



WOMEN'S INVOLVEMENT IN A RURAL BANGLADESH WATER AND SANITATION PROJECT

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Abstract. Rural women were involved in a water and sanitation project (WSS) in which health impacts were compared between children in two areas: intervention and comparison areas. In intervention area people were provided with handpumps, latrines and hygiene education, whereas, in the comparison area, people did not receive these project inputs. In the intervention area women were directly involved in the site selection of handpumps and latrines, their installation, construction, and maintenance. Observations on women's involvement and their performances in the intervention area are presented.

About 89% of the pumps maintained by women ($n = 30$), and 86% of those maintained by project workers ($n = 49$) were found to be in good working condition. Women supervised the construction of all 754 latrines, fenced 58% of the projects-supported latrines ($n = 268$) and emptied the pits of 65% of the 276 filled-up latrines. Socio-cultural factors were not barriers to women's involvement and performance.

The findings have policy implications for effective involvement of rural women towards the development of sustainable WSS programs.

INTRODUCTION

Community participation is regarded as one of the key approaches to the success of a sustainable water supply and sanitation (WSS) project (White, 1992; Anonymous, 1990). Women's roles as managers of water, sanitation, family health, and child care have worldwide recognition (Elemendorf and Isley, 1981, 1982; United Republic, 1983; Van Wick, 1987). Involvement of women in water and sanitation activities, however, has rarely been monitored and documented. One attempt to evaluate women's participation in water and sanitation activities by non-governmental organizations reported inadequacies in their approach of involving and monitoring women (Hoque and Hoque, 1994).

As part of the Mirzapur handpump project (Aziz *et al*, 1990) some observations were made regarding the involvement of community women. Women's participation was considered to be involvement of women in the field planning and implementation of the project objectives. These objectives were to (1) field test a newly developed 'Tara' hand-

pump and (2) to study the health impact of an integrated handpump, latrine and hygiene intervention. The study was carried out at Mirzapur Thana by the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR, B), in collaboration with the London School of Hygiene and Tropical Medicine.

MATERIALS AND METHODS

The project

The study was conducted in the rural areas of Mirzapur, located about 62 km north west of Dhaka city, Bangladesh. It was a four year (1984-87) longitudinal follow-up of an intervention area (two villages) and a control area (three villages), some 5 km apart, each with a population of about 5,000. In the intervention area, the project provided 148 Tara handpumps (on average 32 persons per handpump), 754 twin pit latrines (1 latrine per household), and hygiene education promoting the use of these facilities. Regular questionnaire surveys, combined with occasional observation to confirm the accuracy of responses, were done to investigate the use of the new facilities.

The water and sanitation practices of the people of both the areas during the pre-intervention and

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post-intervention periods are shown in Table 1. The situation in the intervention area during the pre-intervention period and in the control area were similar to those in other rural areas of the country (Anonymous, 1990). During the post-intervention period, significant improvements were observed in the water and sanitation situation and practices in the intervention area compared to those in the control area. The project had a significant impact of childhood diarrheas in the intervention area, where the incidence of diarrhea fell to three quarters of that in the control area. The details of the various findings of the study have been published elsewhere. (Aziz *et al*, 1990; Hoque *et al*, 1989, 1991).

Methods of involvement

The study involved women mainly through role taking in (1) consultation, (2) decision-making and (3) monitoring and maintenance of the hand-pumps and latrines (Fig 1).

Consultation

The local leaders (mostly male) were consulted before the selection of the project sites. They were informed of the purposes and benefits (at individual and general levels) of the study and were also told

that their participation, especially women's, would be encouraged, as it has sustainability implications. Motivational and consultation efforts started with community leaders and were extended to adult males, females and housewives. The nature and efforts of these consultations varied with the type of women's involvement. For example, there was a high demand for handpump water from the beginning of the project; therefore there was competition for the tubewells. The proper site selection required intensive consultations with leaders, males and females. Unlike that of the handpumps, installation of latrines required major consultation (motivational) efforts at the household level, because they were not regarded as essential utility items. Moreover, these were not given free of cost as the hand-pumps were. During the first year, attempts were made to sell the latrines at 30% of their actual cost. This responsibility of motivating the household members to accept a latrine and collect their contributions by installments was given to the housewives. This involvement needed another kind of intensive consultation with the household members by the respective housewives, and the project workers maintained a close advisory relationship.

