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**18DTP** A DPHE Project working with Dutch Aid  
Drinking Water..Sanitation..Hygiene Education



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Project Office : 190 Arambagh, Motiheel C/A, Dhaka-1000 Bangladesh

Government of Bangladesh  
Ministry of Local Government,  
Rural Development and Co-operatives  
Department of Public Health Engineering

Government of the Netherlands  
Ministry of Foreign Affairs  
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**NETHERLANDS - BANGLADESH DEVELOPMENT COOPERATION PROGRAMME**  
**DPHE-DUTCH ASSISTED WATER SUPPLY, SANITATION AND DRAINAGE PROJECTS**

**18 DISTRICT TOWNS PROJECT**

**WOMEN IN DEVELOPMENT  
AND HYGIENE EDUCATION  
IMPACT STUDY**

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**PART 3.  
HYGIENE EDUCATION**

**DECEMBER 1998**

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**PROJECT OFFICE, 17/A MONIPURI PARA (SANGSHAD AVENUE), DHAKA**  
**LIBRARY IRC**  
PO Box 93190, 2509 AD THE HAGUE  
Tel: +31 70 30 689 80  
Fax: +31 70 35 899 64  
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This report was written by Suzanne Hanchett with assistance of 18DTP staff and consultants: Cindy Geers, Rafiqul Islam, Qumrun Nahar, and Jennie van de Weerd. Survey interviews and data entry were conducted by PRAXIS (Mohidul Hoque Khan, Director). Technical assistance for 18DTP is provided by a consortium of three Netherlands consulting firms, DHV, IWACO, and BKH, and three Bangladesh consulting firms, AQUA, BETS, and DEVCON.

## List of Abbreviations

18DTP	18 District Towns Project for Water Supply, Sanitation and Hygiene Education
BBS	Bangladesh Bureau of Statistics, Ministry of Planning
CSC	Community Sanitation Center
NGO / CSC	All-female team hired on contract to do hygiene education, sanitation promotion, and other duties
DANIDA	Danish International Development Agency
Division	A project-defined grouping of towns, not identical with national administrative division
DPHE	Department of Public Health Engineering, part of the Ministry of Local Government, Rural Development, and Cooperatives (counterpart agency for 18DTP)
HEP	Hygiene Education Program
HTW	Hand tubewell
<i>kacca</i>	Roughly, crudely built; rural style (contrasted with <i>pucca</i> ) [pronounced: <i>kuchha</i> ]
NGO	Non-Governmental Organization
ODS	Organizational Development Specialist; over-all supervisor of project division or pourashava-level project work
PD	Project Director, a DPHE official
PO	Project Office, under direction of Team Leader
<i>pucca</i>	Proper, well made; used to refer to concrete, urban-style buildings (contrasted with <i>kacca</i> ) [pronounced: <i>pukka</i> ]
PWSS	Pourashava Water Supply Section (managed by PWSS Superintendent)
SAE	Sub-assistant Engineer
SDE	Sub-divisional Engineer
SMC	School Managing Committee (made up of local people and government employees; every primary school has one)
TEO	Thana Educational Officer
UNICEF	United Nations Children's Fund
WATSAN Committees	A network of thana-level or union-level committees established by DPHE and UNICEF to manage local water and sanitation improvements
XEN	Executive Engineer

# **Women in Development and Hygiene Education Impact Study**

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## **Part 3.**

### **Hygiene Education**

#### **3.1 Overview of the Hygiene Education Program and NGO/CSC Teams**

##### **3.1.1 The Hygiene Education Program: A Brief Overview**

The initial goal of the Hygiene Education Program (HEP) has survived throughout the project: 'To increase hygiene awareness among the target group and improvement of their general health status'. The primary target group is poor women, especially those receiving project latrines, hand tubewells, and/or hand tubewell caretaker training. Another priority target group is school children. (1990 Final Report on Non-Technical Items)

An Interim Evaluation (1993) recommended a change in the HEP goal, to bring it into line with the over-all project goal of ensuring that 'the Pourashava will be able to run technically, financially and institutionally sustainable water supply, sanitation and drainage systems. Consequently', this evaluation report suggested, 'the Project's endeavors should aim at equipping the Pourashavas with the necessary knowledge, skills, materials etc. to do this. This also goes for Hygiene Education. hygiene education should be well integrated into these systems' (1993:4)

Subsequent efforts to make hygiene education a regular part of the Pourashava Health Section, however, proved fruitless. Limited numbers of PHS staff and other demands on their time prevented them from giving 18DTP hygiene education the attention it required. A 1995 evaluation report summed up this experience by saying that sustainable hygiene education at the pourashava level was not feasible under present circumstances:

*"Responsibilities for implementation of a sustainable hygiene education cannot be left completely to the pourashava level. It is increasingly understood that this requires more than assigning or shifting responsibilities. It needs a long term view and strategic support from the central level, which is beyond the reach of the current project "* (MConsult 1995 65)

Only 'the school hygiene program, if implemented properly, will endure beyond the project period', this evaluation concluded. (p.66)

##### **3.1.1.1 Phase III Program Reorganization**

Some important changes also have occurred in HEP administration. During the first two phases of the project hygiene education was coordinated by one staff member in the office of the Project Director (or PD, a DPHE official). For Phase III, however, it was decided that the Project Office (managed by the DHV Consultants Team Leader) would handle "software" -- i.e., hygiene education, community participation activities, and women in development (WID) This change was made upon recommendation from an evaluation mission.

Thus in February 1995 the Project Office hired a new staff member to reorganize the program, develop new educational materials, arrange training, and supervise the NGOs. In late 1995/early 1996, when formal responsibility for all 'software' activities was transferred from the DPHE/Project Director (PD) to the Project Office/Team Leader, a Community Participation Specialist was redeployed to the Project Office. These two staff members, the Hygiene Education Specialist and the Community Participation Specialist, have remained in their posts to the present date. Their functions overlap to some extent.

The failed attempts to engage Pourashava Health Section staff in the program led to another decision -- in Phase III, to give the hygiene education task to NGOs who could devote sufficient time to the effort. In some towns preference was given to those NGOs who had already helped with sanitation promotion. In other towns new groups were selected. The project recommended NGOs, and each pourashava chairman made the final decision to hire one<sup>1</sup>.

WSSC volunteers also have been expected to perform hygiene education functions. Like NGO workers, they have been trained in the basic HEP messages and communication strategies. But unlike them, they are not paid.

### 3.1.2 Hygiene Education Methods

Initial project guidelines identified seven basic messages to be delivered the household or neighborhood level through the hygiene education program (Non-Technical Annexes (1990), Vol. 2, p 8):

- 1 Use safe water for all purposes;
2. Maintain your water source and avoid possible contamination modes,
- 3 Use sanitary latrines;
4. Dispose of children's feces in a latrine immediately following defecation;
5. Make sure that drinking water remains safe all the way from collection to drinking;
- 6 Wash your hands to an adequate level of cleanliness before eating, preparing meals, and after any act related to own or children's defecation or any other act related to animal feces;
7. Dump your waste in a fixed hole.

In Phase III the basic list was simplified somewhat, with special emphasis placed on four of the messages:

- 1 Use tubewell water for all purposes;
- 2 Wash hands after using the latrine and before handling food,
- 3 All family members should use a hygienic latrine,
- 4 Put your garbage in a fixed place; keep the home compound clean.

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<sup>1</sup> In one or two places two NGOs were selected at first rather than just one

Instructional materials consist of: two flip charts each on safe water use and latrine use, a brochure on hand tubewell use and hygienic collection of water, and a brochure on latrine use and cleaning. Beneficiary households receive copies of the two brochures. NGO/CSC workers do demonstrations of proper latrine and tubewell use and maintenance in neighborhoods.

As previous evaluation reports have mentioned, the same basic messages are communicated to all beneficiaries rather than being adjusted for different target groups. An important exception is the primary school program, which has its own special curriculum and materials, developed in collaboration with the NGO Forum for Drinking Water Supply and Sanitation in 1995. This curriculum has been in use since 1996.

Four main communication approaches are used:

1. Individualized instruction in the homes of latrine recipients and trained hand tubewell caretakers;
2. Group meetings with neighbors of latrine recipients and caretakers;
3. Community meetings to solve local water use problems;
4. Mass campaigns, all associated with National Sanitation Week.

Despite some confusion about its over-all goal, 18DTP hygiene education has always had a sound basis in its firm connection to latrine and tubewell distribution. Sanitation promoters, at first, and hygiene educators, later on, have devoted substantial effort to helping (mostly poor) beneficiaries understand how to use their new facilities. Project hygiene education activities mostly have been done in accord with the principle that, 'The ideal timing of hygiene education is at the time of construction of facilities: the sinking of a new hand tubewell, the installation of a new house connection, new sanitary latrines... When the attention is there, advantage should be taken of the opportunity to provide information on health and hygiene'. (1993 evaluation, p.2)

### **3.1.2.1 Specific Groups Receiving Hygiene Education**

Different groups receive different types of technical assistance (including hygiene education) from the NGO/CSC teams. The most intensive services are provided to *latrine recipients*, who are visited several times before and after equipment is provided. *Hand tubewell caretakers* also get visited and informed about hygiene principles, as they are expected to set good examples for their neighbors, who also use the project-provided water source.

*Piped water customers* are informed about cleaning of water tanks, but they usually are not all provided with the basic hygiene instruction given to the former two groups. Special projects — on drainage and solid waste disposal -- have been conducted with piped supply customers in some towns. Most piped water customers are middle class or higher economic status and tend to be more well educated on average than other project beneficiaries.

### 3.1.3 The NGO/CSC Teams: Status, Constraints, and Skills

Since 1995-96 hygiene education has been more or less consistently provided by NGO/CSC teams, all females, each having an office in a Community Sanitation Center. The project actually has made use of local NGOs as sanitation promoters and/or hygiene educators since 1993, but their role was adjusted to its present form in 1995.

The relationship of NGOs to the project has turned out to be far more complicated than was originally anticipated. There have been many changes, contract cancellations, and so on. By the end of 1998 in eight towns teams originally hired through NGOs had been put under the direct authority of pourashava chairmen. Of the ten remaining local NGOs, at least two, set up by chairmen themselves, may or may not do other work in their Pourashavas.

**Table 3.1.1 Status of NGO/CSC Teams**

Town	Pourashava Involvement	Contract with Independent NGO	Name of NGO
Barguna		?	Bahumkhi Samaj Kalyan Sangstha (BSKS)*
Bhola		X	Jatio Bandhiyan Parishad (JBP)
Jhalokati	X		
Joypurhat	X		
Lalmourhat	X		
Magura	X		
Manikganj		X	V.O.N.
Meherpur	X		
Moulvibazar	?	?	Protissruti
Naogaon	X		
Narail		X	Esho Samaj Gori
Netrokona		X	Sublamblay Unnayan Samity (SUS)
Nilphamari		X	Jubo Academy
Panchagarh	X		
Satkhira		X	Jubo Academy
Shariatpur	X		
Sherpur		X	Samity Sangha
Thakurgaon	?	?	Rural Development Program (RDP)

\* *Current status information not available.*

*Chairman may have canceled contract with NGO and hired staff directly*

NGO-project relationships are set up more as consulting contracts than as public-private partnerships. The NGOs have no other role besides providing staff. Once hired, the staff work for the pourashava and the project. All program planning, training, reporting, and so on, is in the hands of project personnel. Either the Pourashava Chairman or the NGO director pays workers' salaries. The only benefit to the NGO in this arrangement is an overhead fee of Tk. 3000 maximum per month. Some NGO contracts have been canceled because of payment irregularities, i.e., taking a cut from workers' pay or not paying at all.

Being women, the NGO/CSC team members are widely considered to be more honest and hard-working than men would be in their positions. One pourashava chairman's graphic statement echoed several others' sentiments: 'If the NGO workers were men', he said, 'it would be hell. Stupid men wouldn't produce the good results these women do!'

As they have proven themselves to be generally reliable workers, the NGO/CSC teams in most towns have been handed more and more project responsibilities. While their basic job is doing hygiene education associated with latrine distribution in poor neighborhoods, they also help with hand tubewell caretaker training, piped water leakage reduction campaigns, miscellaneous local needs assessments or surveys, and the school hygiene education program, while also responding to sometimes harsh demands of locally influential people (or citizens supported by them).

Expansion of their role has caused management confusion. Between 1995 and 1997 the Project Office Hygiene Education Specialist (with support from ODS field managers) apparently was more clearly in charge of the NGO/CSC's field activities than he is in 1998. As each new task is assigned to the NGO/CSC a new Project Office staff member comes out to supervise. Multiple tasks are not always coordinated. The teams work for too many bosses, who may countermand each other's instructions. This situation has caused tension in the central office and surely has interfered with the teams' work.

Pourashava chairmen, and even commissioners, as well feel entitled to supervise the NGO/CSC teams. Some of these officials are very supportive and helpful to them. But there is always the possibility of 'interference' such as: dismissing some team members and replacing them with relatives or supporters; demanding that latrines or tubewells be distributed to political supporters instead of project-selected beneficiaries; forbidding the teams to work according to project guidelines (especially in distribution of free or subsidized equipment). There even are occasional rumors of physical abuse or sexually harassment.

As the project end approached and workloads decreased, the Team Leader in 1998 instructed staff to cut 33 CSC positions, including all night guards and some CSC/NGO jobs. Most pourashava chairmen or other officials are accepting the project's decision, but in five cases they are not. One chairman (Jhalokati) is backing up a team member who filed an employment discrimination court case against the project and the Hygiene Education Specialist personally. Officials in two other towns (Lalmonirhat and Shariatpur) have threatened to sue. And one or two (Narail, Jhalokati) have reversed the PO's decision to dismiss specific individuals. One other chairman has forbade the Hygiene Education Specialist from going to the CSC and personally threatened him.

These actions prove (if any proof is needed) that the road to 'sustainability', or even post-project life, in the 18 towns has many rough spots. Many chairmen appear to be confused about their rights and responsibilities. They are more ready to protest or fight project decisions than to make the inevitable but financially difficult decision to sustain project services with pourashava resources.

Confusing demands and political interference can be resisted by strong teams. Some of the best ones are known to do good work despite their adverse circumstances. Others, however, are too weak to resist negative influences. Or they may lack motivation or skills to do a good job even in a supportive environment.

### 3.1.3.1 Comparison of NGO/CSC Teams

In order to evaluate the impact of the hygiene education program, it is important to understand each team's skills and level of effort. The consultant did field interviews of eight teams and observed supervisors during gender training. But the greater familiarity of Project Office staff is a stronger basis for comparing the 18 teams.

Table 3.1.2 gives a general ranking of the quality of each town's hygiene education program, according to three Project Office staff members' over-all assessments of NGO/CSC team skills and various others' comments on levels of support or interference from pourashava chairmen or commissioners. The list is not based on any precise measurements and should be understood as an approximation only. It is presented here as background information of possible use in understanding survey findings presented in the next section.

A more objective assessment of the teams' hygiene education skills was made during October-November 1998 "NGO Refresher Training" courses for all staff. The training started with a quiz on (a) the health risks and benefits associated with latrine use, water use, solid waste disposal, and personal cleanliness; and (b) identification and causes of specific water/sanitation-related diseases. Teams' average scores were not high. Ranking of all members' marks, team-by-team is indicated in Table 3.1.3.

**Table 3.1.2 Project Office Assessments: Ranking of NGO/CSC Teams**

Town CSC/NGO Team	Overall Rank	Quality of Working Environment
Jhalokati	High	Strong group; Extremely difficult working situation*
Narail	High	Neutral/Difficult
Naogaon	High	Difficult
Bhola	High	Supportive
Magura	High	Supportive
Satkhira	High	Supportive
Netrokona	High	Neutral
Nilphamari	Medium	Supportive
Joypurhat	Medium	Supportive
Manikganj	Medium	Neutral
Moulvibazar	Medium	Neutral
Lalmonirhat	Medium	Neutral
Thakurgaon	Medium	Neutral/Difficult
Sherpur	Medium	Difficult
Barguna	Low	Weak group; Neutral environment
Panchagarh	Low	Weak group; Supportive environment
Shariatpur	Low	Weak group; Difficult environment
Meherpur	Low	Weak group; Difficult environment

\* In Jhalokati the chairman's seat is contested and held by an acting chairman until recently



**Table 3.1.3 Ranking of NGO/CSC Teams on Hygiene Education Quiz, October - November 1998 \***

NGO/CSC Team	Division	Score		Rank
		Range Team Members	Average Team	
Magura	Magura	45 - 84%	60%	1
Satkhira	Magura	13 - 27%	52%	2
Jhalokati	Jhalokati	23 - 69%	48%	3
Bhola	Jhalokati	26 - 55%	45%	4
Moulvibazar	Manikganj	24 - 60%	43%	5
Narail	Magura	26 - 74%	41%	6
Meherpur	Magura	19 - 81%	40%	7
Barguna	Jhalokati	16 - 56%	39%	8
Shariatpur	Jhalokati	18 - 52%	37%	9
Manikganj	Manikganj	24 - 46%	37%	9
Nilphamari	Nilphamari	23 - 42%	34%	10
Lalmonirhat	Nilphamari	16 - 50%	34%	10
Naogaon	Nilphamari	19 - 45%	30%	11
Sherpur	Manikganj	12 - 52%	28%	12
Netrokona	Manikganj	12 - 42%	27%	13
Thakurgaon	Nilphamari	16 - 48%	26%	14
Joypurhat	Nilphamari	10 - 47%	25%	15
Panchagarh	Nilphamari	10 - 39%	23%	16

\* Source 18DTP Training NGO/CSC Supervisors, Project Office

Along with team members' skills, the amount of contact with the public will influence program impact. The level of hygiene education program effort is monitored and reported on quarterly, as numbers of visits to households or other educational activities, such as group/community meetings. Table 3.1.4 compares information from the April-June 1998 quarterly report with survey information on the mean number of days since the last visit by a CSC/NGO team member. (This report reflects activity shortly before and during the time of the household survey).

