the weaning process. The rates remained higher in the second and third year of life, thereafter the rate declined. We observed a significantly higher diarrhoea rate in children of younger mothers; this may be a function of their lack of experience in child-rearing. They should receive special attention from health education programs. Diarrhoea prevalence was significantly lower in children from households who used sanitary latrines. However, only about 25% of the households had access to sanitary latrines.

Mothers' general awareness about ORT was very high. A high percentage of mothers had correct knowledge of when to start ORT and how long ORT should be continued. However, only about 20% of the mothers had correct knowledge of the function of ORT. About 80% of the mothers erroneously thought that ORT stops diarrhoea. For successful implementation of ORT programs, it is critical to make the mothers understand that ORT does not stop diarrhoea, it simply replaces the water and electrolytes that are lost in diarrhoeal stools and, thus, should be given in ample quantities until diarrhoea stops.

There was a major gap between the percentage of mothers who knew about ORT and the percentage of mothers who actually used it. Although almost all the mothers knew about ORT, only about 46% of the children were treated with it. Qualitative studies should attempt to explain the large gap between ORT knowledge and ORT use.

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ICDDR,B Endowment Fund

Each year, ICDDR,B treats over 70,000 patients attending its two hospitals, one in urban Dhaka, the other in rural Matlab. Though they are planted in Bangladeshi soil, they grow because of the dedication of thousands of concerned people throughout the world. The patients are mostly children with diarrhoea and associated illnesses and the services are offered free to the poorer section of the community.

Since these services are entirely dependent on financial support from a number of donors, now we at the ICDDR,B are establishing an entirely new endeavour: an ENDOWMENT FUND. We feel that, given securely implanted roots, the future of the hospitals can confidently depend upon the harvest of fruit from perpetually bearing vines.

To generate enough income to cover most of the patient costs of the hospitals, the fund will need about five million US dollars. That's a lot of money, but look at it this way:

JUST \$150 IN THE FUND WILL COVER THE COST OF TREATMENT FOR ONE CHILD EVERY YEAR FOREVER!

We hope you will come forward with your contribution so that we can keep this effort growing forever or until the world is free of life-threatening diarrhoea. **IT IS NOT AN IMPOSSIBLE GOAL.**

For more information please call or write to:
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