In the second year of the study the latrines were given at lower cost. It was found that charging

Table 1
Water and sanitation variables during Mirzapur handpump project (1984-1987).

	Intervention area	Control area
Handpump coverage:		
Pre-intervention	123 person-pump	114 person/pump
Post-intervention	30 person/pump	114 person/pump
Tubewell water use (for drinking, cooking, bathing and washing):		
Pre-intervention	3%	4%
Post-intervention	60%	3%
Sanitary latrine use by adults:		
Pre-intervention	1%	1%
Post-intervention	90%	1%
Hygiene education:		
Pre-intervention	None	None
Post-intervention	Yes	None

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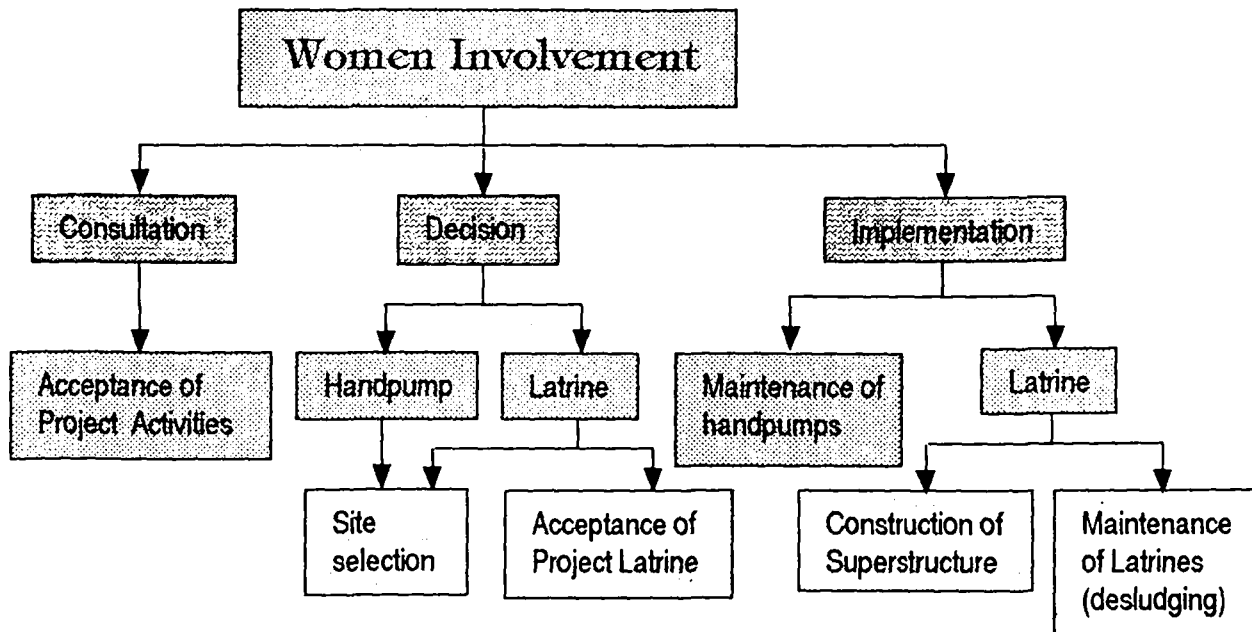


Fig 1—Women involvement in the water and sanitation project.

the same cost, irrespective of financial ability of the target households would require longer periods for purchasing and that would delay the health impact study. At this stage there was a concern that the community members may dislike this arrangement in which some persons pay more and some less for the same latrine. In reality no grievances were expressed.

Decision-making

Both men and women were involved in selecting sites for the handpumps and latrines. Women were given priority over men in the selection of sites for the latrines as their convenience and privacy were important social and cultural factors in changing the household practice. The housewives were given the responsibility to supervise the installation of the latrines which was done by hired contractors. They were earlier given orientation regarding monitoring of quality installation. The contractor was paid only after a satisfactory completion report was received from the housewife of the respective household, followed by a similar report from the project workers.

Handpump maintenance

The local women were involved in the maintenance of handpumps and monitoring of the collection of handpump water.

