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INNOVATION, ADAPTATION AND ENGAGEMENT IN A CHANGING WORLD

# The role of NGOs in improving sanitation status in the rural areas of Bangladesh: challenges and expectations

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*NGOs are playing a significant role to ameliorate the sanitation situation in Bangladesh. Multi-stage 30 cluster sampling was adopted to collect quantitative data and 4,200 households were visited from 10 purposively selected sub-districts with and without NGO-led WASH programme. In every sub-district a focus group discussion was conducted to collect relevant information supplementing the findings from quantitative study. The overall sanitation coverage in areas with NGO intervention was significantly ($p<0.001$) higher than the areas without any such intervention. Logistic regression analyses showed that the existence of NGO-led programme, the level of education, poverty, land ownership and access to media had significant ($p<0.001$) influence on sanitation practice. Financial crisis was reported to be the predominant reason for households not having their own sanitary latrine, where NGO assistance was sought for. People acknowledged the role of NGOs in raising awareness, increasing sanitary latrine use and reported NGO assistance necessary for 100 percent sanitation.*

## Introduction

In Bangladesh, more than 50% of the acute illness across all age groups is attributed to the poor water supply, sanitation access and hygiene practices (WASH Research Team 2008). Though the access to improved drinking water supply has been ensured for 80% of the total population, the country is still struggling in the area of sanitation. The improvement of national sanitation situation till 2008 was not on track to meet the target of Millennium Development Goal (WHO and UNICEF 2010). Unaffordability, unawareness, inaccessibility to quality latrines, water and environmental difficulties are several major factors for poor sanitation situation (Quazi 2003). Nevertheless, the Government of Bangladesh has aimed to attain 100 percent sanitation coverage by the year 2013 (UNICEF 2010a). Though sanitation service is provided as a part of the whole Water, Sanitation and Hygiene (WASH) programme, this study is focused on assessing the sanitation scenario only. Improving rural sanitation necessitates actions both at individual and community levels. It also requires community empowerment as well as improved awareness for behavioral change, providing education for younger people and information dissemination for all age groups (UNICEF 2010b). NGOs have significant contribution in expanding sanitation coverage through participatory approach and by integrating water and sanitation programmes with income generating schemes (Hadi and Nath 1996). Around 700 NGOs active in the water and sanitation sector (World Bank 2006) are providing both hardware (sanitary latrine supply, installation of ring slab/water sealed latrines, etc.) and software (technical support, hygiene education, promotion, monitoring, etc.) support to address the issues of poverty and access to sanitation. The programmes are designed innovatively to improve the sanitation coverage e.g., adoption of demand driven approach rather than a purely supply driven (Hadi 2000; Cairncross 1992). The improvement of literacy and community awareness development are also contributing to sanitation behaviour change. However, the programme components and the delivery mechanisms adopted by the NGOs are often different from each other (Ahmed 2008; Robinson 2005), even though the objective is more or less the same.

Apart from the government interventions, NGO-led WASH activities might be considered significant to supplement the efforts for improving sanitation status of Bangladesh. The role of educational intervention

and participation in the NGO facilitated credit programme in changing sanitation behaviour has already been reported (Hadi 2000; Stanton et al. 1987; Tonon 1982). In some cases the NGO-led sanitation programmes are implemented throughout a local government unit e.g., sub-district or even in a smaller unit like village. Within the existing sanitation synergy of the country, still there are some areas where NGO-led WASH programme does not exist. Thus, it requires studying whether these programmes have any effect on the overall sanitation situation, what is the public attitude towards such programme, what are the challenges and what kind of assistance people expect from the NGOs. Documentation of the NGO role in improving sanitation status of Bangladesh may enhance the success of such intervention with necessary changes, if needed. Thus, the aims of the study are to explore the existing sanitation scenario in the study areas, and investigate the role of NGO activities in improving sanitation situation.

## Methods

### Research type

This is a cross-sectional comparative study between areas "with" and "without" NGO-led WASH programme intervention.

