

Water and sanitation status relating to the poorest in Bangladesh

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Abstract

This study aimed to see the level of access to safe water and sanitation and discusses the knowledge on arsenic contamination in drinking water among the poorest in rural Bangladesh. This was a part of baseline survey for CFPR/TUP. Household survey method was used to collect information through structured questionnaire. The survey was conducted during July-September 2002 in Rangpur, Kurigram and Nilphamari districts. Variables considered were safe water and sanitation. Sources of drinking and cooking water, water quality with regard to arsenic, and knowledge on arsenic contamination were considered under safe water variable. Type, practice and ownership of latrine was considered under sanitation. Coverage of access to drinking water for SUP and NSUP of three study districts was above 96% which is similar to national rural water supply coverage (97%). Nevertheless, most of the households did not have their own tubewell and did not guarantee safe drinking water. It was also found that about 87% of the households drank water from tubewell those were not tested for arsenic contamination. Sanitation coverage of the study households was 5.4-9.4%, much lower than national sanitation coverage for rural area (30% or 41% including pit latrines). Lack of awareness along with unavailability of resources are some causes of poor water and sanitation coverage for the poorest. Raising awareness on safe drinking water and sanitation as well as ensuring safe drinking water and sanitation access to these districts need immediate attention to ensure and secure their healthy and sustainable livelihood.

I. Introduction

Contaminated drinking water and an inadequate supply of water cause diseases that account for 10% of the total burden of disease in developing countries (World Bank, 2002). An estimated 10,000 people die every day from water and sanitation related diseases, and thousands more suffer from a range of debilitating illnesses. The impact of inadequate water and sanitation services falls primarily on the poor. Water and sanitation related sicknesses put severe burdens on health services (World Bank, 2002; 2003). Diarrhea spreads most readily in environments of poor sanitation where safe water is unavailable. A study showed that water-borne diseases are one of the major cases of under-five mortality, along with pneumonia, malaria, and measles (Talk international, 2004).

At the beginning of 2000, one-sixth (1.1 billion people) of the world's population was without access to improved water supply and two-fifths (2.4 billion people) lacked access to proper sanitation. The majority of these live in Asia and Africa, where fewer than one-half of all Asians have access to improved sanitation and two out of five Africans lack improved water supply. Moreover, rural services still lag far behind urban services. Sanitation coverage in rural areas, for example, is less than half than in urban settings, even though 80% of those lacking adequate sanitation (2 billion people) live in rural areas. These figures are all the more shocking because they reflect the results of at least twenty years of concerted effort and publicity to improve coverage (WHO, 2000; World Bank 2003). Lack of clean water and sanitation is the main reason of diseases transmitted by human waste in developing countries (World Bank 2002). The safe water supply and the sanitary disposal of human wastes are generally considered as essential public health services for healthy life. However, a large proportion of the population in developing countries is still deprived of having access to safe water and hygienic sanitary facilities (Hadi, 2000). Among them, the poorest suffer the most because they lack both the means to get such facilities and knowledge on how to minimise the negative effects of the unsanitary environment.

The United Nations initiated the *International Drinking Water Supply and Sanitation Decade* (1981-1990) to promote safe water supplies and sanitation facilities to the poor of the developing countries (Larsimont, 1995). The UN declaration reflects the commitment to improve water supply and sanitation coverage for the disadvantaged people lacking such services. Along with many other countries, Bangladesh also committed to provide safe drinking water and sanitary facilities to its people by the year 2000 which, however, was an unattainable dream.

The role of awareness campaign in promoting tubewells and changing sanitation behaviour has been well documented (Toron 1982; Stanton *et al* 1987). But what is not as clearly known is whether the access to safe water and sanitation among the poorest has increased as a result. CFPR/TUP program of BRAC has a component, in addition to asset transfer to providing tubewell and latrines to the ultra poor participants. Program also provides

assistance and support to the participants to increase the awareness and health and sanitation behaviour. This chapter describes the level of access to safe water and sanitation and discusses the knowledge on arsenic contamination in drinking water among the poorest in rural Bangladesh.