The size of a town is another factor that may influence NGO/CSC teams' effectiveness. Naogaon, for example, is a very large town. The team, which is not large enough to cover all beneficiary households, apparently has decided to work intensively with a smaller number rather than superficially with all.

In five towns — namely, Jhalokati and Bhola (at the recently-visited end) and Panchagarh, Naogaon, and Nilphamari (at the lower contact end) — questionnaire responses agree more or less with official contact reports of high volume household visits. Some puzzling discrepancies exist. For example, Lalmonirhat has low official numbers of visits per household, but household respondents reported being recently visited. In Satkhira and Magura household responses did not reflect the high volume of beneficiary contact indicated in official monitoring reports.

**Table 3.1.4 Level of Recent Beneficiary Contact, by Town:  
Hygiene Education Activities, January - June 1998,  
Quarterly Reports Compared to Questionnaire Responses**

Town	Latrine Beneficiaries*	Questionnaire Responses	April - June 1998		
	Target Phase III	Average No. of Days Since Last Visit	Total Visits*	Average Visits per Household	Group and Community Meetings*
Barguna	1284	10.4	862	0.67	28
Bhola	2013	16.1	2357	1.17	34
Jhalokati	1967	13.1	3845	1.95	52
Joypurhat	2720	25.2	1500	0.55	130
Lalmonirhat	3168	12.7	581	0.18	61
Magura	1354	36.6	2168	1.60	59
Manikganj	2518	21.9	1509	0.60	18
Meherpur	2000	20.2	415	0.21	45
Moulvibazar	1990	22.0	843	0.42	26
Netrokona	2167	24.1	1246	0.57	17
Naogaon	6146	55.3	0	0.00	92
Narail	1596	28.4	658	0.41	7
Nilphamari	2806	60.5	90	0.03	10
Panchagarh	1871	46.5	195	0.10	26
Satkhira	4177	32.5	4934	1.18	59
Shariatpur	1803	29.0	1142	0.63	33
Sherpur	3375	26.3	1930	0.57	38
Thakurgaon	2146	32.6	675	0.31	31

\* Sources 9<sup>th</sup> and 10<sup>th</sup> Quarterly Progress Reports 18DTP-III (Dhaka)

Further comments by project beneficiaries concerning the hygiene education program are in Section 3.2.2.

Town populations, ranked according to 1996 estimated population size within each division<sup>2</sup>, are indicated in Table 3.1.5.

**Table 3.1.5 1996 Population Figures of Project Towns**

<b>Division</b>	<b>Town</b>	<b>Population</b>
Jhalokati	Barguna	25,890
	Bhola	40,680
	Jhalokati	39,650
	Shariatpur	36,370
Manikganj	Manikganj	60,760
	Moulvibazar	40,120
	Netrokona	46,110
	Sherpur	68,040
Magura	Magura	43,370
	Meherpur	27,410
	Narail	32,180
	Satkhira	84,210
Nilphamari	Joypurhat	45,800
	Lalmonirhat	68,340
	Naogaon	123,900
	Nilphamari	40,070
	Panchagarh	37,710
	Thakurgaon	43,270

### 3.1.3.2 Conclusion

In brief, four factors appear to determine an NGO/CSC team's effectiveness. Of greatest importance, to be sure, is the skill and motivation of team members themselves. Second is the level of support or "interference" they get from locally powerful people. Third is the volume of beneficiary contact, largely determined in this project by the schedule of latrine distribution. Fourth is the size of the town and whether or not the staffing is adequate to provide hygiene education for all beneficiaries.

The quality of the educational approach is all-important. In a project of this scale and complexity, the approach seems appropriately simple and practical. The extent to which project messages have reached beneficiary populations is reviewed below, in Section 3.2.

<sup>2</sup> Source of information: 1995 Project Document, p 8

## 3.2 Program Impact Indicators: Household Survey Findings

A quasi-experimental method has been used to assess the impact of the hygiene education program on knowledge and practice. Households receiving project hygiene education have been compared to a "control" group of households who did not receive project hygiene education<sup>3</sup>.

Detailed questionnaire interviews were done in a total of 2851 households in all 18 towns. (The questionnaire is in Annex 3.2.) A stratified sampling method was used. Sample households were randomly selected from five lists: (1) project latrine recipients, (2) hand tubewell recipients or caretakers, (3) households whose tubewell platforms were replaced through the project, (4) piped water supply customers, and (5) households identified (in a previous project survey) as having no latrines. Most households in the final group, it was assumed, would serve as controls. Twenty percent (574) of the 2851 households selected by this method had received no facilities through the project.

A review of the hygiene education history of sample households produced a re-classification into four new groups, based on hygiene education levels:

1. ***"Intensive" project hygiene education***

Respondents reporting that they had been visited and instructed on hygiene matters by NGO/CSC team members; or those in possession of project manuals

2. ***"Some" project hygiene education***

Other respondents, not meeting criteria of (1) but otherwise indicating familiarity with project people or materials.

3. ***"Other" hygiene education***

Respondents not in (1) or (2) but mentioning discussion of health matters with other professionals or groups (such as an NGO).

4. ***"None"***

All respondents not meeting the above criteria were considered to have had no formal hygiene education.

As Table 3.2.1 shows, 93 percent of those having received latrines (with or without other facilities) also received "intensive" hygiene education services, as per project guidelines. Some of their non-beneficiary neighbors benefited from this service or others. But 51% of the non-beneficiary group were found to have received no hygiene education from any source.

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<sup>3</sup> This method is used in lieu of a strong baseline study against which to measure project impact

**Table 3.2.1 Sample Groups, by Hygiene Education Level (Percentages)**

Sample Group: Hygiene Education Level	Latrine Beneficiary * n=1549	Other Beneficiary n=728	Non- Beneficiary n=574	Total n=2851
Project: Intensive	93.4	62.9	5.9	68.0
Project: Some	4.5	18.0	32.1	13.5
Other Education		0.1	11.0	2.2
None	2.2	19.0	51.0	16.3

\* With or without other facilities, such as a hand tubewell

### 3.2.1 Demographic Characteristics of Sample Groups

Table 3.2.2 describes the economic status of sample households<sup>4</sup>. As might be expected from the project's emphasis on the "poorest of the poor," latrine recipients were found to be poorer on average (59% low income or very poor<sup>5</sup>) than households who had received only tubewells or piped water supply customers. Non-beneficiaries (70% low income or very poor) were the poorest of all. The middle/medium income group's reported monthly taka income is within the national Tk. 3000-4999 median. (BBS 1995.69)

**Table 3.2.2 Household Economic Status:  
Reported Monthly Incomes and Percentages by Sample Group**

Economic Status	Very Poor	Low Income	Medium Income	High Income	Total
Median Reported Household Income (Tk./Month)	1,500	2,000	4,000	10,000+	
<b>Sample Group:</b>					
Latrine Beneficiary	6.8	52.3	40.0	0.9	100
Other Beneficiary	1.8	14.8	54.3	29.1	100
Non-Beneficiary	12.7	57.1	30.0	0.2	100
<b>All (n)</b>	<b>6.7 (192)</b>	<b>43.7 (1,246)</b>	<b>41.6 (1,186)</b>	<b>8.0 (227)</b>	<b>100 (2,851)</b>

Being largely poor, the households in this study depend mostly on daily-paid laboring employment or petty business activity for their survival. Most women, regardless of economic status, do not work outside the home. Table 3.2.3 describes occupations of all adults in the study sample.

<sup>4</sup> Economic status was determined by a weighted score of seven different factors (house construction type, number of rooms in house, have servants/not, own more than two suits of clothes, whether had to borrow money for food/not, amount spent on most recent religious festival, and household monthly taka income). Such an estimate is considered more reliable than one that depends entirely on truthful answers to questions about income

<sup>5</sup> If the project had distributed latrines entirely according to guidelines, of course, 100% of latrine beneficiaries would have been found to be poor.

**Table 3.2.3 Occupations of All Sample Household Members Age 15+ (Percentages)**

Occupation	Latrine		Latrine and Other		HTW		Service Connection		Non-Beneficiary		Total		
	M	F	M	F	M	F	M	F	M	F	M	F	T
Day-labor	31.46	2.26	21.13	3.68	23.75	2.56	23.67	1.80	24.93	1.19	27.17	2.12	15.08
Business	28.79	1.08	26.76	1.10	30.00	0.64	35.51	1.73	31.67	0.60	31.3	1.26	16.78
Agriculture	13.08	0.34	10.42	0.37	15.00	0.64	9.74	0.27	16.42	0.00	12.01	0.30	6.36
Private Serv	8.25	2.16	6.48	2.57	8.13	1.92	10.85	2.47	6.45	2.08	8.89	2.28	5.70
Government	5.49	1.47	22.82	1.84	6.88	0.64	6.54	1.67	6.45	1.19	7.31	1.51	4.51
HH Work	12.94	92.69	12.39	90.44	16.25	93.59	13.69	92.07	14.08	94.94	13.36	92.54	51.57
<b>Total Count</b>	<b>2,133</b>	<b>2,037</b>	<b>355</b>	<b>272</b>	<b>160</b>	<b>156</b>	<b>1,622</b>	<b>1,500</b>	<b>341</b>	<b>336</b>	<b>4611</b>	<b>4,301</b>	<b>8,912</b>
<b>Percent</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Tables describing demographic characteristics of sample groups town-by-town can be found in Annex 3.2.

### 3.2.1.1 Hygiene Education Recipients Compared to Control Group

Table 3.2.4 compares demographic characteristics of respondents in the different sample groups. The groups with "intensive" and "no" hygiene education are more similar to each other than to the other two groups, in terms of economic and educational status and religion. The following analysis, therefore, will emphasize findings on these two more comparable sample groups. Comparing those with and without project hygiene education also, of course, offers the best chance of assessing program impact.

Whenever possible tests of statistical significance are done for findings. These tests are of various types, mostly chi-square and Pearson's correlation, or one-way ANOVA. The SPSS statistical program has been used to identify significant findings. Any with  $p < .05$  have been used in the analysis<sup>6</sup>.

### 3.2.1.2 Limitations of the Study Method

#### *Insufficient baseline data*

The quasi-experimental method is needed in this case because sampling and scope of baseline studies do not permit a comparison to pre-project conditions.

#### *Control group affected by the project*

As residents of project towns, people without hygiene education are not as free of project influence as ideal "control" groups should be.

#### *Interview teams were all male*

While most respondents were female, all survey interviewers were male. This may have affected the quality of information on some sensitive hygiene topics.

<sup>6</sup> The p values indicate probability of a difference occurring by chance. Normal tests require  $p < .01$  or  $p < .05$  for a finding of significance.

***Omission of information on some beneficiaries***

The analysis presented below has less information on the point of view of piped supply customers, and those with project tubewells only, than on latrine beneficiaries, who are almost all included. As Table 3.2.1 shows, 18 percent of these “other” beneficiaries are excluded because they are not in the “intensive” hygiene education group, nor are they in the “no” hygiene education group.

***Dependence on questionnaire survey data***

If time had permitted, it would have been useful to do more direct, intensive study of aspects of water and sanitation knowledge and behavior reviewed below. For example, one-day observations of specific households would have shed light on how and why people behave. In the interest of studying habits of a truly representative sample of beneficiaries in all 18 towns, more qualitative approaches were bypassed. As a result some findings are difficult to explain.

**Table 3.2.4 Demographic Profiles of Hygiene Education Comparison Groups**

<b>Hygiene Education Level</b>	<b>Project HE Intensive</b>	<b>Project HE Some</b>	<b>Other HE</b>	<b>No HE</b>
<b><i>Demographic Characteristic</i></b>				
Population	10,719	1,942	342	2,361
Households	1,938	384	64	464
Mean HH Size	5.5	5.1	5.3	5.1
<b><i>Economic Status</i></b>				
Very Poor	5.9%	6.0%	12.5%	9.9%
Low Income	44.0%	39.1%	64.1%	43.7%
Medium Income	44.0%	40.4%	24.4%	35.1%
High Income	6.1%	14.6%	--	11.4%
<b><i>Religion</i></b>				
Muslim	87.8%	83.6%	85.9%	88.6%
Hindu	11.9%	15.4%	14.1%	11.2%
Other	0.4%	1.0%	--	0.2%
<b><i>Respondent's Sex</i></b>				
Male	11.5%	19.5%	6.3%	21.5%
Female	88.5%	80.5%	93.8%	78.5%
<b><i>Mean School Years</i></b>				
Male	7	10	0 (n=3)	9
Female	4	4	2	4

### 3.2.2 People's Perceptions of Project Hygiene Education Services

Respondents considered to have had the project's full (intensive) hygiene education treatment were asked how many times they had been visited by the CSC/NGO team members, how recently, and whether they had found the information useful or not. Responses varied from one town to another.

Latrine recipients had been visited an average of ten times by CSC/NGO team members, who are locally referred to as the 'latrine sisters' (*paikhanar apa*) or 'pourashava women'. The most recently visited households, on average, were those in Jhalokati Town, Bhola, Barguna, and Lalmonirhat.

As a check on their familiarity with visiting program personnel, respondents were asked to mention a CSC/NGO worker's name. The answers differed from town to town. A correct identification level of around 50% seems to indicate either (a) active current/recent contact with beneficiaries, or (b) that meaningful communication has occurred. (Table 3.2.5 presents findings.)

**Table 3.2.5 Respondents' Familiarity with CSC/NGO Workers' Names (Percentages)**

Division/Town	Respondents Who Said CSC/NGO Worker Visited the House		
	Mentioned Correct Name	Mentioned Incorrect Name	Could Not Identify/No Info.
<b>Jhalokati Division</b>			
Jhalokati Town	49	50	1
Bhola	46	53	1
Barguna	67	33	
Shariatpur	30	70	
<b>Magura Division</b>			
Magura Town	22	77	1
Narail	24	75	
Satkhira	29	70	1
Meherpur	56	43	1
<b>Manikganj Division</b>			
Manikganj Town	22	76	3
Moulvibazar	11	34	55
Sherpur	27	72	1
Netrokona	23	77	
<b>Nilphamari Division</b>			
Nilphamari Town	25	75	
Panchagarh	24	74	1
Thakurgaon	37	63	
Joypurhat	17	83	
Naogaon	6	93	2
Lalmonirhat	51	46	5



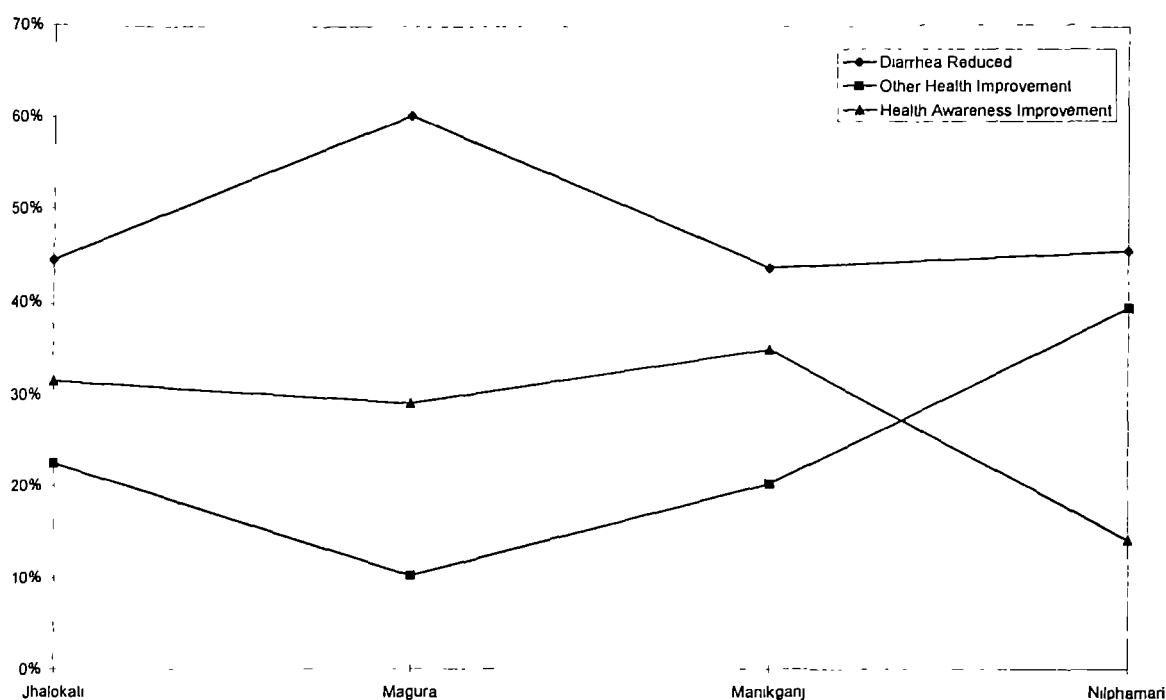
An indicator of respondents' appreciation of the NGO/CSC teams is how they rank them as health information sources. Project hygiene educators ranked fifth: above the TV and after the radio, on frequently mentioned "most trusted health information sources." These responses were consistent from town to town. The five most mentioned sources were:

1. Family Planning Field Workers (39% mentioned)
2. Immunization Health Workers (36% mentioned)
3. Radio (12% mentioned)
4. CSC/NGO Project Women (8% mentioned)
5. TV (3% mentioned)

Asked whether they had learned anything new and useful from the project team, a majority (55%) said they had not. One exception was Lalmonirhat, where 81% said they had learned new and useful things. Similarly, 70% of Nilphamari and 56% of Panchagarh respondents, though less recently visited (average 80 and 70 days ago, respectively), said they had learned useful things from the project's hygiene educators.