### Study area

The study was carried out in 10 purposively selected sub-districts (6 with and 4 without NGO-led WASH intervention). The comparison areas without any NGO-led WASH activity were adjacent to the areas with programme intervention (Figure 1), where there might be NGO activities existing with other interventions, e.g., micro-credit, education etc., but not WASH. A summary of NGO-led sanitation activities in the study areas is shown in Table 1. The original names of NGOs in the study areas have been kept anonymous here.

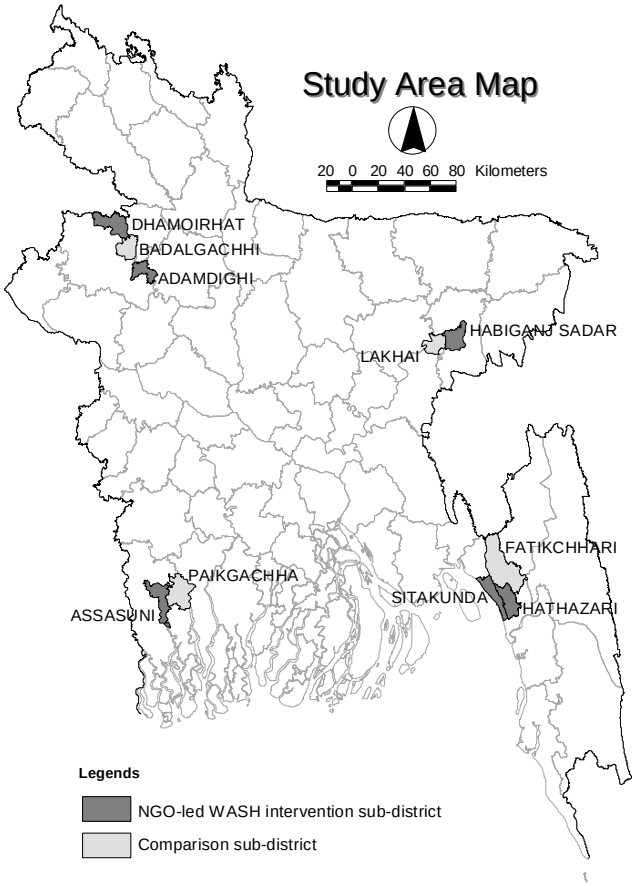


**Figure 1. The selected sub-districts for the study**

**Table 1. Summary of NGO-led sanitation programme in the study area**

| Name of NGO | Name of sub-district with sanitation programme | Sanitation programme components | Duration of the programme |
|---|---|---|---|
| NGO A | Adamdighi, Hathazari, Habiganj Sadar | Free sanitary latrine supply for hardcore poor, loan for sanitary latrine installation, village WASH committee, training | Adamdighi (2006 - 2011), Hathazari (2007 - 2011), Habiganj Sadar ( 2008 - 2011) |
| NGO B | Assasuni | Hardware support for the hardcore poor, sanitation committee at local level for software support e.g., awareness raising | 2005-2008 |
| NGO C | Assasuni | Both hardware and software for the disaster affected people | 4 months in 2010 |
| NGO D | Assasuni and Dhamuirhat | Software support by the village committee and hardware support. | Since 2008 - 2010 |
| NGO E | Sitakundu | Formation of local committee, loan for sanitary latrine installation | 2003-2009 |
| NGO F | Sitakundu | Village WASH committee, hardware support with minimum cost | 2005-2008 |

## Sampling procedure

Representative households for each sub-district were calculated from the total number of households of the respective sub-district at 95% significance level i.e., 384 households for each sub-district, which was rounded to 420 for overcoming non-respondents. The households were selected randomly from the villages of the sub-districts through multi-stage 30-cluster sampling. Several studies in public health science (Milligan et al. 2004; Henderson and Sundaresen 1982) have used this sampling method. Thus, 420 households in every sub-district were equally distributed as 14 households from each village.

## Data collection tools and techniques

Pre-tested questionnaire was used for quantitative data collection, while focus group discussions were used for qualitative study. The respondents of the questionnaire survey were above 18 years old female members, since they were expected to know better the sanitation and hygiene practices of the households. A focus group discussion (FGD) of female respondents was conducted in one village from every sub-district where quantitative data were also collected. The groups were consisted of minimum 8 persons with the characteristics of having own sanitary latrine in the household, not having sanitary latrine, hardcore poor, member of village WASH committee, and received sanitary latrine from the NGO, etc.