II. Methodology

Household survey method was used to collect information for this chapter. A structured questionnaire was developed and employed. The survey was conducted in July - September 2002 in Rangpur, Kurigram and Nilphamari districts. Variables considered in this study were safe water and sanitation. Sources of drinking and cooking water, water quality in regards to arsenic, and knowledge on arsenic contamination has been considered under safe water variable. Type, practice and ownership of latrine has been considered under sanitation.

III. Results and Discussion

3.1 Water

3.1.1 Water supply

National coverage of drinking water supply was 97% in 1994 with 100% in urban and 97% in rural areas (WHO, 1996). This coverage did not consider the quality of water as free from chemical and microbial contamination, which could be termed as safe water. However, tubewell water was considered as safe drinking water.

Tubewell is the main drinking water source of almost all the households, both in SUP (97.7%) and Non-SUP (97.8%) members in all the three study districts, except for few households who were collecting drinking water from dugwells (Table 1). Most of the households (>96%) irrespective of both SUP and NSUP use tubewell water for cooking purposes. Limited access to surface water and lower concentration of iron in tubewell water in these regions were some of the main reasons for using tubewell water for this purpose.

Table 1. Source of water by the study households

Source of water	Study household	
	SUP	NSUP
Drinking water		
Tube well	97.7	97.8
Others	2.3	2.2
Cooking water		
Tube well	96.6	96.7
Others	3.4	3.3
N	2909	2685

Others include dug well, ponds and rivers.

If we look at ownership of tubewell (Table 2), we see that most of the ultra poor households depend on neighbours' tubewell, more so in the case of SUP households (58.8%). On the other hand, the percentage of households owning tubewell was found to be higher in the case of NSUP (38.9%) households.

As it was found, most of the households collect water from their neighbours' tubewell meaning that someone needs to travel to collect water from these tubewells. In all the study areas more than 95% women were found to be responsible for fetching water.

Table 2. Ownership of tube well used by the study households

Ownership	Study household	
	SUP	NSUP
Own	24.6	38.9
Neighbour	58.8	45.5
Government	14.7	12.9
Others	1.8	2.7
N	2842	2627

Others include samity, NGOs, jointly owned, owned by mosque and school.

3.1.2 Arsenic in water

During the 1970s and 1980s, aid organizations installed thousands of wells in Bangladesh, hoping to halt dysentery and cholera. While this program surpassed its goal of providing "safe" wells to 80 percent of the country's population by 2000, it had a massive blind spot: not testing for naturally occurring arsenic. 20,000 Bangladeshis a year are now dying from related ailments, and up to 30 million more may be affected — a public health disaster on a larger scale than Bhopal or Chernobyl is in the making (Safe Drinking Water, 2003). Questions were asked to know the awareness level of the poor households and arsenic status in drinking water at that area.

It is found (Table 3) that only 18%-20% of the total households of all three districts were aware of arsenic and its related health hazards. DPHE (1998) reports that, only 3 or 4 *thanas* of Nilphamari and Kurigram district were arsenic contaminated and the contamination level was 4% and 9% respectively except one *thana* (Rahumari in Kurigram) with 68% contamination. It was quite clear that NGOs were the primary source of information about arsenic for the ultra poor households. The next important source of arsenic related information for the ultra poor households was neighbours.

Table 3. Awareness of arsenic by the study households (in percentage)

Knowledge and source	Study population	
	SUP	NSUP
Knowledge about arsenic	18.3	19.6
Source of knowledge		
Radio	7.7	10.6
NGO worker	63.1	64.1
Neighbour	27.1	22.4
Others	2.0	2.9
N	531	526

Others include different informal sources like local elites, poster, miking and relatives

Awareness about arsenic was lowest among the ultra poor in Niphamari district (3%), and highest among the ultra poor in Kurigram district, where the arsenic problem was reported to be comparatively higher (68% contamination in one *thana*) (BGS 2000).