Some very important comments were made in response to further probing. When asked what they felt they had learned, more than half said that they had less diarrhea because of the project. Comments are summarized by division in Figure 3.2.1.

**Figure 3.2.1 Perceived Value of Hygiene Education, Divisional Comparison**



Responses of 478 beneficiaries, all hygiene education recipients  
 The most frequently mentioned benefits of the program were diarrhea reduction, other health improvement, and health awareness.

## 3.2.3 Domestic Water Use

### 3.2.3.1 Safe / Unsafe Water Uses

The survey investigated water sources used for eight household purposes: drinking, cooking, bathing, utensil washing, washing vegetables (possibly eaten raw), soaking *pantha bhat* (a breakfast food, cooked rice from the evening meal soaked with water and eaten without re-heating), clothes washing, and priming the hand tubewell pump (a possible source of tubewell water contamination).

Alternate water sources are used for different purposes in the 18 towns, as elsewhere in Bangladesh. Seven commonly used sources are: hand tubewell (shallow or deep), piped supply in house, street hydrant (piped supply), mud or concrete well, pond, and canal or river. Based on the relative possibility of fecal contamination, tubewells, piped supply, and wells are classified as "safe" water sources; and pond, canal, river are classified as "unsafe" sources<sup>7</sup>.

The Bangladesh arsenic problem has caused the project recently to modify the message, 'Use tubewell water for all purposes', in towns where arsenic has been found in tubewell water<sup>8</sup>. During the last months of the project a significant effort is under way to educate the public about arsenic hazards. The present study, however, has been done to evaluate the effectiveness of work done under the earlier assumption, that tubewell water was safe.

Table 3 2.6 presents findings on all sources used by sample households for five domestic purposes. Drinking "safe" water is a virtually universal practice. Soaking *pantha bhat*, often done with pond water elsewhere in Bangladesh, also was found to be generally done with safe water in this sample. For other uses there is no significant difference between the practices of households with or without project hygiene education when data are grouped together in this way.

In town-wise comparisons, however, differences do appear. The greatest differences between project hygiene education and control groups are found in three Jhalokati Division towns, Jhalokati Town, Bhola, and Barguna. Households of these towns tend to use more "unsafe" water than do households of other 18DTP towns. But project hygiene education recipients are significantly better than controls, which they mostly are not elsewhere. Figure 3.2.2 demonstrates this point for utensil washing. The same pattern is characteristic of other domestic water uses.

A possible explanation for the difference between Jhalokati Division towns and others is the greater use of deep tubewells in those towns. Being more expensive to install than shallow tubewells, deep tubewells are fewer in number and therefore less easily available. Another factor is the greater availability of surface water. Jhalokati towns are in the southern delta area, crossed by numerous small water channels and dotted with ponds.

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<sup>7</sup> There is disagreement about whether mud wells actually are safe, but this study classifies them as safe because of their supposed isolation from sources of fecal contamination.

<sup>8</sup> The project towns most affected by arsenic in tubewell water are. Magura, Manikganj, Meherpur, Narail, Satkhira, and Sherpur

**Table 3.2.6 Safe / Unsafe Water Uses, by Hygiene Education Level**

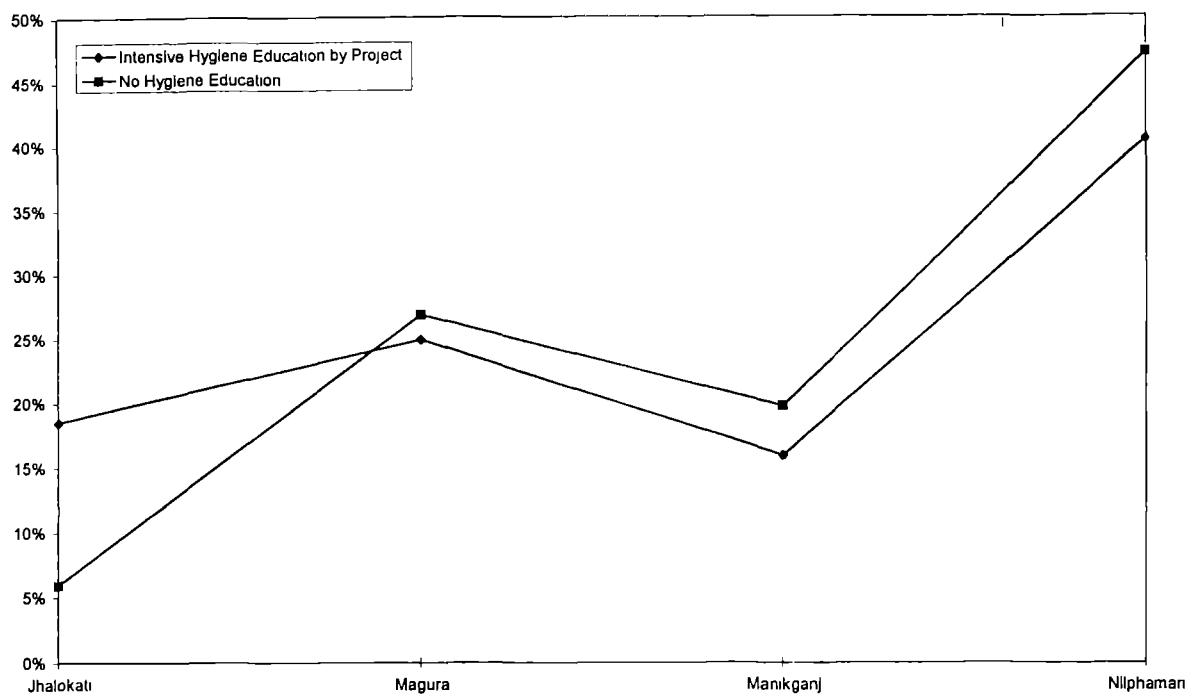
Use of Water	Hygiene Education Level			
	Intensive Project HE		None	
	Households	Percentage	Households	Percentage
<b><i>Drinking</i></b>				
Safe	1875	100%	457	100%
Unsafe	0	0%	0	0%
<b><i>Utensil Washing</i></b>				
Safe	1639	87%	381	84%
Unsafe	236	13%	75	16%
Total	1875	100%	456	100%
<b><i>Vegetable Washing</i></b>				
Safe	1701	91%	396	88%
Unsafe	167	9%	56	12%
Total	1868	100%	452	100%
<b><i>Soaking pantha bhat</i></b>				
Safe	1836	98%	434	97%
Unsafe	32	2%	12	3%
Total	1868	100%	446	100%
<b><i>Priming HTW Pump</i></b>				
Safe	1182	89%	298	92%
Unsafe	151	11%	26	8%
Total	1333	100%	324	100%

Comparing hygiene education recipients and controls in other towns (besides Jhalokati, Bhola and Barguna), statistically significant differences in safe water use were found sporadically. In Shariatpur households, hygiene education recipients made significantly more use of safe water for laundry and vegetable washing than did controls. In Manikganj the same was true for laundry and vegetable washing. In Moulvibazar more hygiene education recipients use safe water for utensil washing than controls; and in Sherpur more use safe water for laundry. In Netrokona hygiene education recipients made significantly less use of safe water for hand tubewell priming than did controls. No simple explanation comes to mind for these patterns. It seems unlikely that such piecemeal results would indicate project impact.

Certain regions seem to have better over-all water habits than others. In Nilphamari Division, for example, both project and control households use more "safe" water sources than in other divisions. Jhalokati Division has the greatest tendency to use "unsafe" water, making project influence especially remarkable.

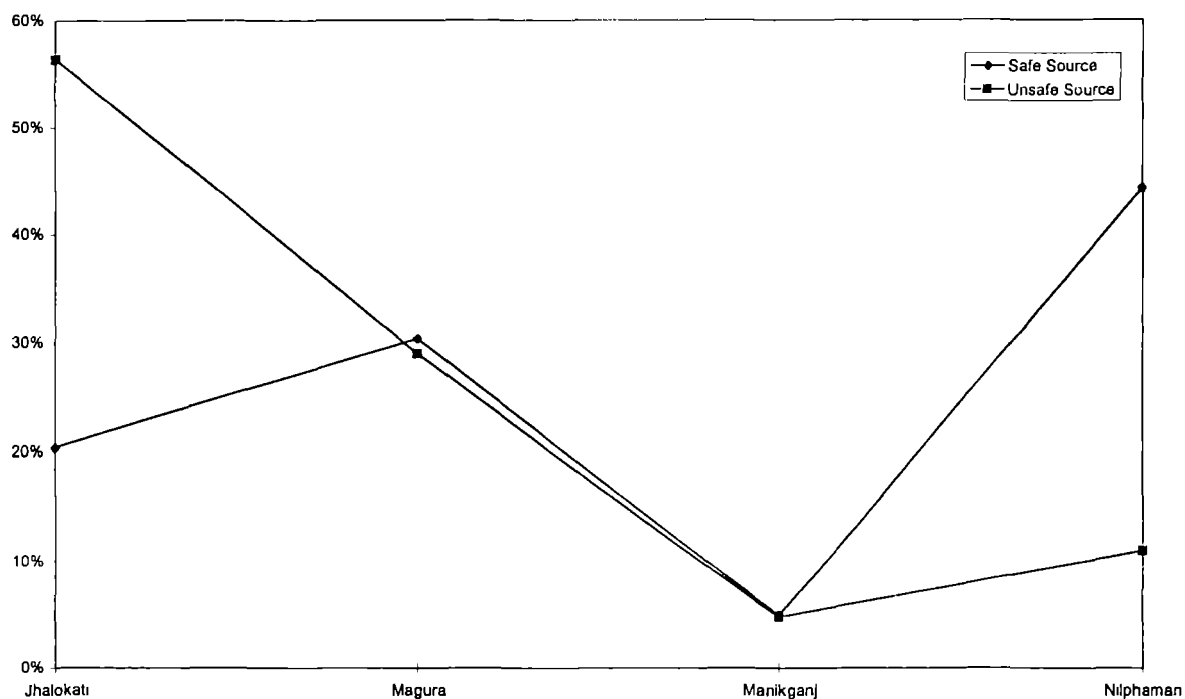
Hand tubewell pump priming, a potential source of domestic water contamination, should be done with safe water. But the hygiene education program only began to address the practice recently, when NGO/CSC teams got involved in hand tubewell caretaker training. So it has not been an emphasis of the hygiene education program. Pump priming is not done with tara pumps. So the question of water used for priming is not relevant to project-provided equipment use in towns, such as Magura, where tara pumps are the type provided. It still is an issue, however, of concern to the majority of households, who use other types of pumps.

**Figure 3.2.2 Safe Water Used for Utensil Washing, Divisional Comparison Between Hygiene Education Recipients and Control Group**



Hygiene education recipients make less use of safe water for utensil washing than do controls in all divisions except Jhalokati

**Figure 3.2.3 Water Used for Hand Tubewell Priming, Divisional Comparison, Hygiene Education Recipients Only**



In Jhalokati Division project-educated households, there is more use of unsafe water to prime tubewell pump, in Nilphamari Division, less use

As Figure 3.2.3 shows, Nilphamari Division is the only project area where hygiene education recipients make more use of safe water than unsafe for this purpose. (But there is no significant difference between Nilphamari Division hygiene education recipients and controls on this point.) Although Jhalokati project educated households make more use of unsafe water for pump priming than others, non-educated households' practices are even worse (significantly so).

### **3.2.3.2 Observed Cleanliness of Tubewell Platform**

Improvement and maintenance of the tubewell platform is an important project activity. Platforms themselves have been upgraded, and hygiene educators try to motivate all beneficiaries to keep them clean. Hand tubewell caretakers are expected to set an example for others

Survey interviewers observed the condition and cleanliness of the platforms of households with tubewells. There were interesting differences from one project area to another. In Magura and Manikganj towns hygiene recipients' platforms were much cleaner than controls'. This was also true in three towns of Nilphamari Division -- Nilphamari Town, Panchagarh, and Thakurgaon. But in Naogaon (Nilphamari Division) hygiene education recipients' tubewell platforms were dirtier than controls' to a statistically significant extent. In other areas there were either too few tubewells to compare (as in Jhalokati Division) or no significant differences between the two comparison groups.

### **3.2.3.3 Management of Drinking Water**

It is generally assumed that hygiene education recipients will collect drinking water from a safe source in a clean vessel and then store it in a covered container in an elevated place in the home. A basic message of the program is to keep drinking water clean from the source to the mouth. Three indicators are used to assess program impact. (1) explanation of a project brochure picture demonstrating how to clean the water collection vessel; (2) location of drinking water container on floor or in an elevated place; and (3) whether the drinking water container is covered or not. (The first test result may be distorted by the fact that some could read the brochure and give a correct meaning without previously having received hygiene education; but education levels are low enough in the two study groups to make the test still worthwhile.)

#### ***Brochure Explanation***

Generally similar percentages of hygiene education recipients (78%) and controls (73%) gave correct or partially correct explanations of the brochure. But in two towns -- Meherpur (Magura Division) and Netrokona (Manikganj Division) -- hygiene education recipients gave significantly more accurate explanations than controls.

#### ***Location of Drinking Water Container in the Home***

Slightly more than half of all hygiene education recipients keep drinking water containers on the floor instead of an elevated place. But even more of those without hygiene education keep them on the floor. (Table 3.2.7) In three project towns hygiene education recipients were

significantly more likely to keep their containers in an elevated place than were controls: Moulvibazar and Netrokona (Manikganj Division), and Lalmonirhat (Nilphamari Division). Lalmonirhat project-educated households, with 57% of containers on the floor, were not up to the project standard; but they were substantially better than controls (82% of containers on the floor).

**Table 3.2.7 Location of Drinking Water Container, by Hygiene Education Level (n = 2,074 households)**

Respondents	Drinking Water Container Location	
	On Floor	Elevated
Intensive Project HE	50.7%	49.3%
None	59.5%	40.5%
All	52.4%	47.6%

#### *Drinking Water Container Is Covered or Not*

Covering the drinking water container is a widespread practice. So both hygiene education recipients and controls alike were found to do so 80%-95% of the time, especially in Jhalokati, Magura, and Manikganj divisions, with no significant differences over-all between the two comparison groups.

In Nilphamari Division households covering is generally less frequent (56%) than in other divisions. But important differences were found between towns. In Thakurgaon, Joypurhat, and Lalmonirhat project-educated households were more likely to cover their drinking water containers. But in Nilphamari, Panchagarh, and Naogaon they were *less* likely to do so. (Differences were statistically significant in Panchagarh and Naogaon.)

The only other statistically significant finding on covering the household water container was in Moulvibazar, where hygiene education recipients performed better than controls (91% vs. 84% covered).

### **3.2.3.4 Discussion: Domestic Water Use / Management**

The hygiene education program does not seem to have altered people's water use habits to any significant extent. Despite the consistent project message to 'use safe water for all purposes', hygiene education recipients' water use habits are not significantly different from others' except in three towns of Jhalokati Division (Jhalokati Town, Barguna, and Bhola) and in limited ways for other specific towns. The Jhalokati case shows important differences between hygiene education recipients and controls, even though there is generally less use of safe water in this division than in others.

Hand tubewell pump-priming is a practice of special concern. Project-educated households make more use of unsafe water for this purpose than do controls. In Netrokona (Manikganj Division) poorer performance in project-educated households was statistically significant.

Positive findings indicated limited project-related improvements in water use in: Shariatpur (Jhalokati Division), Manikganj, Moulvibazar, and Sherpur (all three in Manikganj Division).

