

Drinking Water Scarcity in the Southwest Coastal Area in Bangladesh

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Abstract

This paper represents the present situation of water scarcity and salinity problem in the southwest coastal part of Bangladesh. The scarcity of water is hampering in every sphere of the lives of the people living in the southwest coastal part of Bangladesh specially Khulna, Jessore, Satkhira and Bagherhat districts are the most vulnerable among the coastal districts. It has been stated that the level of salinity in the available water sources is very high in these areas. In this study, 33 places in different five unions of Shyamnagar has been selected to find information regarding water scarcity, type of water diseases, distance and source of drinking water, water demand per person and water crisis period. Three techniques have been adopted to collect information while conducting the study e.g. Transect walk, Questionnaire Survey and Focus Group Discussion (FGD). Lack of aquifers and contamination of water by arsenic had forced the tube wells to become unusable. Salinity in this part increases steadily from December and reaches the maximum in late March and early April. From the survey, it has been revealed that among the studied families, around 60% families have 4-8 members and 25% of the families have 8-12 members. Besides, the findings reveal that around 50% of the population is managing their drinking water from Pond Sand Filter (PSF). The rest of the population surveyed consumes water which are collected directly from the pond. Moreover, PSF is unable to remove coliform bacteria by 100% from highly contaminated water. On an average 50% of the respondents stated of being affected by diarrhea.

Keywords: Coastal, Water, Scarcity, PSF

1 Introduction

Scarcity of water is hampering in every sphere of the lives of the people living in the southwest coastal part of Bangladesh. Though there were ample government interventions to bring about a positive change, but these interventions lacked efficiency and sustainability. Moreover, at times, the issue salinity was even ignored by the government. For example, according to BBS-2013, 98.5% population within the country has access to fresh water but this study did not incorporate the issues of salinity. Taking the issues of salinity into consideration would have resulted in a significant decrease in this percentage. The southwest coastal region is prone to natural disaster like flood, cyclone, tidal surges etc. and to worsen the situation there is presence of human induced water logging. This region of the country is struck with a disaster almost once in every five years. The intensity of damages caused by the disaster is maximum in Satkhira which is the result of its geographical settings. Miseries of the people residing in these regions are endless. It needs to be noted that according to the latest poverty map of Bangladesh, Khulna division is one of the poorest divisions within the country while Satkhira district is ranked 7th among all the 67 districts of the country, and it is the poorest district among the coastal district of the country. Being one of the poorest districts of the country, this part of the country is struck with extreme poverty with majority of its population living below the poverty line and where people are stumbling in every step of their lives for ensuring their livelihood.

2 Background

Bangladesh is the 5th most disaster prone country of the world where the intensity of disasters is maximum in its southwest coastal region. Satkhira, due to its geographical settings are exposed to major threats of the disasters that this region encounters. To worsen the situation, from the available secondary sources, it has been found that the Satkhira district of the southwest coastal regions is one of the most vulnerable regions of the country in case of fresh water crisis which is caused by the high presence of salinity in its surface and ground water. Also the government has declared this part of the country as one of the most vulnerable zones of the country in respect to water crisis and labeled some parts of it as the Hard to Reach Areas of Bangladesh. Extreme poverty in this part of the country piles up the sufferings of the local people. According to the latest poverty map of Bangladesh,

Khulna division was labeled as one of the poorest divisions of the country while Satkhira is the 7th ranked poorest district among the 67 districts of the country and the poorest district in the southwest coastal region.

The acute shortage of fresh water forces the people of Satkhira to consume saline or contaminated water or buy fresh water. The expense of fresh water turns out to be enormous burden for the people who are struck by extreme poverty.

The area under study is 5 unions (Atulia, Burigoalini, Munshiganj, Koikhali, Ramjannagar) in Shyamnagar Upazila of Satkhira district. The maximum area possible within these 5 unions were opted to cover. Therefore the unions were selected based on its geographical boundaries. The 5 largest unions of the Shyamnagar were preferred to work.

To get an overview of this 5 unions, a statistical profile is given below. From the profile, it is easy to know about the area of each union with its total population.