Of the 148 Tara handpumps, 30 were maintained by local female volunteer handpump caretakers (FVHC) over a period of 15 months (Hoque and Hoque, 1994). Three FVHCs were assigned to each handpump, and they were selected by the users of the respective pump. The women were trained to maintain the pumps through a 2-day training program: one day of two teaching sessions at the project site and one day of practical teaching at their pump site. The women living closest to each pump kept the maintenance tools at their houses. The FVHCs were told to collect the spare parts of handpumps which they felt were necessary, from the project office.

Of the remaining 118 pumps (project pumps), 49 pumps belonged to the same design as the FVHC's pumps and the others belonged to a different kind of design. All project pumps were regularly maintained by pump mechanics.

To study the performance of FVHCs we selected 21 pumps based on the representativeness of the location, variation in user size, and those with no interference from the design-test study. Data collected through the project's fortnightly monitoring system has been used to compare the performance of the FVHC's pumps with that of the project's pumps which were of similar design. During the fortnightly monitoring survey, water discharge rate and leakage condition of every pump were

tested and recorded by project mechanics. These tests were done following standardized methods developed at the beginning of the project and the details may be found in the literature (Hoque *et al.*, 1989, 1991).

Handpump monitoring

Local women were also involved in several surveys for the measurement of handpump water collection (Hoque *et al.*, 1989). They were trained to record the number of strokes a member from a neighborhood household pumped by putting pieces of stone chips in a specified pot. A multiplying factor based on the discharge rate of each pump per stroke (available from the monitoring system) was used to estimate the volume of water collected over the observed 2 days. The women observers were supervised three times a day by project workers. During those visits the workers counted and recorded the chips in each pot on a specific data form. The women's involvement made the identification of households more efficient and minimized the cost as well as the disturbance factor.

Latrines

It was the responsibility of the owners to fence their latrines. After about 6 months following the latrine installation, 486 of the 754 latrines were found to be fenced. The other households were either unable or reluctant to do so. Twelve groups formed with local people, each with 2 males or 2 females, were contracted to fence the rest of the

latrines at the rate of about US\$ 0.27 per latrine. These groups motivated the members of the households to provide materials available in their households (jute sticks, bamboo sticks or, at least, jute sacking) for the fences. They then built the fences at no cost to the household.

Local women were also involved in desludging (emptying) of the pits of the latrines which were filled before the closing of the project. Fifteen women were trained to do the job in a hygienic way without contaminating themselves.

RESULTS

Handpumps

The performance of the FVHCs in the maintenance of the pumps is shown in Table 2. During the study there was only one major breakdown of a caretaker pump and a project pump. The efficiency of the FVHC was well demonstrated. The users were satisfied with their performances and accepted this arrangement for pump maintenance. Their involvement cost the equivalent of about US\$ 0.50 per person to cover their transport costs during their classroom training. The project maintenance workers, on the other hand, worked about 62 mandays per pump and were paid the equivalent of about US\$16.30 per pump.

The handpump use data collected by the local women observers showed that the mean household handpump water consumption rate was 43 liters per

Table 2

Summary of pump maintenance by women volunteers and by project staff.

	Women caretakers	Project workers
No. of pumps	21	49
No. of inspection visits	494	1,247
No. of good pumps	439 (89%)	1,072 (85%)
Pump components replaced/pump/year	2.6	3.2
Estimated water drawn/person/pump/day	36 l	33.7 l
Cost involved (US\$)	1.5/pump*	16.3/pump

*At the rate of US\$ 0.5 per person to cover their transport cost during classroom training, there were 3 women per pump and the actual cost was as shown.

Table 3

Community participation in latrine program.

Participation	% observed
Monetary contribution (n = 754)	
Partial/full contribution	57
No contribution	43
Site selection (n = 754)	100
Supervision of latrine construction (n = 754)	100
Fence construction with project input (n = 268)	
8 female groups	58
4 male groups	42
Local women desludged pits (n = 276)	65
Cost involvement:	
Women paid/pit	US\$ 1.3/pit
Rate proposed by local professional scavengers/pit	US\$ 7.5/pit

capita per day (Hoque *et al*, 1989). The involvement of local women in the measurement of handpump water collection provided a simple unobtrusive way for monitoring the use of handpumps. In the early stages of the project, electronic water flow meters were used to measure the water discharged from the handpumps. These meters proved to

be unreliable and so an appropriate alternative approach was sought. Considering the wide variation in the size of the containers used to collect water and the high use rates of the pumps, direct measurement of water collected in a container was thought to be a more reliable technique than the previous method used.