## Data analysis

The quantitative data were entered, cleaned and analyzed in Stata 9.2 SE with t-test and $\chi^2$-test for comparing the variables between NGO-led WASH intervention areas and comparison areas. The difference in percentage point was calculated by subtracting data of comparison areas from that of NGO intervention areas. The qualitative data were used for supplementing the findings from quantitative data. Each FGD was considered as a single unit of analysis. The tested variables were type of latrine used by the households, ownership of latrines, sources of money for latrine installation, socio-economic characteristics of household heads using sanitary latrine, reasons for not having sanitary latrines, awareness issues regarding the importance of using sanitary latrines, kind of NGO assistance in sanitary latrine installation, impact of NGO assistance on sanitary latrine use, necessity of NGO intervention, expected duration of NGO intervention and the kind of NGO assistance expected by the people not having sanitary latrines. Additionally, a binary logistic regression was also performed to calculate the odds ratio (OR) at 95% confidence interval (CI) to predict the reasons for not having sanitary latrine in the households e.g., prevalence of NGO intervention, education of household heads, poverty, land ownership and media access.

A "sanitary/hygienic latrine" included (i) confinement of feces away from the environment, (ii) sealing of the passage between the squat hole and the pit to effectively block the pathways for flies and other insect vectors thereby breaking the cycle of disease transmission, and (iii) keep the latrine odour free and encourage continual use of the hygienic latrine (LGD 2005). Household which owned less than 10 decimal (40.47 $m^2$) of land or had no fixed source of income or was headed by a day labour or female or disabled or above 65 years old person was considered as a "hardcore poor household". The household which had 10 decimal (40.47 $m^2$) to 100 decimal (404.70 $m^2$) land and/or sold manual labour for living was considered as "poor", while the "non-poor" households were those which did not fall in these two categories.

## Results

### Quantitative study

In the comparison areas there was higher literacy rate of household heads and less poverty, while the average household size was larger and the members (above 10 years old) of households had less access to media, e.g., radio or TV or newspaper compared to the NGO-led WASH intervention areas (Table 2).

**Table 2. Characteristics of households in the study area**

| Characteristics | NGO-led WASH areas | Comparison areas |
|---|---|---|
| Average household size | 4.7 | 4.9 |
| Percent literacy of household head | 49.9 | 58.7 |
| Percent poverty of household | 61.7 | 51.5 |
| Percent exposed to media | 56.3 | 38.8 |
| n | 11964 | 8263 |

*** Significance level of 1 percent*

Significant difference was found in the sanitation practices between NGO-led WASH intervention areas and comparison areas. The rate of sanitary latrine use was higher in the intervention areas than the comparison areas (50% vs. 17.9%). A considerable proportion of ring slab latrines were not considered sanitary due to the absence of water seal in both NGO intervention and comparison areas (33.1% vs. 35.0%) (Table 3).

**Table 3. Sanitation practices of the household members of the study area**

| Sanitation practice[a] | | NGO-led WASH areas | Comparison areas | Difference |
|---|---|---|---|---|
| Sanitary latrine | Sanitary, ring slab with water seal | 50.0 | 17.9 | 32.1** |
| Unsanitary latrine | Ring slab without water seal | 33.1 | 35.0 | -1.9** |
| | Pit | 4.4 | 12.6 | -8.2** |
| | Open defecation | 11.8 | 34.7 | -22.9** |
| | n | 11964 | 8263 | - |

[a] *Multiple response ** Significance level of 1 percent*

Among the study areas, majority of the households using sanitary latrine owned the facility themselves, which was higher in the NGO intervention areas than the comparison areas (84.4% vs. 81.7%). The rest of the households had shared ownership of the facility. The expenditure for installing the latrines was arranged predominantly by the owner him/herself. However, in the NGO intervention areas higher proportion of sanitary latrines was installed free of cost (9.8%) and the money was borrowed from NGO (6.9%) (Table 4).