Table 1: Profile of 5 unions (Statistics)

Union Name	Area (acre)	Household	Population	Literacy rate (7+ years)
ATULIA	10134	5621	30152	44.59
BURIGOALINI	10533	4644	24304	38.93
MUNSHIGANJ	12135	6480	32981	42.34
RAMJANNAGAR	9163	4447	22504	34.46
KOIKHALI	11025	4982	25737	36.19

3 Methodology

To study the prevailing condition in the locality in respect to water crisis the social research methodology was adopted. The techniques were:

- Transect Walk
- Questionnaire Survey
- Focus Group Discussion (FGD)

The study initiated with a transect walk around the working area. Accompanying some key local people and tried their level best to observe the overall condition in the working areas, i.e. the 5 unions of Shyamnagar upazila. Based on the findings of the transect walk, an overall condition, problems and challenges of the operating water sources were detected and at the same time we had got a rough idea about possible solution for the concerned locality and also locate the specific working area. The findings of the transect walk revealed 60 different sites within these 5 unions where the intensity of fresh water crisis is extremely high and immediate steps needs to be undertaken in order to minimize and mitigate the sufferings of the local residents.

Once completed with the transect walk, conducting questionnaire survey was focused in the working area. It was ensured that a diverse range of participants in the survey and thus ensured that survey was done by both men and women irrespective of their class or age. In the questionnaire survey, the local people were asked about their problems related to water and also the problems they encounter on consumption of water from the available sources. Apart from their hurdles, their opinion was gathered regarding the solution to these crises.

The FGD was the then conducted with the key local figures. They were also asked about their opinion and experiences regarding the available water sources and also from them got to know about their preferences regarding the best water option.

4 Findings

Struggle for safe drinking water has been a regular routine of the local people's lives. After we had conducted our survey and carried intense discussion on the matter of water crisis, it has been found that, a significant amount of time is lost daily for fetching fresh water. It was learnt that people at time requires to walk for 2-3 km. to avail fresh water. Not that it is only painful and involves huge physical labor but it takes away a huge chunk of time from their lives affecting their household and economic activities. But still at times, collecting water from 2-3 km away from home cannot ensure 100% fresh water. Life cannot be much more painful when these poverties struck population are forced to buy fresh water. As we all know, Satkhira in the 7th ranked poorest district of the country and people here are victim of extreme poverty. Every single penny matters for these people. The natural calamities, environmental degradation and the unfavorable natural settings hamper the economic activity of the

local people immensely. Paying for water on a regular basis turns out to be enormous burden for these people who are living below the poverty line.

Figure 1 shows that around 60% of the families studied has 4-8 members in their family. Around 25% of the families have 8-12 members. While the rest of the population studied, either has more than 12 members in their family or have less than 4 members in their family. From the findings of the survey, it can be stated that a family, in working area, on an average has around 7-8 members. From the findings in Figure 2, it has been revealed that a family usually can afford to pay less than BDT 100/ month for water.

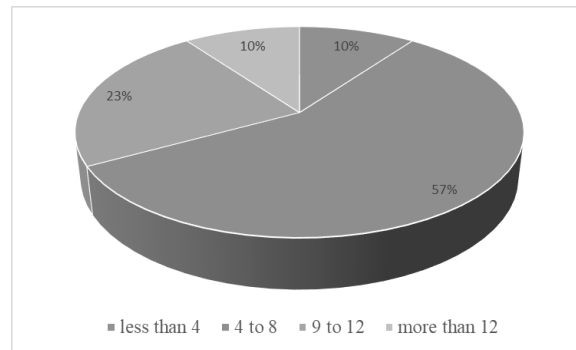


Figure 1. Number of Person per family

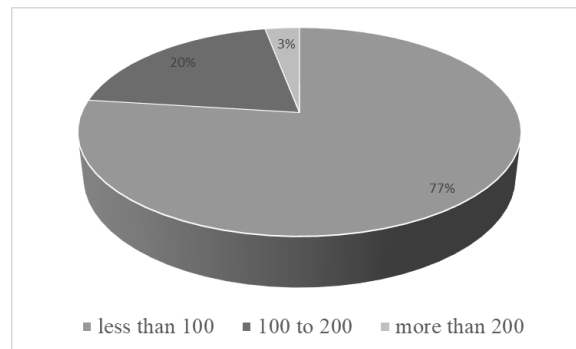


Figure 2. Monthly cost for drinking water per family (BDT)

Figure 3 shows that averagely 50% of the respondents stated of being affected by diarrhea. High rate of stomach ache and upsets are other common problems. Also people are regularly being affected by high fever due to consumption of contaminated water.

From Figure 4, it is reveal that around 50% of the population is managing their drinking water from PSFs. The rest of the population surveyed consumes water which are collected directly from the pond. A very few families are using RWHS as a source of fresh water.