Management of household drinking water was found to be only slightly better in project-educated households than in control households. Considering that more than half of project-educated households keep their drinking water containers on the floor, project messages cannot be said to have had a strong effect. In most towns there is little difference between project-educated households and controls in whether drinking water containers are covered or not. A positive finding, that they are more likely to be covered, was made in only four towns: Moulvibazar, Thakurgaon, Joypurhat, and Lalmonirhat. In three others, however, there was a negative finding, that they are *less* likely to be covered: Nilphamari, Panchagarh, and Naogaon.

### **3.2.4 Sanitation**

Findings on sanitation practice reveal a stronger program effect, especially on latrine maintenance and use, a major project focus.

#### **3.2.4.1 Latrine Maintenance and Use**

Hygiene education program impact on latrine maintenance and use was measured by three indicators:

**1. *Observed cleanliness "condition" of the household latrine***

Measured according to (a) whether or not the pit was filled up, whether the pan was cleaned, muddy, or had visible feces or feces smear; (b) whether feces were visible on the ground near the latrine, and (c) whether human feces (normally infants' feces, if any) were visible in the courtyard.

**2. *Evidence of hygienic latrine use "behavior"***

Indicated by the observed presence of (a) sandals, (b) water pot, and/or (c) soap or ash near the household latrine

**3. *Age at which small children begin to use the latrine***

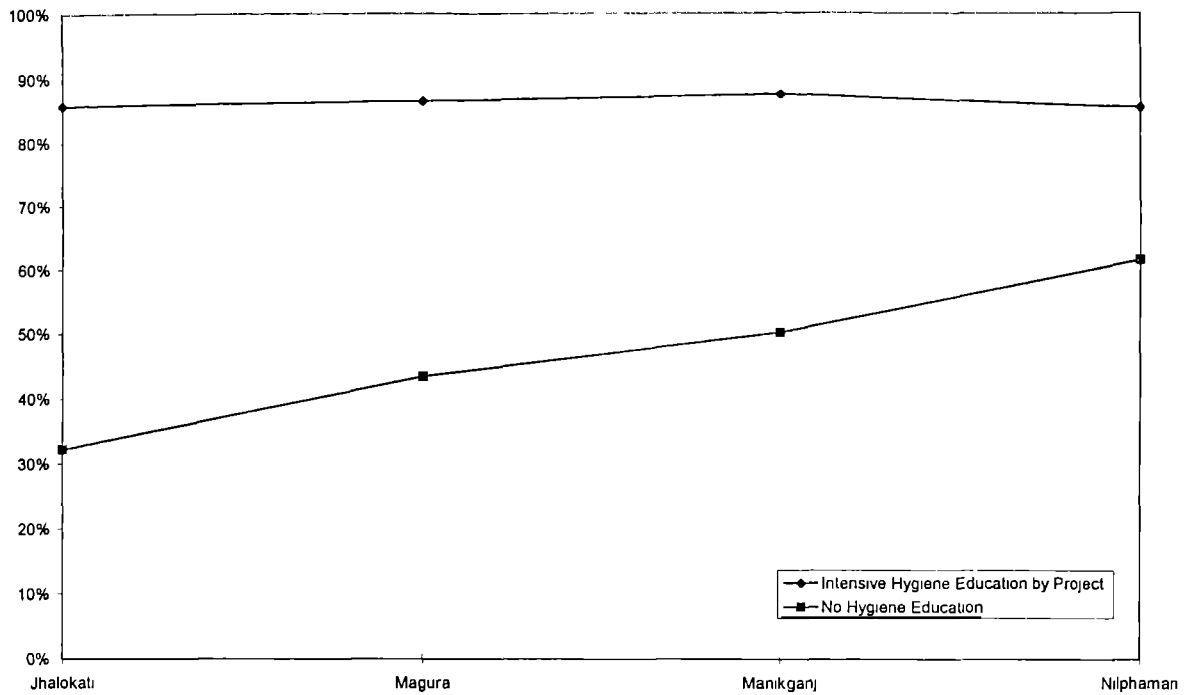
As reported by respondents with small children.

For the first two indicators, each sample household was given "condition" and "behavior" scores based on surveyor's observations. The maximum household latrine "condition" score was 100, and "behavior," 99.

As Figure 3.2.4 shows, the hygiene education program has been a great success in motivating people to keep their latrines clean. The higher "condition" scores of hygiene education recipients are statistically significant in all towns except Naogaon (where they are higher, but not significantly so).

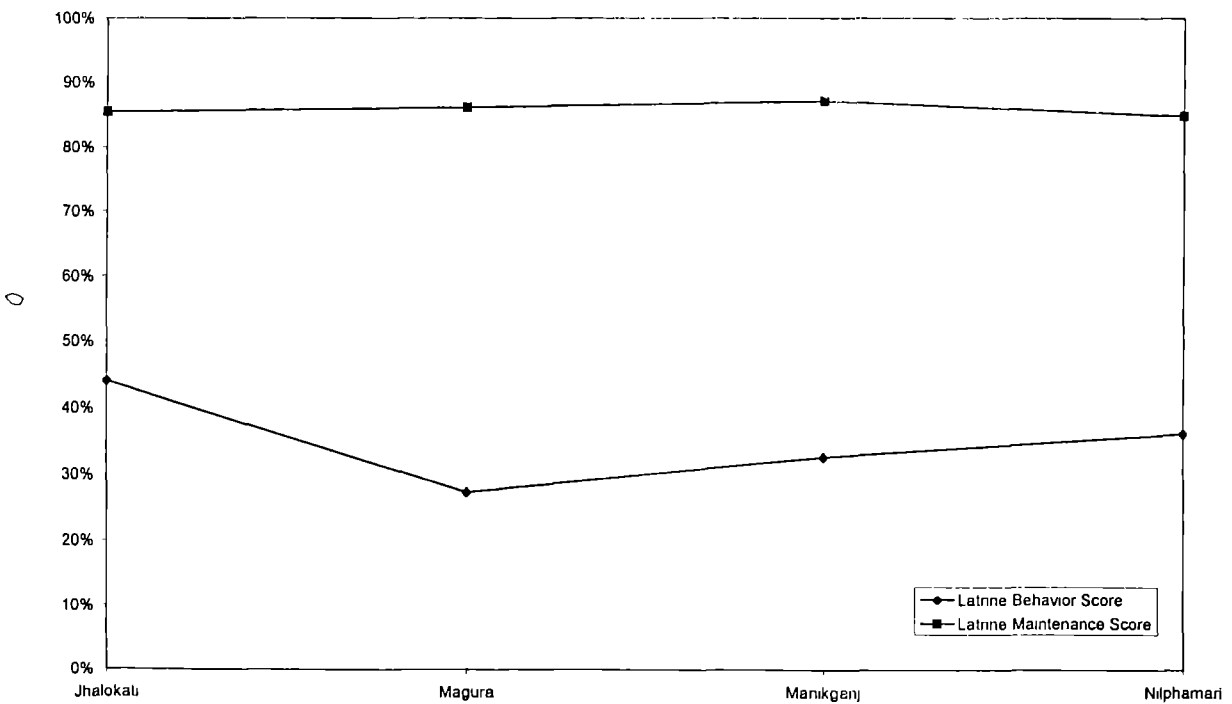
Proper latrine use, as indicated by the "behavior" score, however, is only a limited success. As Figure 3.2.5 shows, "behavior" scores lag far behind "condition" scores. (This is true for all project towns.) Yet hygiene education recipients' latrine behavior scores are better than controls, especially in Jhalokati and Nilphamari Divisions (see Figure 3.2.6.)

**Figure 3.2.4 Latrine Cleanliness Condition Score, Divisional Comparison Between Hygiene Education Recipients and Control Group**



Latrines in project-educated households were found to be significantly more well maintained than in control households

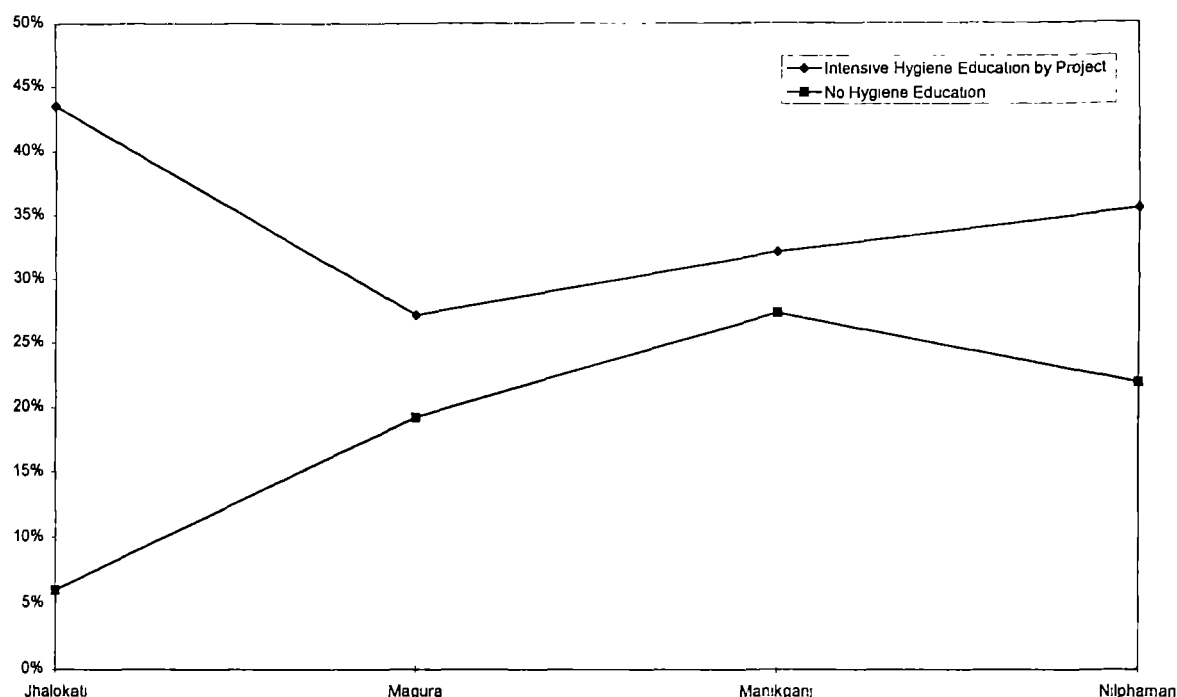
**Figure 3.2.5 Sanitation Indicators, Divisional Comparison, Hygiene Education Recipients Only**



Hygiene education recipients had high scores for latrine maintenance (condition) but lower scores on behavior indicators



**Figure 3.2.6 Latrine Behavior Score, Divisional Comparison Between Hygiene Education Recipients and Control Group**



Hygiene education recipients' latrine-use behavior is better than in control groups, but only minimally so in two divisions

Relative to controls hygiene education recipients show signs of better latrine behavior habits than controls in eleven project towns. Findings are presented in Table 3.2.8.

### 3.2.4.2 Age at Which Children Begin to Use Latrine

The hygiene education program strives to motivate all family members to use sanitary latrines. The defecation behavior of very young children is of special importance. Normally they are allowed to go wherever they wish. Because many Bangladeshis do not consider children's feces harmful in any way, the feces are left for animals to clean up or ignored entirely. Thus, hygiene educators encourage project beneficiaries to train their young children in hygienic latrine use and to carefully dispose of feces of those not using latrines yet.

Household survey respondents were asked at what age they expected their children to start using the family latrine. The mean age mentioned by respondents (n=1239) of both comparison groups combined was 3.31. Comparing hygiene education recipients with controls showed some differences between towns. In all towns of Jhalokati Division except Jhalokati Town, hygiene recipients' children start using latrines slightly later on average than do controls' children -- around age 3.2 years vs. 3.1 years, not a statistically significant difference. (See Figures 3.2.7 and 3.2.8.)

In most towns of the other divisions hygiene recipients' children start using latrines at earlier ages, except in Manikganj Town and Lalmonirhat.

**Table 3.2.8 Latrine Behavior, Town-wise Comparison**

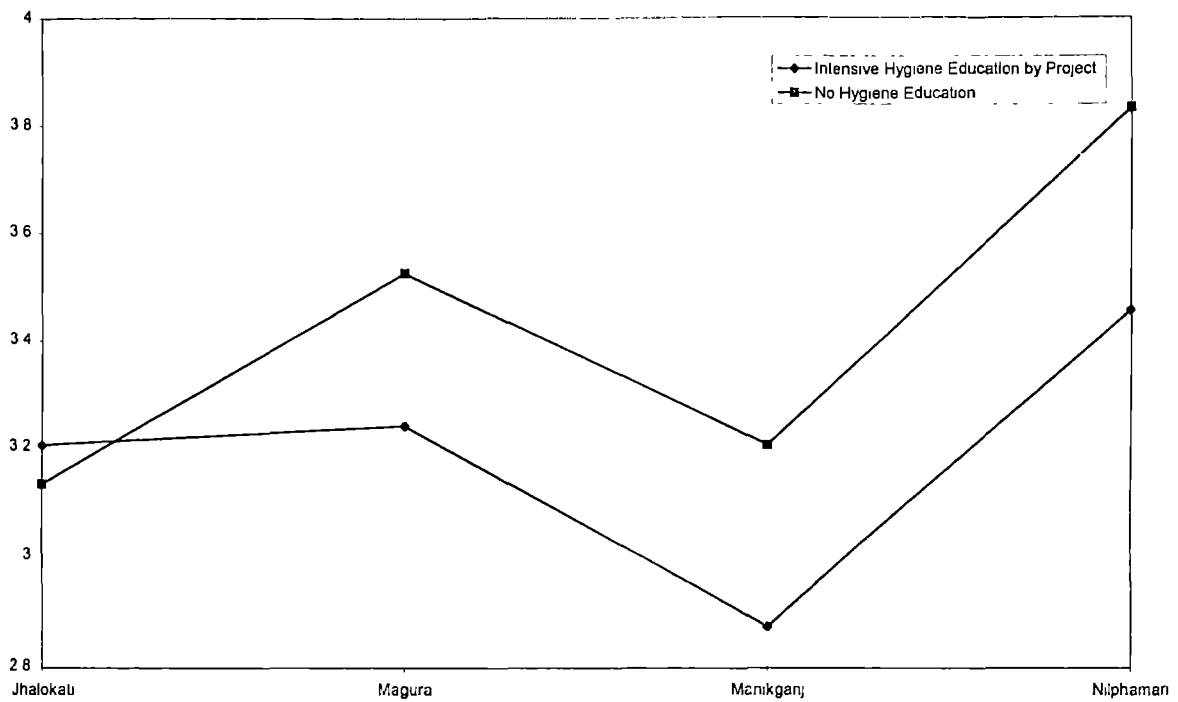
Division	Town	Recipients of Project Hygiene Education		
		Behavior Significantly Better	Behavior Not Significantly Better	Behavior Worse Than Controls
Jhalokati	Bhola	X		
	Barguna	X		
	Jhalokati	X		
	Shariatpur	X		
Manikganj	Manikganj	X		
	Moulvibazar		X	
	Netrokona		X	
	Sherpur		X	
Magura	Magura			X (not significant)
	Meherpur		X	
	Narail	X		
	Satkhira		X	
Nilphamari	Joypurhat	X		
	Lalmonirhat	X		
	Naogaon			X (significant)
	Nilphamari	X		
	Panchagarh	X		
	Thakurgaon	X		

The only towns in which hygiene recipients' children start using latrine at statistically significantly younger ages than controls' are Sherpur and Netrokona (both in Manikganj Division), and Panchagarh (Nilphamari Division):

**Table 3.2.9 Children's Latrine Use, Comparison between Hygiene Education Recipients and Control Group**

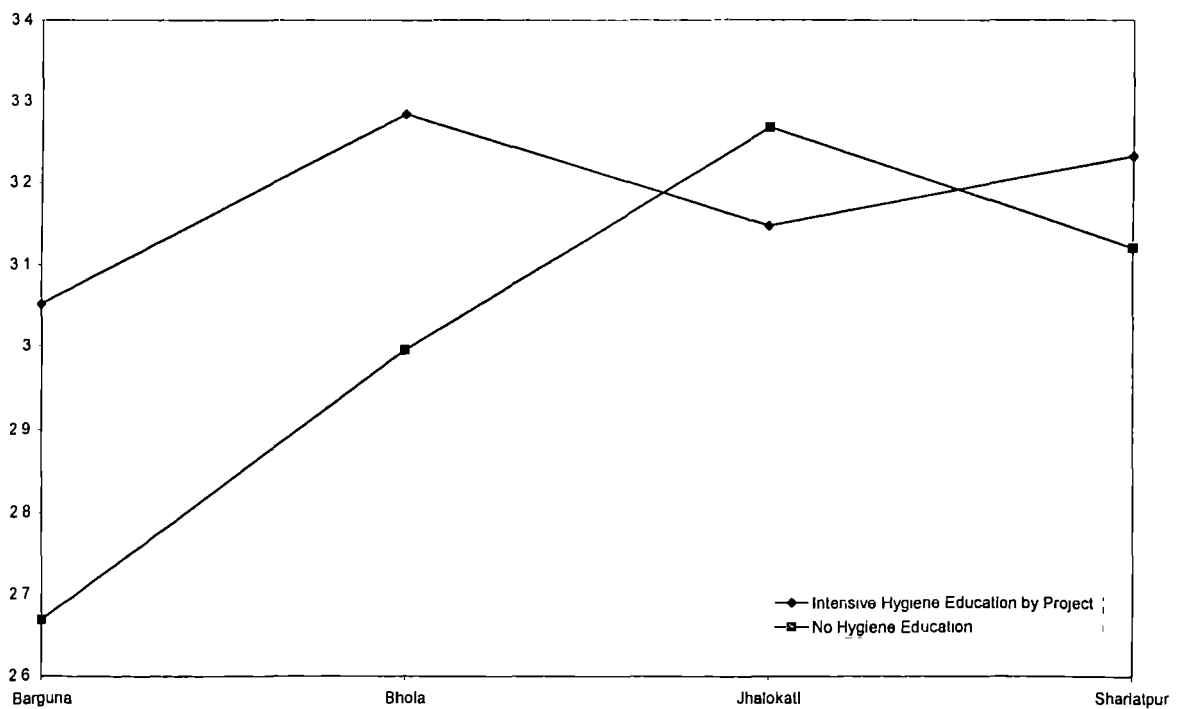
Town	Intensive Hygiene Education Mean Age	No Hygiene Education Mean Age
Sherpur	3.1	4.0
Netrokona	3.1	4.6
Panchagarh	3.3	4.4

**Figure 3.2.7 Mean Age at Which Child Starts Latrine Use, Divisional Comparison Between Hygiene Education Recipients and Control Group**



Hygiene education recipients in all division except Jhalokati begin using latrines at earlier ages than control group children

**Figure 3.2.8 Mean Age at Which Child Starts Latrine Use, Jhalokati Division Towns, Comparison between Hygiene Education Recipients and Control Group**



Hygiene education recipients' children in three Jhalokati Division towns begin latrine use later than control group children (not statistically significant)

### 3.2.4.3 Disposal of Children's Feces

When asked whether they think children's feces can cause disease, similar percentages, 96-97%, of both project and control respondents said, Yes.