Latrines

The housewives motivated the male members as well as other members of all 754 households that had latrines to accept and use the latrines (Table 3). They participated satisfactorily in the construction and maintenance of the latrines (Table 3, 4). Their participation in desludging of the pits was remarkable.

Characteristics of women in handpump and latrine maintenance

Figure 1 compares specific socioeconomic and demographic characteristics among local women in the project area and women involved in handpump and latrine maintenance (desludging) activities. The women involved in latrine maintenance were, in general, older, less wealthy and less literate than the other groups.

DISCUSSION

Although the project was originally designed

Table 4

Characteristics of women involved in pump and latrine maintenance.

Characteristics	Percentage involved		
	Women in intervention area (n = 779)	Women in pump maintenance (n = 90)	Women in desludging (n = 15)
Literate	18	19	10
Muslim	70	86	100
Farming-based family	44	42	36
Housewives	91	100	100
Age > 25 years	16	55	70
Possess one or more radio, bicycle, watch	41	44	25

to study health impacts under project management, the decision to involve women as much as possible was incorporated as it progressed. In general, the performance of local women involved in various stages of the project was found to be satisfactory. However, the need for appropriate training is emphasized. The description of their involvement and evidence of their potentials for involvement have planning and policy implications for sustainable WSS programs as well as human resources (women) development.

It was found that the involvement of women in the process of consultation (promotion) helped to make the people realize the fact that they should consider the financial abilities of their neighbours as well as the conditions of the project instead of creating confusion on getting latrines at different costs.

The fact that almost all women involved were housewives suggests that their new roles were accepted and supported by the male members of the house and the society. In earlier phases there was some local reluctance to women's participation, but that attitude changed with continued motivational efforts and people's confidence in project workers, as the project progressed. This was a male dominated society and most of the housewives (less than 85%) were not wage earners. The initial involvement of the whole community (leaders, males and females), and subsequently making all activities open to males and females alike, yet emphasizing women's roles, helped to gain essential community support and adequate contact with women. Male members were encouraged to watch women's training programs and help them in these activities. However, they lost interest or could not afford to follow them after a few days and left the responsibilities with their female family members. All women were allowed to bring their children during the training programs. This approach to involve women has planning and sustainability implications for several reasons: consideration of the existing patriarchal social system, respect for the cultural factors to which most women themselves are tuned, less or no resistance from male members of the households of interested women, and a community/household support towards the project activities.

The training of women for involvement in all of the mentioned activities was designed to take into account the needs and inadequacies of the

local woman, the nature of her job, her overall safety and household factors.

Local women (FVHC), who were mostly illiterate, did the maintenance tasks as well as the more highly trained mechanics. The difference in cost was marked also. The fact that the users were satisfied with the women's performance and pumps were functioning well has planning and sustainability implications.

Desludging of pits, disposal of sewage or any contact with adult feces is usually seen to be the job of a special group of scavengers. These people (sweepers) are usually regarded as 'untouchable'. These women desludged the pits probably because they needed the money and were convinced that by being trained to do the job in an acceptable way they were different from the sweeper class. The positive aspect of this involvement is that the technique was transferred to the community through skill development. If the women/household members so desired, they could desludge the pits of their own latrines, and thus save paying high prices to the professional scavengers.

In summary social and cultural factors posed no barriers to the satisfactory involvement of women in the WSS project, provided appropriate approaches for involvement and training were adopted.

ACKNOWLEDGEMENTS

This research was supported by the International Centre for Diarrhoeal Diseases Research, Bangladesh (ICDDR, B). The ICDDR, B is supported by the aid agencies of the Governments of Australia, Bangladesh, Belgium, Canada, Denmark, Japan, The Netherlands, Norway, Saudi Arabia, Sweden, Switzerland, the United Kingdom and the United States; international organizations including the United Nations Children's Fund, the United Nations Development Programme, the United Nations Population Fund (UNFPA) and the World Health Organization; and private foundations including the Ford Foundation and the Sasakawa Foundation. This study was supported by the Canadian International Development Agency through the World Bank-UNDP.

We are grateful to all members of the field team. Special thanks are due to Ms J Sack for reviewing and editing the manuscript.

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