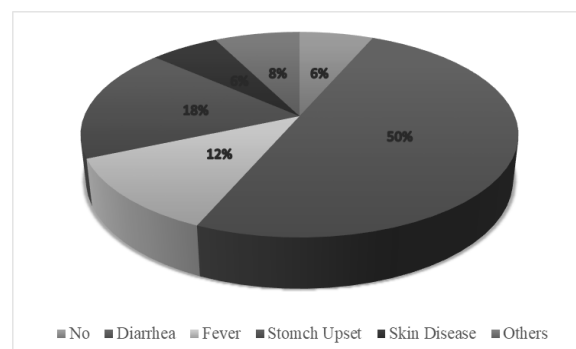


Figure 3. Types of diseases faced by local people

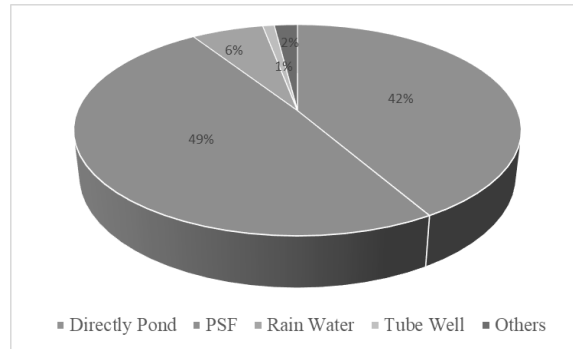


Figure 4. Current drinking water source

From the Figure 5, it is revealed that maximum of the surveyed population has a fresh water source within 200 meters from their home. Then again around 1% of the surveyed population has to travel more than 3km to collect fresh water. Around 3% of the surveyed population needs to travel 2-3km in search of fresh water. Travelling 2-3 km is a quite a huge distance and involves a lot of labor. At the same time, it consumes at least few hours from Figure 6 shows that on an average, a family consumes around 10-12 liters of water per day which is quite standard for families with 7-8 members. To add on, majority (55%) of the respondents said that in his/her family consumes 10-12 liters of water every day. The rest 45% of the respondents either consumes more or less than 10-12 liters of water every day.

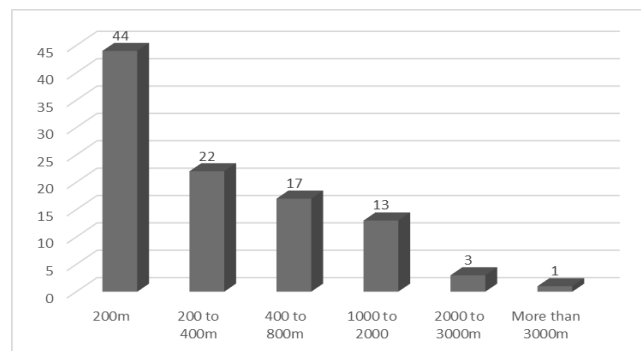


Figure 5. Distance of drinking water sources

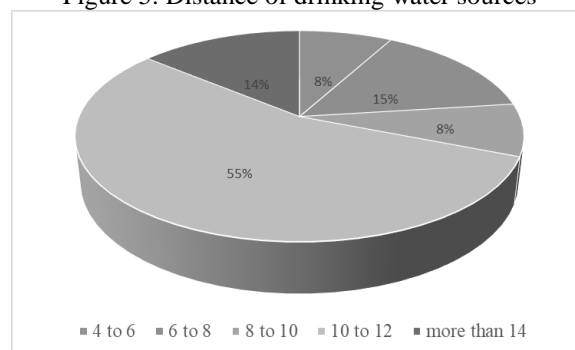


Figure 6. Daily drinking water demand per family (L)

Figure 7 shows that majority of the population prefers to collect water after 2 pm. Around 30% of the surveyed population wants to collect water before 8 pm. Around 40% of the population wants to collect water after 5pm While 19% of the population prefers collecting water during 2-5 pm.

In figure 8, it has been reported by around 55% of the respondents that water scarcity is maximum during March-April period of the year. While the rest believes that scarcity of water is maximum only during the month of April when the season is completely dry.