Although knowledge of the health risks is widespread, actual practice differs greatly from town to town. The usual disposal sites are: latrines; ditches or waste dumps near homestead boundaries; or (less frequently) in ponds. While some apparently have followed the advice of project hygiene educators, who recommend putting the feces in latrines, others have not. In six towns hygiene education recipients reported significantly higher<sup>9</sup> rates of latrine disposal than did controls.

- Bhola (Jhalokati Division);
- Shariatpur (Jhalokati Division);
- Manikganj (Manikganj Division) - minimally significant ( $p < .07$ );
- Netrokona (Manikganj Division) - minimally significant ( $p < .06$ );
- Panchagarh (Nilphamari Division);
- Lalmonirhat (Nilphamari Division).

Survey interviewers observing respondents' courtyards checked to see if human (i.e., children's) feces were visible. Feces were observed in 4% of controls' courtyards and 2% of hygiene education recipients': this is a statistically significant difference ( $p < .02$ ). The project seems to have had some effect on behavior.

### 3.2.4.4 Cleaning the Hands after Washing Child's Bottom

Several studies have shown that Bangladesh women tend not to clean their own hands carefully after touching their young children's feces. So the method of hand cleaning was investigated in the household survey. People with young children were asked how they clean their own hands, specifically whether they clean at all, and if so, whether they use water only or some kind of rubbing agent (soap, ash, or mud)

Findings were not positive. Over-all there was no difference in the practices of hygiene education recipients and controls. Approximately half clean their hands, and half do not. In one town only -- Shariatpur (of Jhalokati Division) -- was there any significant evidence of project effect. In another town -- Manikganj -- project hygiene education recipients were significantly less likely to clean their hands than controls.

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<sup>9</sup> Differences are highly significant ( $p < .004$  or better), unless indicated otherwise

### **3.2.4.5 Discussion: Sanitation**

Findings indicate that the hygiene education program has succeeded in improving latrine maintenance and use habits in almost all towns. Latrine maintenance is the greater success, with very much higher percentages of project-educated households in all towns found to have clean, well-maintained latrines. Findings on latrine usage habits (as indicated by presence of sandals, water, and soap or other rubbing agent) are not as consistently positive, but in most places (though not in Magura Town or Naogaon) project-educated households' behavior indicators were better than controls'.

Despite the project's message that 'all family members should use hygienic latrines', findings on use by young children were not especially positive. In three towns only (Sherpur, Netrokona, and Panchagarh) children of hygiene education recipients were found to start using latrines at significantly earlier ages than children of controls.

Regarding disposal of children's feces, the most positive finding is that hygiene education recipients' courtyards are less likely to have children's feces lying around. In six of the 18 towns project-educated households have heeded the message to dispose of children's feces in latrines rather than in ditches or other household trash disposal sites. It is interesting to see that behavior varies greatly despite nearly universal knowledge (96-97%) that children's feces can cause disease.

As with children's feces disposal, findings on adult hand washing after cleaning children's bottoms do not indicate much project influence on behavior. Hygiene education recipients in one town only (Shariatpur) were found to be significantly more likely than controls to clean their hands. In one other town (Manikganj) there were significantly less likely to do so.

## **3.2.5 Hand Washing Practice**

### **3.2.5.1 Post-defecation Hand Washing**

It is a well known fact that post-defecation hand washing, if done properly, is one of the most important ways to prevent the spread of infectious sanitation-related diseases. One frequent Bangladeshi method of cleaning the hands after defecation, however, is not adequately hygienic. This is to use the left hand, washing the anus with some water (approximately one liter) and then cleaning the left hand with more water and some kind of rubbing agent, commonly mud or ash. The hand is then dried on a towel or one's clothes. (Zeitlyn and Islam 1991)

Detailed observational research has proven that if two hands are washed (rather than just one) with at least two liters and any rubbing agent, including mud or ash (soap is preferred but not necessary), then the fecal coliform count on the hands decreases significantly. Clothing or towels can be a source of re-contamination, so the use of a special cloth for the purpose of drying hands, or drying the hands in the air, is a further preventive measure. (Hoque 1995; Bateman et al 1995)

The project hygiene education program has had a positive effect on post-defecation hand washing practices, especially the washing of two hands and use of a separate cloth for drying. Table 3.2.10 compares the practices of hygiene education recipients and controls. The use of rubbing agents is so common, that the project-educated households' slightly more frequent use is not statistically significant; but the other differences are.

**Table 3.2.10 Post-defecation Hand Washing Practice, Comparison between Hygiene Education Recipients and Control Group (Percentages)**

Sample Group	Intensive Hygiene Education by Project		No Hygiene Education		Total	
	Un-hygienic	Hygienic	Un-hygienic	Hygienic	Un-hygienic	Hygienic
<b>Hand Washing Technique</b>						
<b>Washing Method (n=2400):</b>						
Water Only	0.8		1.3		0.9	
Water, Ash/Mud		28.2		30.3		28.6
Water, Soap		71.0		68.4		70.5
<b>Hands Washed (n=2395):</b>						
One Only	23.9		27.1		24.5	
Two		76.0		71.8		75.2
<b>Drying Method (n=2396):</b>						
In Air		1.2		2.4		1.4
Separate Cloth		45.5		35.1		43.5
Towel	40.6		41.4		40.8	
Clothes	12.5		20.9		14.1	

As with other indicators, there are variations from one project area to another. In Jhalokati Division over-all, hygiene education recipients are significantly more likely to use soap than are controls

Hygiene education recipients in Manikganj and Nilphamari are significantly more likely to wash two hands than controls. This difference is statistically significant among Sherpur (Manikganj Division) and Lalmonirhat (Nilphamari Division) sample groups. Jhalokati Division hygiene education recipients over-all are more likely to do so, but not to a significant extent. Magura Division hygiene education respondents (of all towns) are less likely than controls to wash two hands, but not to a statistically significant extent

Regarding hand drying method, the project-educated group's better performance is based mainly on the greater frequency of use of a special cloth to dry hands. This is true of all divisions:

**Table 3.2.11 Use of Separate Towel to Dry Hands after Washing, Divisional Comparison between Hygiene Education Recipients and Control Group (Percentages)**

Division	Percentage of HE Recipients Using Separate Towel	Percent of Control Group Using Separate Towel
Jhalokati	45.8	44.1
Manikganj	57.7	36.8
Magura	32.5	21.2
Nilphamari	48.4	39.3

Regarding post-defecation drying of hands on clothes, there is little evidence of project impact. The practice is still widespread among both project-educated respondents and controls. In fact, there are only a few towns where project respondents are less likely than controls to dry their hands on their clothes:

- Shariatpur (Jhalokati Division)
- Meherpur (Magura Division)
- Moulvibazar (Manikganj Division)
- Thakurgaon (Nilphamari Division)
- Lalmonirhat (Nilphamari Division)<sup>10</sup>

In all other towns, larger percentages of hygiene education recipients than controls dry their hands on their clothes, in particular in Naogaon (Nilphamari Division), 17% vs. 10%.

### 3.2.5.2 Other Important Hand Washing Times (Women's Responses)

Table 3.2.12 summarizes findings on women's responses to the question, 'What are the other important times each day when you wash your hands?' The habits of women are emphasized here because of their greater role in food handling and other domestic activities affecting disease spread. Incidentally, the category 'routine times', reflects answers such as 'after I get up in the morning', or 'when I return home from outside'

There is less difference between the two comparison groups than might be expected, considering the project's emphasis on hand washing. Especially disappointing is the small percentage of women mentioning that hands should be washed after latrine cleaning or wiping a child's bottom. Differences between the comparison groups are small, but in Magura and Nilphamari divisions this practice was mentioned by fewer project-educated females than by those with no hygiene education.

An important positive finding is the percentages saying one should wash hands 'after any work', meaning cleaning chores or other activities that might get the hands dirty. In all divisions except Jhalokati significantly more women in the hygiene-educated group mentioned this than did those without hygiene education.

<sup>10</sup> Fewer than 10% of Lalmonirhat respondents over-all dry their hands on their clothes. The practice also seems to be relatively less common in some other towns namely, Nilphamari, Thakurgaon, and Barguna

**Table 3.2.12 Female Respondents: Important Hand Washing Times Mentioned, by Hygiene Education Level\***

Important Hand Washing Times Mentioned	Hygiene Education Level					
	Intensive Hygiene Education			No Hygiene Education		
	Mentioned by No.	Percentage		Mentioned by No.	Percentage	
Routine Times	973	56.8%		204	55.9%	
Before Prayers	602	35.1%		118	32.3%	
After any Work	748	43.6%		137	37.5%	
After Latrine / Child Bottom Cleaning	144	8.4%		34	9.3%	
Before Cooking	548	32.0%		116	31.8%	
Before / After Eating	1229	71.7%		237	64.9%	
<b>Total Respondents</b>			<b>1714</b>			<b>365</b>

\* Multiple responses possible

### 3.2.6 Solid Waste Disposal

A basic message communicated through the hygiene education program is that the home -- typically a mud-paved compound with three or four small rooms surrounding a courtyard -- should be swept regularly and kept neat. In some places NGO/CSC teams work hard to persuade people to dig garbage disposal pits.

Survey interviewers checked respondents' courtyards to see how much litter was present, and what disposal arrangements seemed to be in effect. Before doing this observation, they asked the people what they did with their garbage. Neatness and messiness are subjective matters, so neither the observations nor respondents' answers were precise. But the general picture indicates positive project impact on household solid waste management.

Table 3.2.13 describes the ways that solid waste was disposed of in hygiene recipients' homes vs. those of controls. The neater condition of project-educated respondents' homes is statistically significant.

**Table 3.2.13 Observations of Household Solid Waste Disposal, Comparison between Hygiene Education Recipients and Control Group (Percentages)**

Household Trash Observation	Intensive Project Hygiene Education (n=1848)	No Hygiene Education (n=445)	Total (n=2293)
Scattered Around	35.8	38.7	36.3
Piled Neatly	63.4	57.3	62.2
In a Container	0.9	4.0	1.5



The two-thirds neatness finding reflects an important project accomplishment, considering low levels of solid waste disposal awareness generally found in Bangladesh towns. NGO/CSC teams and beneficiaries both have worked hard to improve disposal of solid waste. Town residents mentioned in open-ended interviews that garbage disposal was one of the harder lessons they had to learn from the project teams. The results of their efforts are visible in relatively clean streets and homes of the 18 towns.

### **3.2.7 Water and Sanitation Knowledge**

The hygiene education program includes instruction on basics of diarrheal disease causes and prevention, especially safe water and hygienic latrine use. The following simple messages are basic to the program.

*Diseases* caused by unsafe water and/or unhygienic latrine use are

- Diarrhea;
- Dysentery;
- Cholera;
- Typhoid;
- Hepatitis;
- Worms,
- Skin diseases

*Disease spread* occurs through:

- Hands and fingers;
- Fluids (especially water);
- Feces;
- Flies,
- Feet.

*Prevent diarrhea* by:

- Drinking safe (tubewell) water;
- Eating fresh, clean food;
- Covering food, to keep off flies;
- Hand washing;
- Cleaning utensils in clean water,
- Hygienic latrine use.

*Important hand washing times* are:

- After defecation,
- Before preparing food,
- Before feeding children,
- Before eating;
- After handling animal feces;
- After cleaning child's bottom.

### 3.2.7.1 Findings

Respondents' awareness of these points was checked during questionnaire interviews. It is important to mention that their comments were solicited with fully open-ended questions, such as 'What are the diseases related to latrine-use?' or 'Would you please mention the times (other than after defecation) that you wash your hands every day?' There was no prompting for specific answers, and responses were post-coded. Hand-washing findings have been presented above, in Section 3.2.5.

#### 3.2.7.1.1 Knowledge of Sanitation-related Diseases

Diseases mentioned as related to latrine use are in Table 3.2.14. While knowledge of the connection between hygienic latrine use and diarrhea is widespread, hygiene education recipients' awareness is higher than controls'. In fact, knowledge of all sanitation-related diseases is greater among hygiene education recipients. The difference is especially great in the case of worms.

**Table 3.2.14 Knowledge of Diseases Related to Latrine Use, by Hygiene Education Level\***

Disease Mentioned	Hygiene Education Level					
	Intensive Hygiene Education			No Hygiene Education		
	Mentioned by No.	Percentage		Mentioned by No.	Percentage	
Diarrhea	1711	88.3%		360	77.4%	
Dysentery	965	49.8%		205	44.1%	
Cholera	743	38.3%		162	34.8%	
Worms	893	46.1%		162	34.8%	
Jaundice	115	5.9%		17	3.7%	
Skin Disease	31	1.6%		6	1.3%	
Typhoid	36	1.9%		13	2.8%	
Other Possible WATSAN**	468	24.1%		129	27.7%	
Incorrect Response***	254	13.1%		32	6.9%	
<b>Total Respondents</b>			<b>1938</b>			<b>465</b>

\* Multiple responses possible

\*\* Upset stomach, loose motions and vomiting, malaria, fever, polio

\*\*\* Numerous diseases mentioned, including pneumonia, ulcers, goiter, pox, tuberculosis, cancer, measles, kidney problem, diphtheria, tetanus, asthma, diabetes

#### 3.2.7.1.2 Knowledge of Disease Spread Causes

Respondents mentioned several ways diseases can spread. Their comments are summarized in Table 3.2.15. Awareness of the health risks of using unsafe water is lower than might be expected, considering the project's emphasis on safe water use. But overall hygiene education recipients are slightly more aware of the need to use safe water than are controls.

Awareness of insects or animals as carriers of disease is much greater among hygiene education recipients than among controls.

Other positive findings are greater hygiene recipients' awareness of the role in disease spread of: feces, hands and fingernails, and barefoot latrine use. These findings probably can be explained by the project's emphasis on the health benefits of improved sanitation.

**Table 3.2.15 Disease Spread Causes Mentioned, by Hygiene Education Level**

Disease Spread Cause Mentioned	Hygiene Education Level					
	Intensive Hygiene Education			No Hygiene Education		
	Mentioned by No.	Percentage		Mentioned by No.	Percentage	
Unsafe Water	681	35.1%		146	31.4%	
Food	762	39.3%		157	33.8%	
Insects/Animals	1210	62.4%		249	53.5%	
Unclean Env't./HH Items	554	28.6%		140	30.1%	
Air/Wind	385	19.9%		84	18.1%	
Feces	407	21.0%		83	17.8%	
Hands/Nails	185	9.5%		33	7.1%	
Barefoot Latrine Use	101	5.2%		21	4.5%	
Other Contagion	89	4.6%		24	5.2%	
None Mentioned	86	4.4%		36	19.5%	
<b>Total Respondents</b>			<b>1938</b>			<b>465</b>

### 3.2.7.1.3 Knowledge of How to Prevent Diarrhea

Hygiene education recipients are much more aware than controls of the disease prevention effects of: careful food handling, clean hands and nails, and a clean house and latrine. Larger percentages also mentioned safe water use, general personal hygiene, and avoiding mosquitoes and flies; but the difference from controls on these points was less pronounced. (Findings are in Table 3.2.16.)