**Table 4. Ownership of sanitary latrines and sources of money for installation (% households)**

| Ownership and source of money | NGO-led WASH areas | Comparison areas | Difference |
|---|---|---|---|
| *Ownership of sanitary latrine* | | | |
| Self owned facility | 84.4 | 81.7 | 2.7 |
| Shared facility | 15.6 | 18.3 | -2.7 |
| n | 1254 | 306 | |
| *Source of money* | | | |
| Self/family | 78.8 | 97.3 | -18.5** |
| Free of cost | 9.8 | 0.7 | 9.1** |
| NGO loan | 6.9 | 0.7 | 6.2** |
| Local government | 2.7 | 4.7 | -2.0 |
| Others | 7.2 | 1 | 6.2** |
| n | 1168 | 300 | |

*** Significance level of 1 percent*

Significant difference was evident in the socio-economic characteristics of households having own sanitary latrine in the intervention areas and comparison areas (Table 5). In the intervention areas, higher proportion of households having own sanitary latrines had illiterate household heads or were hardcore poor and poor, while in the comparison areas the sanitary latrines were owned by higher number of non-poor households.

More households having own sanitary latrines in the intervention areas had access to media than the comparison areas (76.6% vs. 71.2%) (Table 5).

**Table 5: Socio-economic characteristics of the households having own sanitary latrine (%)**

| Socio-economic characteristics | NGO-led WASH areas | Comparison areas | Difference |
|---|---|---|---|
| *Education of household head* | | | |
| Illiterate | 34.3 | 28.8 | 5.5 |
| Primary | 25.5 | 21.6 | 3.9 |
| Secondary or higher | 40.2 | 49.7 | -9.5** |
| *Poverty level of households* | | | |
| Hardcore poor | 22.8 | 7.5 | 15.3** |
| Poor | 34.5 | 26.1 | 8.4** |
| Non-poor | 42.7 | 66.3 | -23.6** |
| *Households having access to media* | | | |
| Have access to radio/TV/newspaper | 76.6 | 71.2 | 5.4 |
| n | 1254 | 306 | |

*** Significance level of 1 percent*

The log odds ratio for predicted variables e.g., existence of NGO intervention, poverty, education of household head and access to media were found correlated with the incidents of not having sanitary latrines. Probability of households not having sanitary latrine was more likely in the comparison areas (OR 4.3 95% CI 3.7-5.0) compared to the NGO-led WASH intervention areas. Irrespective of sanitation programme existence, household heads who were illiterate (OR 2.2 95% CI 1.8-2.5) showed higher tendency of having no sanitary latrine compared to the household heads educated up to primary (OR 1.7 95% CI 1.3-2.5) and secondary level education ($p<0.001$). If all other variables are controlled, the hardcore poor (OR 1.5 95% CI 1.3-1.8) and landless (OR 1.8 95% CI 1.3-2.5) households had more likelihood of not having sanitary latrines than the non-poor and landowner households ($p<0.001$), respectively. Similarly irrespective of all other variables, households having no media access were more likely (OR 1.9 95% CI 1.6-2.2) to not having sanitary latrines than their counterpart ($p<0.001$). The respondents who did not have their own sanitary latrine mostly mentioned financial crisis as the reason behind, both in the intervention (89.2%) and comparison areas (91.8%). The other reasons were land scarcity, joint family, not feeling necessary, etc. The awareness about the importance of using sanitary latrine in the NGO-led WASH programme areas was significantly higher than that of the comparison areas (Table 6). This was evident since higher percentage of respondents in areas with NGO intervention (94.7%) were reported to be informed of the importance of sanitary latrine use and they opined it as mandatory (50.0%). Regardless of the NGO facilitated WASH programme existence, social institutions (family, neighbour, educational institutions) were the most common information source to households for sanitary latrine use. Additionally, NGO and mass media played major role in raising sanitation awareness among the people. The role of NGO in the intervention areas was significantly higher (Table 6).