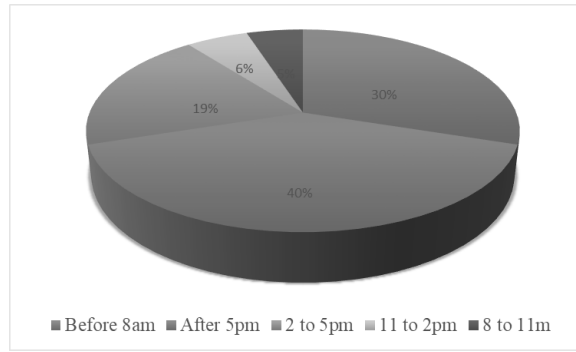


Figure 7. Period of day to collect water

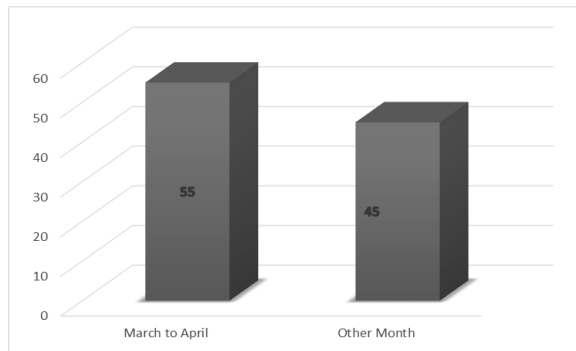


Figure 8. Maximum water crisis period (public Opinion)

From Figure 9, it has been revealed that in around 93% cases, women are responsible for collecting water. it has been revealed that the responsibility of water collection is burdened on women.

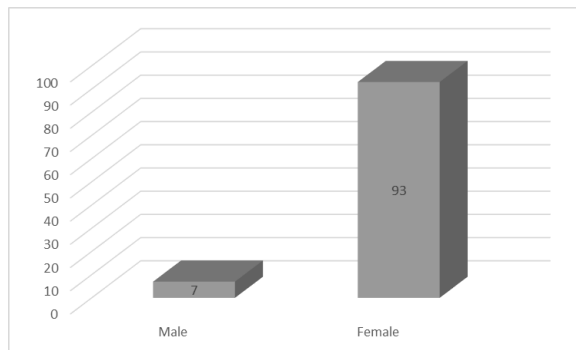


Figure 9. Gender % Collection of drinking water

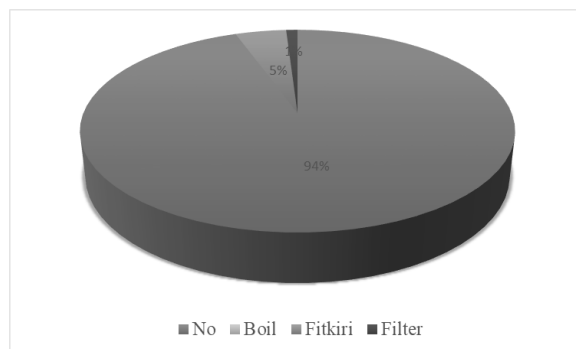


Figure 10. Water purifications process by local people

Figure 10 represents that more than 90% of the surveyed population does not apply any purification technique for consuming the water. Rarely the person surveyed boils or uses fitkiris to purify their water. Few of the respondent's uses filter machines to purify their drinking water.

From table 3 to table 7 show the water test result of different parameters. Water has been collected from 10 studied site. Seven sources of them are directly pond and others are PSF. There is no so much variation of result between the sources of directly pond and PSF.

Table 3: Water quality test result for several water sources

SL No	Sources	pH		EC ($\mu\text{S}/\text{cm}$)		TDS (mg/L)		Salinity (%)		Turbidity (NTU)	
		Concentration present	BD Standard	Concentration present	BD Standard	Concentration present	BD Standard	Concentration present	BD Standard	Concentration present	BD Standard
1	Pond	7.0		107.0		51		0.05		45	
2	Pond	7.3		387		191		0.18		26	
3	Pond	7.6		1110		548		0.56		62	
4	Pond	7.4		560		277		0.27		10	
5	Pond	7.6	6.5-8.5	124	-	61	1000	0.07	-	21	10
6	Pond	7.1		775		384		0.38		33	
7	Pond	7.0		1228		610		0.60		15	
8	PSF	7.5		142		70		0.05		11	
9	PSF	6.8		780		386		0.38		10	
10	PSF	7.3		1240		615		0.62		3	

5 Conclusion

In this region, there is extreme scarcity of safe drinking water. People at times need to walk for several kilometers before they can gain access to fresh water sources. The presence of high rate of water borne diseases in the areas where the local people claims to have fresh water options automatically gives us an impression that the prevailing water options are failing to serve its purpose. PSF, the most widely used source for fresh water are exposed the environment and the different natural calamities resulting the contamination of the water sources. Also, humus in the form of falling leaves and surface runoff are making the water contaminated. The color of the water of the ponds, where PSFs are operating, reveals that the water is high on nutrients which imply that the water source is somehow connected to the sewerage.

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