It is disappointing to see that only 2.5% of hygiene recipients mentioned using sandals in the latrine, since the program places so much emphasis on this aspect of proper latrine use. As low as this percentage is, it still is higher than the 1.5% of controls who mentioned sandal use. Nilphamari was the only division with a larger percentage of hygiene education recipients (6.3% vs. 3.2% of controls) mentioning sandal use.

**Table 2.3.16 Diarrhea Prevention Methods Mentioned, by Hygiene Education Level**

Prevention Mentioned	Hygiene Education Level				
	Intensive Hygiene Education		No Hygiene Education		
	Mentioned by No.	Percentage	Mentioned by No.	Percentage	
Proper Food Handling	1364	70.4%	273	58.7%	
Safe Water Use	570	29.4%	125	26.9%	
Good Personal Hygiene	1394	71.9%	324	69.7%	
Clean Hands/Nails	211	10.9%	30	6.5%	
Clean House/Latrine	183	9.4%	31	6.7%	
Avoid Mosquitoes & Flies	62	3.2%	10	2.2%	
Use Sandals in Latrine	49	2.5%	7	1.5%	
Abide by Health Messages	32	1.7%	6	1.3%	
NA (Treatment)	74	3.8%	25	5.4%	
None Mentioned	32	1.7%	22	4.7%	
<b>Total Respondents</b>			<b>1938</b>		<b>465</b>

### 3.2.7.2 Discussion: Water / Sanitation Knowledge

Findings on knowledge improvement are generally very positive. On almost all points covered, hygiene education recipients showed greater awareness of the connection between hygiene and health than did controls. There still is a great need for public education on some of these topics revealed by generally low levels of certain kinds of knowledge (causes of jaundice, skin diseases, and typhoid). The health value of proper latrine use also is not well enough understood, as was shown already in the preceding discussion of sanitation.

A finding of concern is the low level of awareness of the relationship between health and safe water use. Although well informed on the need to drink safe water, people in the 18 towns (including hygiene education recipients and others) still fail to understand the health risks of other uses of unsafe water. As was mentioned earlier, this lack may be why there is still much use of unsafe sources — pond, canal, or river water — for such purposes as utensil washing, vegetable washing, and tubewell pump priming.

### 3.2.8 Family Health Status

As mentioned earlier (in Section 3.2.2), a large number of beneficiaries report that family health has improved as a result of project services. Proving this claim is unfortunately beyond the capacity of this evaluation study and would be quite difficult even under more rigorous research conditions.

In general, health benefits of water and sanitation programs such as this one must be evaluated differently from benefits of other kinds of health-related programs. Although improved personal hygiene and water use habits are known improve the health of those with good habits, they also benefit many others as well by reducing risks of infectious disease spread. The public health value of such programs is well established. But individual effects are so diffuse, that it is not easy to demonstrate the connection between improved water/sanitation and specific individuals' health status.

Keeping these reservations in mind, a brief review of 18 DTP survey households' health status has been done. Three types of information provide a basis for evaluating the health of the sample population. First is proportional morbidity, i.e., the degree to which water/sanitation diseases contribute to (are a percent of) all illness. Second is prevalence of water/sanitation-related diseases among young children, a matter of considerable public health concern in Bangladesh. Third is child mortality causes.

Respondents of all sample groups mentioned a total 2487 illness cases as having occurred in their households within the month preceding the survey. Fifteen percent of these cases were clearly identified as water/sanitation-related (WATSAN) illnesses<sup>11</sup>. There was no significant difference between project households' and control groups' rates of known WATSAN diseases. The great majority of other illnesses -- especially 1539 cases of 'fever (maybe malaria)' -- were vaguely identified. It was not possible under the conditions of this study to determine which of these others were or were not WATSAN diseases.

#### 3.2.8.1 Proportional Morbidity

The most recent data on proportional morbidity are from the 1994-95 report by the Bangladesh Bureau of Statistics, *The Bangladesh Health and Demographic Survey* (1996). Table 3.2.17 compares WATSAN-related morbidity in our two sample groups with these national data. Diarrhea morbidity rates in both sample groups are lower than the national average (which may have decreased by now, but current information is not available). Dysentery was found to occur at a higher rate than the national rate in control group households but lower in the project-educated group, a possibly important finding. Skin diseases (eczema/rashes) make up a larger percentage of project-educated household illnesses than either the national average or the control group.

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<sup>11</sup> Diarrhea, dysentery, cholera, typhoid, jaundice, skin disease (eczema/rashes), worms. Respondents can make mistakes in reporting diagnoses, but such reports are reliable enough for present purposes.

**Table 3.2.17 Proportional Morbidity:  
Water and Sanitation Related Disease as a Percentage of All Illness**

Disease	National (1994-95)	Intensive Project Hygiene Education	No Hygiene Education
Diarrhea	7.6*	5.5	5.8
Dysentery	5.6	4.3	6.6
Typhoid	1.6	1.1	1.2
Jaundice	1.5*	1.2	0.9
Skin Disease/Eczema	0.7	2.6	0.9
Worms	0.8	0.4	0

\* Urban

### 3.2.8.2 Prevalence of Children's Diarrhea

*Progotir Pathey* (BBS and UNICEF 1997) provides data on 15-days prevalence<sup>12</sup> of children's diarrhea in December 1996-January 1997. These data, while not fully comparable to our survey findings, are the best available. This study found 13% (males) to 15% (females) of children under age four nationwide to have diarrhea.

The prevalence of children's diarrhea in the two 18DTP comparison groups is dramatically less, only three percent. This difference is puzzling, considering the close match of proportional morbidity findings, just discussed, to national studies. It may be due to program accomplishments; but it is more likely due to the way the question was asked. Respondents were asked to recall illnesses for a month preceding the interview. The interview also covered a wide range of topics, rather than being focused purely on health matters, so young children's illnesses may well have been under-reported.

**Table 3.2.18 Prevalence and Proportional Morbidity:  
Diarrhea, Dysentery, and Eczema Cases in Young Children (age <5),  
by Hygiene Education Level**

Sample Group	Intensive Hygiene Education			No Hygiene Education		
No. Children Age < 5	958			273		
Disease	Reported Cases	% of Children	% of All Illness	Reported Cases	% of Children	% of All Illness
Diarrhea	25	2.6%	9.8%	6	2.2%	11.3%
Dysentery	18	1.9%	7.1%	5	1.8%	9.4%
Eczema / Rash	16	1.7%	6.3%	3	1.1%	5.7%
Others	195	20.4%	76.8%	39	14.3%	73.6%
<b>Total</b>	<b>254</b>	<b>26.5%</b>	<b>100.0%</b>	<b>53</b>	<b>19.4%</b>	<b>100.0%</b>

<sup>12</sup> Prevalence in *Progotir Pathey* is measured as a percent of all children having the disease at a given point in time (Alternative measures are per 1,000 or per 100,000)

Table 3.2.18 presents findings on young children's diarrhea, dysentery, and skin disease in hygiene education and control group households. A positive finding is the lower percentage of both diarrhea and dysentery cases relative to other illnesses among young children in project-educated households. A negative finding is the slightly higher prevalence of skin disease (or eczema/rash).

### **3.2.8.3 Child Mortality**

One of the 18DTP feasibility studies, investigating causes of child death, found in Lalmonirhat, for example, that more than 10% of the deaths of 28 children under age 10 were caused by diarrhea in the five years preceding those 1990 interviews (Netherlands-Bangladesh 1990, p. A.42). Although it is not possible for the present study to report on child mortality at the town level, because numbers are too small, statistically useable data are available on child deaths for the full sample.

Approximately similar percentages of project-educated and control households had experienced deaths of children age 10 or less during the five years preceding these 1998 interviews. The percentage due to diarrheal disease (diarrhea, dysentery, or cholera) in both groups was around 12%, similar to the feasibility study finding

A negative finding was that slightly larger percentages of project-educated households (0.72%, n=14) actually had lost children to diarrheal disease than control households (0.65%, n=3). A positive finding was that fewer project-educated households (0.15%) had lost children to other WATSAN diseases, such as typhoid, jaundice, or malaria (one case), than control households (0.65%).

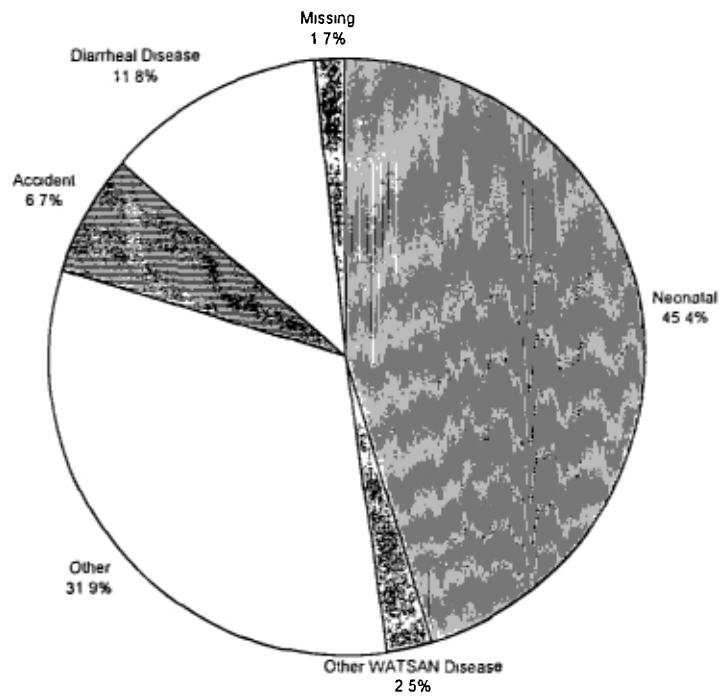
Figures 3.2.9 and 3.2.10 present findings on the percentages of mortality attributed to all causes for hygiene education recipient households and control households.

### **3.2.8.4 Discussion of Health Status Findings**

Findings on health status reflect many factors other than project influence. And for reasons mentioned above, these findings should be interpreted with caution. But they deserve mention as an important aspect of the total water-sanitation picture in project towns.

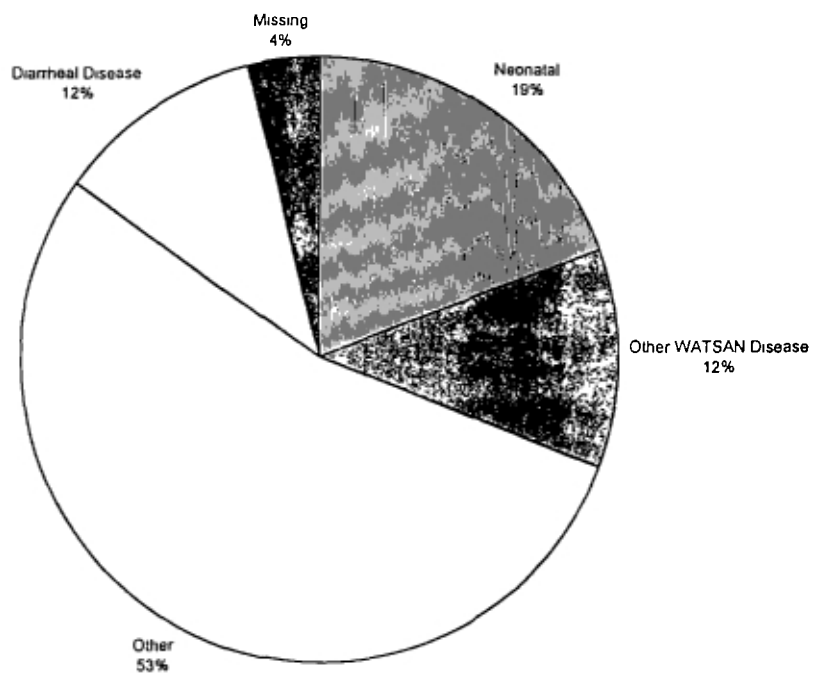
A positive finding was that people in project-educated households, including young children, were somewhat less likely to have diarrhea and dysentery than controls. Diarrheal disease — diarrhea, dysentery, or cholera -- caused approximately similar percentages of child deaths in the two comparison groups (actually slightly more in project educated households). But child deaths caused by other WATSAN diseases — typhoid, jaundice, or malaria (one case) -- occurred at higher rates in control households

**Figure 3.2.9 Causes of Child Deaths with Past Five Years, Hygiene Education Recipients Only**



Child age < 11, n = 117.

**Figure 3.2.10 Causes of Child Deaths within Past Five Years Control Group Only**



Child age < 11, n = 25.



A negative finding was that rates of skin disease (eczema/rash) were found to be higher among hygiene education recipients than controls -- and also higher than national averages. Being mostly 'water-wash' diseases, i e., diseases caused by inadequate quantity of water for cleaning, skin diseases decrease with increased volume of water use, even if less than ideal quality. (Cairncross and Feachem 1983) The findings on skin disease rates thus raise concerns about whether project beneficiaries even now have enough access to water — safe or otherwise -- for bathing and other personal hygiene purposes. Unless they have tubewells within their own compounds, they may not have enough access.

### **3.2.9 Summary and Conclusions**

A quasi-experimental method has been used to assess the impact of the hygiene education program on knowledge and practice. Households receiving project hygiene education have been compared to a "control" group of households who did not receive project hygiene education<sup>13</sup>.

Detailed questionnaire interviews were done in a total of 2851 households in all 18 towns. A stratified sampling method was used. A review of the hygiene education history of sample households produced a re-classification into four new groups, based on hygiene education levels:

1. "Intensive" project hygiene education;
2. "Some" project hygiene education;
3. "Other" hygiene education;
4. "None".

Ninety-three percent of those having received latrines (with or without other facilities) also received "intensive" hygiene education services, as per project guidelines. Being largely poor, the households in this study depend mostly on daily-paid laboring employment for their survival. Most women, regardless of economic status, do not work outside the home.

The groups with "intensive" and "no" hygiene education are more similar to each other than to the other two groups, in terms of economic and educational status and religion. The analysis, therefore, highlighted findings on these two more comparable sample groups. Comparing those with and without project hygiene education also, of course, offers the best chance of assessing program impact.

#### **3.2.9.1 Summary of Significant Findings**

##### **3.2.9.1.1 Perceived Program Benefits**

The main benefits that hygiene education recipients mentioned were. reduced diarrhea, general health improvements, and greater 'health awareness'.

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<sup>13</sup> This method is used in lieu of a strong baseline study against which to measure project impact

### 3.2.9.1.2 Domestic Water Use

The hygiene education program does not seem to have altered people's water use habits to any significant extent. Despite the consistent project message to 'use safe water for all purposes', hygiene education recipients' water use habits are not significantly different from others' except in three towns of Jhalokati Division (Jhalokati Town, Barguna, and Bhola) and in limited ways for other specific towns. The Jhalokati case shows important differences between hygiene education recipients and controls, even though there is generally less use of safe water in this division than in others.

Hand tubewell pump-priming is a practice of special concern. Project-educated households make more use of unsafe water for this purpose than do controls. In Netrokona (Manikganj Division) poorer performance in project-educated households was statistically significant.

Positive findings indicated limited project-related improvements in water use in: Shariatpur (Jhalokati Division), Manikganj Town, Moulvibazar, and Sherpur (both in Manikganj Division).

In five towns (Magura, Manikganj, Nilphamari, Panchagarh, and Thakurgaon) hygiene recipients' hand tubewell platforms were significantly cleaner than those of controls. But in one town (Naogaon) they were significantly dirtier.

Management of household drinking water was found to be only slightly better in project-educated households than in control households. Considering that more than half of project-educated households keep their drinking water containers on the floor, project messages cannot be said to have had a strong effect. In most towns there is little difference between project-educated households and controls in whether drinking water containers are covered or not. A positive finding, that they are more likely to be covered, was made in only four towns: Moulvibazar, Thakurgaon, Joypurhat, and Lalmonirhat. In three others, however, there was a negative finding, that they are less likely to be covered: Nilphamari, Panchagarh, and Naogaon.

### 3.2.9.1.3 Sanitation

Sanitation findings are more clearly positive than those concerning water use. The hygiene education program has succeeded in improving latrine maintenance and use habits in almost all towns. Latrine maintenance is the greater success, with much higher percentages of project-educated households in all towns found to have clean, well-maintained latrines. Findings on latrine usage habits (as indicated by presence of sandals, water, and soap or other rubbing agent) are not as consistently positive, but in most places (though not in Magura Town or Naogaon) project-educated households' behavior indicators were better than controls'.

Despite the project's message that 'all family members should use hygienic latrines', findings on use by young children were not especially positive. In three towns only (Sherpur, Netrokona, and Panchagarh) children of hygiene education recipients were found to start using latrines at significantly earlier ages than children of controls.

Regarding disposal of children's feces, the most positive finding is that hygiene education recipients' courtyards are less likely to have children's feces lying around. (This is not a common problem, however, for either comparison group.) In six of the 18 towns project-educated households have heeded the message to dispose of children's feces in latrines rather than in ditches or other household trash disposal sites. It is interesting to see that behavior varies greatly despite nearly universal knowledge (96-97%) that children's feces can cause disease.