**Table 6: Awareness regarding the necessity of using sanitary latrine (%)**

| Awareness issues | NGO-led WASH areas | Comparison areas | Difference |
|---|---|---|---|
| *All household members informed of sanitary latrine use* | 94.7 | 83.3 | 11.4** |
| *Opinion regarding sanitary latrine* | | | |
| Mandatory | 50.0 | 22.4 | 27.6** |
| Necessary | 49.1 | 75.7 | -26.6** |
| Cannot mention | 0.8 | 1.8 | -1.0** |
| *Source of information about the necessity of sanitary latrine use*[a] | | | |
| Social institutions | 67.2 | 86.0 | -18.8** |
| NGO | 44.5 | 2.4 | 42.1** |
| Mass media | 34.6 | 23.6 | 11.0** |
| Local government | 6.2 | 3.0 | 3.2** |
| n | 2520 | 1680 | |

[a]*Multiple responses, ** Significance level of 1 percent*

The offer of assistance (software or hardware) to households in installing own sanitary latrine was significantly higher in the intervention areas (20.8%) than the comparison areas (2.6%). Additionally, significantly higher incidents of motivation and sanitary latrine supply helped people in sanitary latrine installation. There was strong public demand for NGO assistance to increase the use of sanitary latrine in the study areas. In areas with NGO intervention, the respondents mostly opined for long term NGO assistance (more than 5 years), while in the comparison areas more people opined for less than 1 to 5 years NGO intervention necessary to reach 100% sanitation coverage (Table 7). People who did not have their own sanitary latrine sought for hardware support (78.9% in the intervention and 89.7% in the comparison areas) as sanitation assistance from the NGOs to reach 100% sanitation coverage. The other necessary assistances specified were financial support (6.4% and 5.1%, respectively in intervention and control areas) and training (0.6% in the intervention areas).

**Table 7: The issues relevant to NGO role in sanitation specified by the respondents (%)**

| Relevant issues | NGO-led WASH areas | Comparison areas | Difference |
|---|---|---|---|
| *NGO offer for assistance in establishing sanitary latrine* | 20.8 | 2.6 | 18.2** |
| *Kind of NGO assistance in establishing sanitary latrine* | | | |
| Motivation | 31.7 | 1.3 | 30.4** |
| Supply sanitary latrine | 17.4 | 1.0 | 16.4** |
| No assistance | 59.7 | 97.7 | -38.0** |
| n | 1254 | 306 | |
| *Impact of NGO assistance on the use of sanitary latrine* | | | |
| Increased | 74.6 | - | - |
| No change | 10.7 | - | - |
| Cannot mention | 12.0 | - | - |
| n | 2509 | - | - |
| *Necessity of NGO intervention* | | | |
| Yes | 98.5 | 91.7 | 6.8** |
| n | 2520 | 1680 | |
| *Expected duration of NGO intervention* | | | |
| Less than 1 to 5 years | 35.6 | 71.8 | -36.2** |
| More than 5 years | 64.4 | 28.2 | 36.2** |
| n | 2481 | 1540 | |

** *Significance level of 1 percent*

## Qualitative study

Regardless of the existence of NGO-led WASH programme in the study areas, majority of focus group discussions (FGDs) mentioned that the households, predominantly from poor and hardcore poor groups and/or landless did not use sanitary latrine, since they did not have any of their own. However, in the NGO intervention areas, there were some hardcore poor households having sanitary latrine supplied free of cost by the NGOs, which contributed to better sanitation situation in such areas compared to the comparison areas. Thus, FGDs of both areas mentioned the necessity for external support to increase sanitation coverage. They stressed on both government and NGO support to supply free sanitary latrines for the poor people who hardly could afford. One of the respondents in a FGD of Assasuni mentioned, "We are poor, would we install sanitary latrine rather than buying rice?" Nevertheless, loan support was recommended by majority of the FGDs for sanitary latrine installation for those who might be able to pay back. People also mentioned that getting government support might be cumbersome since the representatives of the local government did not act properly in this regard. Some of them opined that, NGOs should take the lead role for sanitation support to the community. The FGDs reported that majority of the villagers were poor and they were busy with their own income generating activities with hardly any time to spend for sanitation promotion. The non-poor household members and the local leaders were not concerned enough in this regard. Initiatives taken at local level without NGO involvement would not be successful, revealed from all the FGDs. The NGO employees through courtyard meetings, discussions and door to door visits could increase awareness among the people. But such activities were absent in the comparison areas resulting in less awareness status. To achieve 100% sanitation coverage the poor people should be provided with free hardware support, which would also increase the participation of the local people in NGO interventions. Majority of the FGDs in the NGO intervention areas, opined that the overall sanitation situation had improved after the programme