Table 4. District level awareness level on arsenic

Knowledge on Arsenic	Study Households					
	Rangpur		Nilphamari		Kurigram	
	SUP	NSUP	SUP	NSUP	SUP	NSUP
Yes	18	18	3	3	32	32
No	82	82	97	97	68	68

Testing of tubewell water for arsenic is the only way to know if a tubewell water is arsenic contaminated or not. According to the BGS (2000) survey, none of the study district was situated in arsenic 'hot spot' areas. Since the study districts are not included as arsenic 'hot spot' areas, concerned villagers performed these limited tests with their own initiatives (Table 5). The percentage of households drinking water from tubewell that was tested for arsenic is quite low (12.6% for SUP and 13.4% for NSUP). Out of those tested tubewell most tubewell were found not contaminated with arsenic (Table 5 as green). Though it was found that 86-87% of SUP and NSUP household's drinking water source is not tested for arsenic, where quite a few households are not aware whether their water source is tested or not (18-18.8%). Therefore, it is not certain that those 86-87% households are drinking safe water (Table 5). Nevertheless, referring DPHE (1998) and BGS (2000), this area is not considered as severely affected by arsenic contamination. This also reflected from green marked tubewell water source that around 91.1% (calculated from 666N green and 65N red in Table 5) tasted water source is considered as safe among the study households.

Table 5 Information on water testing for arsenic and test results of those tubewell study households fetch drinking water

Knowledge on test for arsenic	Study households (in %)		N
	SUP	NSUP	
Yes	12.6	13.4	731
Green (no Arsenic)	11.5	12.3	666
Red (with Arsenic)	1.1	1.1	65
No	68.6	68.4	3853
Don not know	18.8	18.2	1042
Total	87.4	86.6	
N	2913	2713	5626

3.2 Sanitation

Total sanitation (including urban and rural coverage) coverage in Bangladesh was 35% in 1994 with 77% urban and 30% rural coverage (WHO, 1996). Lack of sanitation is a major public health problem that causes disease, sickness and death. Highly infectious, excreta-related diseases such as cholera still affect whole communities in developing countries. Diarrhoea, which remains to be primary killer of children, spreads easily in an environment of poor hygiene and inadequate sanitation, killing about 2.2 million people each year. In order to address this important issue this study assessed the sanitation coverage of the respondent households.

Sanitation coverage has been found to be very low in contrast to the high water supply coverage among the ultra poor. Table 6 shows that a very small proportion (2.5% among SUP and 4.5% among NSUP) of the households use sanitary latrines. According to the national data (BBS and UNICEF, 1999), 43% of the urban households and 10 % of the rural households use water seal latrine; if simple pit latrines are included, the figures increase to about 61 percent and 41 percent respectively. But, sanitation coverage (considering water sealed and pit latrine) was 5.3% and 9.5% for the SUP and the NSUP households

respectively. Only 4.9% SUP household adults use their own latrine. Use of own latrine was higher (11.4%) among the NSUP households (Table 7).

Table 6. Type of latrines used by the study households

Type of Latrines	Study household	
	SUP	NSUP
Sanitary	2.5	4.5
Pit	2.8	5.0
Open	6.8	8.1
No fixed place	87.9	82.4
N	2913	2713

Table 7. Place of adult's defecation by study households

Ownership	Study population	
	SUP	NSUP
Own latrine	4.9	11.4
Others' latrine	5.9	5.4
No fixed place	89.2	83.2
N	2913	2713

Latrine includes sanitary, pit and open latrine.

IV. Conclusions

This study found very encouraging coverage in using drinking water access (>96%) irrespective to SUP and Non-SUP compare to national rural water supply coverage (97%). Nevertheless, most of the households did not have their own tubewell. Knowledge on arsenic and related activities was very poor, since this is not hotspot area identified by different arsenic survey. Even than, NGO played an important role on disseminating information on arsenic in ground water. About 87% households drink water from tubewell those are not tested for arsenic; which gives an impression of uncertainty of safe drinking water source for the poorest people at that area.

Though the national sanitation coverage for rural area is low (30% or 41% including pit latrines), still SUP and Non-SUP households of these three districts (around 5.4-9.4 %) are far behind the national coverage. Most adult are using open and not fixed place for defecation. This is partly might be due to lack of proper education and consciousness about health problem related to this practices.

Lack of awareness along with unavailability of resources are some causes of poor water and sanitation coverage for the poorest. Raising awareness on safe drinking water and sanitation should be considered while making any development planning for the poorest people at that area. Safe drinking water for the poorest deserve more attention without considering the water supply coverage. Since this coverage does not ensure chemical and microbial safety of drinking water. Sanitation coverage of these districts needs immediate attention to ensure and secure their healthy and sustainable livelihood.

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