As with children's feces disposal, findings on adult hand washing after cleaning children's bottoms do not indicate much project influence on behavior. Hygiene education recipients in one town only (Shariatpur) were found to be significantly more likely than controls to clean their hands. In one other town (Manikganj) there were significantly less likely to do so.

#### **3.2.9.1.4 Hand Washing Practice**

The project hygiene education program has had a positive effect on post-defecation hand washing practices, especially the washing of two hands and use of a separate cloth for drying. The use of rubbing agents is so common, that the project-educated households' slightly more frequent use is not statistically significant; but the other differences are

Regarding post-defecation drying of hands on clothes, there is little evidence of project impact. The practice is still widespread among both project-educated respondents and controls. In fact, there are only a few towns where project respondents are less likely than controls to dry their hands on their clothes.

Regarding women's responses to the question, 'What are the other important times each day when you wash your hands?', there is less difference between the two comparison groups than might be expected, considering the project's emphasis on hand washing. Especially disappointing is the small percentage of women mentioning that hands should be washed after latrine cleaning or wiping a child's bottom. Differences between the comparison groups are small.

An important positive finding is the percentages saying one should wash hands 'after any work', meaning after cleaning chores or other activities that might get the hands dirty. In all divisions except Jhalokati significantly more women in the hygiene-educated group mentioned this than did those without hygiene education.

#### **3.2.9.1.5 Solid Waste Disposal**

Comparing the state of solid waste disposal in hygiene recipients' homes vs. those of controls, project-educated homes were found to be significantly less littered than those of controls. This finding reflects an important project accomplishment, considering low levels of solid waste disposal awareness generally found in Bangladesh towns. NGO/CSC teams and beneficiaries both have worked hard to improve disposal of solid waste. Town residents mentioned in open-ended interviews that garbage disposal was one of the harder lessons they had to learn from the project teams. The results of their efforts are visible in relatively clean streets and homes of the 18 towns.

### **3.2.9.1.6 Water and Sanitation Knowledge**

The hygiene education program, as conducted in neighborhoods and homes, depends on very simple instructional materials and messages. Starting from a more complex approach, it has been simplified dramatically since 1995. This seems to have worked in large part. On three indicators there were findings of positive project impact on knowledge of: (a) diseases associated with sanitation practices, (b) causes of disease spread, and (c) diarrhea prevention methods.

While knowledge of the connection between hygienic latrine use and diarrhea is widespread in the Bangladesh population by now, hygiene education recipients' awareness is clearly higher than controls'. In fact, knowledge of all sanitation-related diseases is greater among hygiene education recipients. The difference is especially great in the case of worms (although this knowledge does not necessarily translate into strong tendencies to use sandals in defecation areas).

About disease spread causes, awareness of the health risks of using unsafe water is lower than might be expected, considering the project's emphasis on safe water use. But over-all hygiene education recipients are slightly more aware of the need to use safe water than are controls. Awareness of insects or animals as carriers of disease is much greater among hygiene education recipients than among controls. Other positive findings are greater hygiene recipients' awareness of the role in disease spread of: feces, hands and fingernails, and barefoot latrine use. These findings probably can be explained by the project's emphasis on training people to use their improved sanitation facilities.

Hygiene education recipients are much more aware than controls of the disease prevention effects of: careful food handling, clean hands and nails, and a clean house and latrine. Larger percentages also mentioned safe water use, general personal hygiene, and avoiding mosquitoes and flies; but the difference from controls on these points was less pronounced. It was disappointing to see that only 2.5% of hygiene recipients mentioned using sandals in the latrine, since the program places so much emphasis on this aspect of proper latrine use. As low as this percentage is, it still was higher than the 1.5% of controls who mentioned sandal use.

### **3.2.9.1.7 Family Health Status**

A large number of beneficiaries' report that family health has improved as a result of project services. Proving this claim is unfortunately beyond the capacity of this evaluation study and would be quite difficult even under more rigorous research conditions. Keeping these reservations in mind, a brief review of 18 DTP survey households' health status has been done.

Findings on health status reflect many factors other than project influence. And for this reason and others, these findings should be interpreted with caution. But they deserve mention as an important aspect of the total water-sanitation picture in project towns.

A positive finding was that people in project-educated households, including young children, were somewhat less likely to have diarrhea and dysentery than controls. Diarrheal disease — diarrhea, dysentery, or cholera -- caused approximately similar percentages of child deaths in

the two comparison groups (actually slightly more in project educated households). But child deaths caused by other WATSAN diseases — typhoid, jaundice, or malaria (one case) -- occurred at higher rates in control households.

A negative finding was that rates of skin disease (eczema/rash) were found to be higher among hygiene education recipients than controls (and also higher than national averages). Being mostly 'water-wash' diseases, i.e., diseases caused by inadequate quantity of water for cleaning, skin diseases decrease with increased volume of water use (even if less than ideal quality). (Cairncross and Feachem 1983). Two possible explanations for the finding are: (1) hygiene education recipients are more aware than controls of rashes as 'disease'; or (2) they actually do have more skin disease than controls. Assuming that the latter is true, the finding raises concerns about whether project beneficiaries even now have enough access to water — safe or otherwise -- for bathing and other personal hygiene uses. Unless they have tubewells within their own compounds, they may not have enough access.

### 3.2.9.2 Conclusions

Expectations of impact in a project such as the 18DTP should be realistic. This has been a vast and long-term effort covering a large number of municipalities, each of which offers unique constraints and opportunities. Like most projects this one had ambitious behavior-modification goals. But it would not be realistic to expect small teams of hygiene educators-*cum*-sanitation promoters to change all the personal habits investigated in all homes. Nor can the teams be blamed if people do not understand messages.

Of course, each town's hygiene education program is unique. Although they are trained and monitored by the central office staff, the CSC/NGO teams' work has been strongly influenced by local factors plus, of course, the teams' own skills and motivation (as discussed above in Section 3.1). It was not surprising, therefore, to see differences in project impact among towns. No one town (or team) has been a total success or a total failure, but the findings presented above demonstrate uneven performance between towns, or possibly just a diminishing of impact as contact declines.

Considering the close relationship between latrine distribution and hygiene education, the latrine distribution schedule drives much of the NGO/CSC team - beneficiary contact. Latrine distribution targets have been met at different times in different towns. The only towns where large numbers of latrines still were being distributed around the time of the survey were<sup>14</sup>:

- Jhalokati (Jhalokati Division);
- Bhola (Jhalokati Division);
- Sherpur (Manikganj Division);
- Moulvibazar (Manikganj Division);
- Satkhira (Magura Division);
- Naogaon (Nilphamari Division);
- Thakurgaon (Nilphamari Division).

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<sup>14</sup> Sources of information April-June 1998 Quarterly Report, p 28, and Project Office staff.

To the extent that it has affected the water and sanitation life of the 18 towns, the project's most important contribution probably has been in helping people translate general messages into specific practices, especially latrine-related habits. Benefits of such influence can extend beyond the range of direct intervention. It is safe to assume that positive impacts on many domestic practices will affect large populations — not just the formal “beneficiaries.”-- have benefited from project services if diligently provided. Maybe this is why some towns have better over-all practices than others.

## **3.3 The 18DTP School Program**

### **3.3.1 Introduction**

Since 1995 the 18DTP has been working in primary schools. There are two forms of project assistance to schools. First is facilities improvement, which means installation of hand tubewells and sanitary latrines as needed, up to four latrines per school. By the end of June 1998 54 of a planned 67 sanitary latrines had been installed.

The second is hygiene education. Project officials negotiated an agreement with the Ministry of Education's Director General, Primary Education Department, who in 1994 sent a letter to all district Primary Education Officers, directing them to instruct pourashava area schools to implement the hygiene education program. In 1995 a special curriculum, including rhymes and role-play exercises, was developed by project staff in collaboration with the NGO Forum for Drinking Water Supply and Sanitation. Two teachers per school (the headmaster and one science teacher) were trained in 1995-96 by the NGO Forum to use the special curriculum, on the assumption that they would share what they learned with other faculty members.

The two types of project assistance are related, at least in theory. New facilities should ensure that the school environment is a place where children can practice the good hygiene habits they are taught. The physical appearance of the school and its facilities may in itself partly indicate the level of program impact.

#### **3.3.1.1 Evaluation Objectives and Methods**

Evaluation activities have been conducted to provide insight into the School Program's functioning, and also to assess its over-all impact. An effort has been made to understand both teachers' and program staff's points of view. Key questions are

- What is the condition of school hygiene facilities? Are school environments clean?
- Are teachers providing hygiene education as per their training? If not, why not?
- Do students learn what they are supposed to?
- What are the main problems and successes of the School Program?
- Will there be any lasting impact of the school program after 18DTP finishes?

Between March and November 1998 staff conducted four workshops for a total of 110 headmasters / teachers of 34 schools in four project towns (Barguna, Lalmonirhat, Netrokona, and Satkhira). Participants reviewed their experiences with the 18DTP curriculum and proposed future activities or improvements for their schools.

Six NGO teams were interviewed in detail about the school program, as were 30 teachers in nine towns.

Checklist observations of physical facilities were done in 24 schools of nine towns. Observations and interviews were done as case studies, to illuminate the dynamics of specific types of situations.

One or more of these evaluation activities occurred in the following 12 project towns: Barguna, Jhalokati, Lalmonirhat, Magura, Manikganj, Moulvibazar, Netrokona, Nilphamari, Panchagarh, Satkhira, Sherpur, and Thakurgaon. No information was gathered on the school program in the remaining six towns: Bhola, Joypurhat, Meherpur, Naogaon, Narail, and Shariatpur. Evaluation work had to be curtailed because of the 1998 floods.

### 3.3.1.2 The District Town Primary School

#### 3.3.1.2.1 Types of Schools

Two types of schools participate in the School Program. One is the government primary school, usually located in the town's core area in a sturdy (*pucca/concrete*) building. The other type is the 'registered' primary school, typically located in a fringe area in a less substantial building (such as, *kacca/bamboo* walls and thatch or tin roof, or semi-*pucca/concrete* walls and tin roof). The core area schools usually are inside locked compounds, while the fringe area schools rarely if ever are. A larger proportion of fringe area primary students are from poor families than are those in core area schools. The evaluation team found many similarities among the schools of each type in different project towns<sup>15</sup>.

#### 3.3.1.2.2 Size

Schools of both types tend to be crowded, understaffed, and poorly funded. The average number of primary students in the schools observed was 392. The teacher-student ratio ranged from 25:1 to 125:1 with a median of 50:1 (70:1 in the government schools). Several schools operate on shifts, in order to accommodate large student populations.

#### 3.3.1.2.3 Maintenance Funds

Funds for school supplies and facility cleaning may come from various sources: monthly departmental 'contingency' allowances; examination fees; and student contributions. Several teachers, remarking that many students cannot afford to pay even Tk. 2.00, complained that the costs of chalk, paper, and so on, were not even covered by available funds. So paying for tubewell or latrine cleaning supplies is, they said, out of the question. Others (6 of 24 schools), however, do manage funds to pay someone to clean latrines and/or tubewells on a regular basis. Repairs are handled either by the pourashava government or the Facilities Department, which requires administrative authorization before doing any work.

#### Primary School, Manikganj Division

The school receives Tk. 2000 per year for "contingencies." This money is used for purchasing chalk, dusters, soap, a broom, and cleaning supplies (*herpic*). The contingency money also must be used for any minor or major repairs. Separate funds should be allocated for major construction purposes, but the allocation has not been made, so if any major repairs are needed, they are in trouble.

*Interview Notes, 1998*

<sup>15</sup> In Sherpur one school was said to be "semi-governmental," possibly a third type. We did not determine how this type is funded, but it is possible that student fees are used to pay all or part of teachers' salaries.



#### **3.3.1.2.4 Staffing and Administration**

Most schools have both male and female teachers. Each school is managed by a Headmaster, and an 11-member School Managing Committee authorizes teacher's pay and has responsibility for: monitoring teacher performance, following up on drop-outs, and arranging physical improvements, among other duties. The Headmaster is Member Secretary of the Committee. Each district is administered by a District Primary Education Officer (DPEO) or Thana Educational Officer (TEO).

#### **3.3.1.2.5 The School Managing Committee (SMC)**

The SMC is a powerful part of the primary education system. But several teachers and headmasters said in interviews that the SMC is not as helpful in maintaining school sanitation as it could be. Any funding arrangements for this purpose would normally be channeled through the SMC, which also has been known to raise funds on its own to fund school improvements of other types.

#### **3.3.1.2.6 Status and Authority**

People of different status within the school system tend to observe required codes of conduct. Students are lectured to and expected to behave respectfully to teachers. Teachers defer to headmasters on most subjects. Collegial relationships between teachers also are constrained by status distinctions. This pattern affects the 18DTP School Program. The teaching style tends to discourage the kind of playful attitude that students need to adopt when using the specially developed hygiene education curriculum. Relationships between teachers themselves also are affected. Most of those who received training on how to use the project curriculum apparently did not pass along their new skills and knowledge to other teachers. If trained teachers are transferred, as has happened in two schools visited<sup>16</sup>, they take their expertise with them and leave none behind.

Status differences affect use of physical facilities, as might be expected. In some schools specific latrines are reserved for teachers and others for students. In one school a religious male teacher has reserved one latrine for his own personal use.

#### **3.3.1.2.7 Pressure on Facilities**

Even if all four school latrines were installed and functioning, which they often are not, they would be only minimally adequate for the numbers of people using them. In several schools (9 of 24) there is additional pressure from community members wanting to use the facilities. School headmasters were found to take drastic measures to protect facilities from over-use. In seven of the 24 schools visited one or more latrine was found to be locked during the day. In one case no one knew where the key was, in another school it was with the Headmaster's mother. In order to use latrines, children in these situations must either request a key, urinate outdoors, go home, or use a neighborhood latrine.

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<sup>16</sup> One in Magura and one in Sherpur

School tubewells also may be serving the general public as well as school teachers and students. And there are problems with theft of parts or even whole tubewells (mentioned in three of the 24 schools). One of the fringe area schools, this type being typically less secure because of the lack of compound walls, thus had its tubewell installed inside a classroom.

While some schools pay latrine or tubewell cleaners, others expect teachers and/or students to perform this chore. Some parents, however, object to teachers' requiring their children to perform the polluting latrine-cleaning chore.

### **3.3.2 The 18DTP Hygiene Education School Curriculum**

The School Program never received the level of official, governmental support it needed to be sustainable. The Ministry of Education (Department of Primary Education) and the Ministry of Health (Bureau of Health Education) were involved in the program at first. The Ministry of Education issued an order to all primary schools in project towns to use the special curriculum. The Ministry of Health was supposed to take an active role in curriculum development and teacher training, but it did not. The tasks were performed instead with assistance from the NGO Forum for Drinking Water Supply & Sanitation (Dhaka).

By the end of December 1996 580 teachers in all 18 towns had been trained and basic hygiene education materials developed. Project staff had completed a total of 2589 monitoring/teaching visits to 244 schools by the end of June 1998.

Two teachers per school were trained. Each school received two teaching manuals and other educational supplies (Samples of cartoon stickers are in Annex 3.3.) The manuals were still available in most schools visited. But teachers' and headmasters' responses to the project's curriculum have been extremely variable. Some like it and use it, but this group seems to be a minority. Others claim that they do not have time for the games and other participatory activities. Some teachers resent the fact that they did not receive training. A majority express the opinion that there is little difference between the nationally mandated curriculum and the one specially developed for this project. As above, very few teachers in any school have been trained to use it.

NGO/CSC team members at first were supposed to limit their role to monitoring teachers' performance, but in most towns they took on responsibility for some or all classroom instruction. One teacher commented that they are welcome to do this, and that children participate with fewer inhibitions when the project staff conduct classes than when teachers do.

Whether taught by project staff or their usual teachers, children seem to respond to this curriculum. In the majority of schools visited children were indeed found to know the curriculum's catchy rhymes, some of which are presented in Annex 3.3.

### 3.3.2.1 Project Curriculum Not Integrated with Others

Confusing many from the program's beginning, Education Ministry and project officials made little or no effort to reconcile the project's curriculum with the one already mandated nationwide for Class III-V students, *Paribesh Parichiti*. Another likely source of confusion is the introduction of other hygiene education programs (UNICEF and World Vision, e.g.) in an unknown number of schools<sup>17</sup>. Interview and workshop comments indicate that there are somewhat different emphases in the different curricula in use. The project curriculum places great emphasis on using tubewell water for all purposes and exclusive use of latrines for defecation. The national curriculum also promotes safe water and sanitary latrine use, and additionally emphasizes careful personal grooming. UNICEF and World Vision curricula promote similar practices, with an additional emphasis on oral saline solution preparation.

### 3.3.2.2 Teachers' Comments on the Project Curriculum

Teachers (many not trained) made the following comments in 1998 workshops:

#### *Jhalokati Division*

- The approach is boring;
- Need more colorful and entertaining materials

#### *Manikganj Division*

- Some of the words are hard to understand;
- Project and textbook curriculum need to be integrated.