implementation. People were better informed about the necessity and the procedure of using sanitary latrine. The overall awareness status increased due to the participation of local people in the village level community meetings, training and other promotional activities implemented by the NGOs. FGDs of both NGO intervention and comparison areas advocated the necessity of NGO support for sanitation situation improvement (Table 8).

**Table 8. Major issues and findings regarding sanitation from the qualitative study**

| Major issues | Findings |
|---|---|
| Sanitary latrine use by the households | 1. The non-poor households had sanitary latrines mostly.<br>2. Those who did not use sanitary latrines were mainly from poor and hardcore poor households, since they did not have their own. |
| Attitude towards NGO activity | 1. The sanitation situation improved after implementation of NGO-led WASH programme.<br>2. The NGO employees were very effective in sanitation related awareness-raising.<br>3. NGOs should take the lead role for sanitation promotion. |
| Kind of NGO support expected | 1. The poor households unable to pay back the loan should be supplied with free latrines.<br>2. Loan for sanitary latrine installation should be given to those who are able to pay back the loan. |

## Discussion

Higher rate of sanitary latrine use was found in the NGO-led WASH intervention areas. This implies that NGO's approach is effective to make positive difference by overcoming the barriers. However, both in the intervention and comparison areas a considerable proportion of ring slab latrines were not considered sanitary due to absence of water seal. Installation, use and maintenance of water seals in the latrines have been reported to be inconvenient for the users (Quazi 2002), and thus they probably remove it after installation. This warrants a need for technological innovation. Nevertheless, more hardcore poor and poor households in the intervention areas were found to own sanitary latrines than the comparison areas. Households in the comparison areas, which were hardcore poor or had illiterate household heads or had no media access showed higher tendency of not having sanitary latrine. People struggled with financial crisis and argued for support from the NGOs either as hardware or as loan for sanitary latrine installation both in quantitative and qualitative study. The positive association of higher education, land ownership and media access with the use of sanitary latrine has been reported in several studies (Dieterich 1982, Hadi 2000). Poverty stands as a strong barrier in improving sanitation situation, since the poor people lack both the means to get access to improved sanitation facilities as well as they have limited knowledge on how to minimize the negative effects of the unsanitary environment. People do not use sanitary latrine as they do not own or do not have access to the facility (Hadi 2000). In a study of WASH Research Team (2008) the hardcore poor households have been reported to show less likelihood of using improved sanitation facilities mainly owing to their lack of ownership of these facilities. Bartram and Cairncross (2010) mentioned that the disease burden associated with inadequate WASH facilities is carried by the poor and disadvantaged people in the developing world. Thus, most of the NGO-led WASH interventions involved either hardware support and/or loan for sanitary latrine installation by the poor and the reflection of which was observed as the higher sanitation coverage in the intervention areas as well as strong community demand for such facilities in future. Advocacy, training, community meeting through village WASH committees, house to house visit, awareness raising, etc. offered by the NGOs have been able to effectively improve the awareness among the community regarding the necessity of sanitary latrines. People in general strongly opined for the necessity of NGO interventions for different durations to reach the 100% sanitation coverage.

## Conclusion

The positive impact of NGO-led WASH interventions in improving sanitation situation in the rural areas of Bangladesh is evident in this study. However, the challenges which were hindering the increase of sanitation coverage are still prevailing. The NGOs have been able to create community support and demand for their activities, but people are still struggling with poverty to afford sanitary latrines and thus they expect hardware, software and loan support from the NGOs in future.

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