#### *Magura Division*

- Messages are not easy to understand;
- Project materials are not integrated with the national curriculum;
- Role-play, rhymes are monotonous;
- There is a need for more colorful, attractive materials;
- The curriculum demands too much time;
- Project funding cuts are reducing use of the curriculum,
- More teachers need training.

#### *Nilphamari Division*

- Messages are difficult to communicate; Sentences should be simpler;
- Curriculum demands too much time;
- It is too expensive to stage 'dramas'.

The project's "child-to-child" teaching method -- using role-play exercises, for example -- is not familiar to most teachers. Even those who know the rhymes or messages tend to be uncomfortable with this method. One misunderstanding became apparent during interviews: instead of role-play, some teachers think that hygiene education 'dramas' should be full-blown stage events with costumes.

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<sup>17</sup> In the four workshops teachers did not indicate much familiarity with UNICEF or World Vision teaching materials, but these materials are known to be in use in some project area schools

### **3.3.3 Monitoring the School Program**

Teachers in each project school, as required, fill out forms documenting hygiene education sessions. These reports are the basis of the numbers mentioned above. But most would agree that the reports are not carefully prepared. There is no incentive to do them properly. More reliable sources of information are NGO/CSC team members themselves, who visit each school monthly or bi-monthly. During these monitoring visits they either observe teachers in hygiene education sessions or do the teaching themselves.

### **3.3.4 Teachers' Comments on Child Health**

Fifteen teachers were asked whether students showed signs of water- or sanitation-related diseases. Ten mentioned that some students have diarrhea, worms, or other conditions. Five, however, gave only vague answers. Such responses mean either (a) that the teachers themselves need more information about water/sanitation-related diseases, or (b) that they do not follow up on absent children's health status. Poor hygiene, however, is a subject of great concern to them. They regularly urge children to improve their grooming.

### **3.3.5 Problems, Successes, and Future Plans**

While the problems of time, crowding, training, communication, misunderstanding, and so on, are visible even upon casual inspection, the School Program can claim some successes. As with other aspects of the project, hygiene education in the schools has caught the imagination of motivated local people, who make good use of it and surely will continue to do so in the future. In Lalmonirhat, Nilphamari, and Panchagarh, for example, at least six headmasters are known to be very enthusiastic about the dramatic and entertaining instructional approach used. In their schools NGO/CSC team members are not teaching, because teachers are using the project curriculum. (It is possible that others also are, but detailed information is only available from six towns.) The headmaster of Panchagarh Primary School No 1, for example, is urging the NGO/CSC team to use the curriculum as the basis of a mass campaign.

Workshop discussions revealed more enthusiasm than did individual teacher interviews. On the whole they were positive about NGO/CSC workers' teaching. And most said that children have a good time learning from the curriculum

Most teachers interviewed claimed that they would go on with hygiene education after the end of the project, which is to be expected, since it is nationally mandated. The question remains how to integrate the more effective aspects of the curriculum into the normal teaching routine. This would best be done at the central government level, with genuine support from the Ministry of Education, and perhaps from UNICEF. During the last year of the project some mass campaigns probably would be an effective use of project resources, and may inspire pourashava officials and potential volunteers to continue to spread hygiene education messages in an appealing and effective manner on their own in the future.

### **3.3.5.1 Teachers' Recommendations and Proposals**

Workshop participants and interviewees made a number of suggestions for improving both school hygiene and hygiene education. The main recommendations are:

#### ***School Facilities Improvement / Protection***

- Some teachers should be trained in hand tubewell maintenance; and schools should get some of the necessary tools.
- Pourashava Sweepers should clean school latrines daily, not students.
- Funds should be allocated for cleaning supplies: first from the project and later from school contingency funds through School Managing Committees.
- Neighboring families should be provided with tubewells and latrines, so they will not use those of schools. They also need hygiene education, so they do not ruin the school equipment they do use.
- Schools without compound walls need money to build them.

#### ***Hygiene Education Program Improvement***

- All teachers need training in the project curriculum, not just a select few. There also is a need for updating trained teachers' sanitation information.
- School Managing Committees should receive training as well, so that they can understand and support the program and a hygienic school environment.
- Attractive and colorful print or video materials should be developed to make hygiene education more interesting to students.
- NGO/CSC staff should continue doing teaching in schools as long as the project goes on, to reduce pressure on teachers' time.
- The project curriculum should be integrated with the national curriculum, to save time and prevent confusion.
- Competition between schools would stimulate enthusiasm. Project funds could pay for small prizes to the cleanest schools. After the end of the project the pourashava should continue any competition program.

The above recommendations refer to long-term School Program enhancement goals, which will be met long after the 18DTP's end, if ever. In the short-term, teachers suggest, NGO workers could continue to help with monitoring students' personal hygiene, and perhaps awarding prizes to those who are the cleanest (or who show most improvement). Sanitation Week activities also could be expanded, with pourashava chairmen giving prizes to the cleanest schools.

### **3.3.5.2 Consultant's Comment**

The teachers' ideas, including competition among schools, are mostly reasonable ones. But any competition among individual students on grooming and personal hygiene should be avoided. There would be a tendency to give prizes to those who can afford good clothes and shoes, thus embarrassing those who cannot. Poor people already are stigmatized and considered by others to be dirty. Losing a personal hygiene contest would only cause further, unnecessary personal pain.

There might be an award for school improvement, as well awards for absolute hygiene condition, to provide an incentive to less well built schools to improve hygiene.

**Two Primary School Visits  
Magura Division, August 1998**

***School No. 1***

Construction type: pucca. Number of students: 172. Interviewed: Headmaster, teacher, and Assistant T.E O , who all thanked the Dutch Government for helping to improve school facilities

There is a problem with the hand tubewell, which started malfunctioning soon after it was installed. They have asked the Pourashava to repair it, but the Pourashava has told them to write a letter to the higher authorities (Department of Facilities, Primary Education Department, Ministry of Education). They did this a long time ago but are still awaiting a reply.

The tubewell is situated close to the school latrines, which have no other water stored by them. The tubewell platform is muddy and littered with garbage. Latrines also is not clean. One pipe is broken and emitting a bad smell. The teachers said there is no money to repair it.

Children of Classes 3, 4, and 5 clean the latrines and tubewell with water only. There is no fixed schedule for cleaning. It is done whenever necessary. While sometimes doing the job, children (and their parents) have complained about it. And children rarely clean properly.

Children themselves are often dirty, according to their teachers. They come barefoot through fields on their way to school, stepping in mud and cow dung. A proper path or road would be better, but there is no money to construct one.

Hygiene education is going on. NGO/CSC teams visit monthly. Children enjoy the sessions and learning rhymes. (Children were found to know the curriculum rhymes.) But teachers are not enthusiastic. They are not familiar with the curriculum. The two who were trained have been transferred. Before leaving, they unfortunately did not share their knowledge and skills with those who remained. Drama sessions are especially difficult to follow.

The School Managing Committee's (SMC) main function is helping to follow up on school drop outs and to persuade parents and children that attending school is important. SMC members attend yearly social events at the school.

***School No. 2***

Construction type: *kacca*. Number of students: 222. This school is located along a fringe area road. It is not enclosed. Classrooms consist of two walls and mud floors. 'Floating people' (i.e., passers-by) use school facilities. There are four latrines, but the SMC decided that one pan was enough for children's use. Of the four, one was always locked; one was used by a nearby shopkeeper, who holds the keys; one was used by the children; and one was full of mud and stones. The hand tubewell platform was observed to be very dirty, with stagnant water sitting on it. There is no regular cleaning arrangement.

Children, dogs, and even outsiders sometimes defecate in the corner of the classroom itself, covering excreta with ash.

### **3.3.6 Impact of the School Program**

#### **3.3.6.1 Physical Facilities**

The project has installed some school water and sanitation improvements, but the four latrines in each school are not as accessible to children as it was expected they would be. Public pressure on some facilities is great, and school administrators have reacted by locking them or otherwise further restricting access. Children needing to use latrines must either wait, go outside, or go home.

#### **3.3.6.2 Teachers' Skills**

The teacher training program has not been as effective as was originally hoped. Trained teachers rarely if ever have shared their knowledge with other staff members. If they are transferred, their expertise goes with them. A few important exceptions are enthusiastic headmasters or teachers, who have sufficient interest and ability to inspire others. But the number of such enthusiastic persons is not known.

#### **3.3.6.3 Children's Awareness**

There is no doubt that hundreds of children have memorized project messages and other hygiene instructions communicated in school. These may eventually influence their behavior, especially if hygienic facilities are available and other family members also are aware of the importance of hygienic practices. For poor children especially the school program thus could improve their future general health and quality of life.

### **3.3.7 Summary of Findings**

The 18DTP program in primary schools consists of: (a) latrine and tubewell installation and (b) hygiene education. The program began in 1995 with the development of a special curriculum. In 1996 two teachers from every school were trained in use of the curriculum, and latrine installation had begun. Project staff had completed a total of 2589 monitoring/teaching visits to 244 schools by the end of June 1998.

This evaluation is based on multiple information sources. In addition to document review, it uses the findings from four 1998 workshops for 110 headmasters and teachers; individual interviews of 30 teachers in nine towns; checklist observations of 24 schools in nine towns; and interviews with six NGO/CSC teams. One or another of these activities was conducted in 12 project towns.

### 3.3.7.1 The Primary School: Physical Facilities and Administration

The situation of the typical project school is not ideal. Two types of schools were visited. One is the government primary school, usually located in a core area and having a sturdy, concrete (*pucca*) building. This type is usually in an enclosed compound. The other is the 'registered' primary school, typically located in a fringe area and having a less substantial (*kacca*) building — for example, bamboo mat walls and thatched roof, or concrete walls and corrugated tin roof, and not in an enclosed compound

Both types of school are so crowded, that they must operate in shifts. The average number of students was 392; and student-teacher ratios were 1:70 for the government schools visited, and 1:50 for the registered schools.

There is great pressure on all physical facilities under the best of circumstances. And circumstances are far from good. The public tries to use latrines and tubewells, so headmasters often put the latrines under lock and key, which also restricts children's access. Public use is almost impossible to prevent in schools without walled compounds. Teachers may designate some latrines for their own use, further limiting the numbers available to students

Money for maintenance and all school supplies comes from a small "contingency" fund, which most teachers say is too small to allow for purchase of latrine cleaning supplies. Most latrine cleaning is done by students and/or children, who consider it a distasteful task, some parents complain about teachers' requiring their children to do it. So latrines tend to be poorly maintained. Most tubewell platforms also were observed to be unclean.

The School Managing Committee (SMC) is said by most teachers to have little interest in solving school hygiene problems, although some SMCs do support facilities improvement and repairs. Some teachers recommend that the SMCs need to improve their own awareness of the importance of proper use of water and sanitation facilities.

### 3.3.7.2 The Hygiene Education Curriculum

The Ministry of Education (Primary Education) and the Ministry of Health (Bureau of Health Education) were involved in the program at first. The Ministry of Education in 1995 issued an order to all primary schools in project towns to use the special curriculum. The Ministry of Health was supposed to take an active role in curriculum development and teacher training, but it did not. These tasks were performed instead with assistance from the NGO Forum for Drinking Water Supply & Sanitation (Dhaka).

The curriculum itself is based on an innovative, "child-to-child" concept. It makes much use of rhymes, games, and role-play exercises. But many teachers do not see any difference between the project's curriculum and the nationally mandated one.

A serious problem with the curriculum is that it was never reconciled with the already-existing national curriculum, *Paribesh Parichiti*, mandated for use in every primary school. Teachers, trained or not, have been confused about how the new curriculum fits into their



lesson plans. There is no evidence of continuing Ministry interest in promoting the project's curriculum. The project has managed the confusion in most cases by having NGO/CSC team members of each town do lessons with the curriculum, rather than expecting teachers to do them.

In school workshops teachers, mostly not trained in its use, made specific criticisms of the curriculum, such as:

- The approach is boring;
- Role-play, rhymes are monotonous;
- Need more colorful and entertaining materials,
- Messages are difficult to communicate; Sentences should be simpler;
- Some of the words are hard to understand;
- Curriculum demands too much time;
- It is too expensive to stage 'dramas';
- Project materials are not integrated with the national curriculum;
- Project funding cuts are reducing use of the curriculum;
- More teachers need training.

When teachers were trained, it was assumed that the two trained per school would share their knowledge of new techniques with their colleagues. But this sharing did not occur to the extent anticipated. Teachers not receiving the training sometimes feel neglected and resentful -- as well as being confused about the overlap with the national curriculum. If trained teachers are transferred, no expertise with the curriculum remains in the school.

Some important exceptions have been found. In three towns (Lalmonirhat, Nilphamari, and Panchagarh), for example, at least six headmasters are known to be very enthusiastic about the entertaining instructional approach. In their schools NGO/CSC team members are not teaching, because teachers themselves are using the project curriculum. (It is possible that others also are, but detailed information is only available from six towns.) The headmaster of Panchagarh Primary School No. 1, for example, is urging the NGO/CSC team to use the curriculum as the basis of a mass campaign.

### **3.3.7.3 Teachers' Suggestions for Future School Projects**

In workshops and individual interviews headmasters and teachers made a number of suggestions for future projects to raise general awareness of hygiene issues. These projects are not feasible within the framework of the 18DTP, but the suggestions might be passed on to the appropriate local or national authorities:

#### ***School Facilities Improvement/Protection***

- Some teachers should be trained in hand tubewell maintenance; and schools should get some of the necessary tools.
- Pourashava Sweepers should clean school latrines daily, not students.
- Funds should be allocated for cleaning supplies: first from the project and later from school contingency funds through School Managing Committees.

- Neighboring families should be provided with tubewells and latrines, so they will not use those of schools. They also need hygiene education, so they do not ruin the school equipment they do use.
- Schools without compound walls need money to build them.

### *Hygiene Education Program Improvement*

- All teachers need training in the project curriculum, not just a select few. There also is a need for updating trained teachers' sanitation information.
- School Managing Committees should receive training as well, so that they can understand and support the program and a hygienic school environment.
- Attractive and colorful print or video materials should be developed to make hygiene education more interesting to students.
- NGO/CSC staff should continue doing teaching in schools as long as the project goes on, to reduce pressure on teachers' time.
- The project curriculum should be integrated with the national curriculum, to save time and prevent confusion.
- Competition between schools would stimulate enthusiasm. Project funds could pay for small prizes to the cleanest schools. After the end of the project the pourashava should continue any competition program.

The teachers' ideas, including competition among schools, are mostly reasonable ones. But any competition among individual students on grooming and personal hygiene should be avoided. There would be a tendency to give prizes to those who can afford good clothes and shoes, thus embarrassing those who cannot. Poor people already are stigmatized and considered by others to be dirty. Losing a personal hygiene contest would only cause further, unnecessary personal pain.

### **3.3.8 Conclusions**

As far as facilities improvement is concerned, findings are only minimally positive. Schools are not well enough funded to properly maintain the facilities. They are over-used and not (in the case of latrines) adequately accessible to school children. Not only is there too much pressure from within each school, but also neighbors and passers-by often insist on using school tubewells; and school latrines too often are regarded as public latrines.

School Managing Committees mostly do not exercise creative leadership in water and sanitation matters, though more effort could have been made to include them in the program. The result is that the planned relationship between facilities improvement and increased hygiene awareness did not work out as well as planned in most places.

The most positive thing that can be said about facilities is that, the project installed 67 latrines and a number of hand tubewells<sup>18</sup> that would not otherwise have been in place.

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<sup>18</sup> Hand tubewells installed in schools are not counted separately from those installed elsewhere in project reports

The most difficult issue raised by the school program is that its hygiene education innovations will not survive the end of the 18DTP in most schools. There are at least three reasons for this. First is the failure of most trained teachers to share their knowledge with colleagues. This lapse means that faculty expertise is low or even nonexistent (in cases where trained teachers have been transferred.) Second is the project's decision to take on the responsibility of teaching rather than insisting that the Ministry of Education enforce its early mandate that teachers use the project's curriculum in project town primary schools. Third is the inherent confusion, never resolved, between the project curriculum and that already mandated as a national standard.

One way to increase the likelihood of an enduring impact as the project ends would be to publish and circulate the curriculum as widely as possible. It is one of at least four curricula in use in Bangladesh primary schools, along with those produced by UNICEF, World Vision, and, of course, the nationally mandated Ministry of Education curriculum. Specialists in hygiene education may want to refer to it when the national curriculum next comes up for revision. So it should be available in all appropriate libraries and government offices.

As far as the children are concerned, in the end all that can be said is that, a great many children will have received somewhat unusual lessons between 1996 and the end of the project. When the NGO/CSC teams stop doing the teaching, these lessons will end in most places.

Given these limitations, the program's successes deserve recognition. The program has ignited the imagination of some educators in some towns. These teachers, though a minority, are passing on their knowledge to colleagues and students. Six headmasters are known to be enthusiastically using the project's hygiene education ideas. There probably are others, perhaps more than one in each town. But the exact number is not known.