

WATER, SANITATION AND HEALTH STATUS OF AILA AFFECTED COASTAL AREA OF BANGLADESH

*Md. A. Haque, A. Haque and M. S. Ansari

Environmental Science Discipline, Khulna University, Bangladesh

*Corresponding author: Sohel_es06@yahoo.com

ABSTRACT

To evaluate the existing water and sanitation situation and health threats, the study has been conducted after one year of cyclone Aila in a disaster prone coastal union of Khulna district. A detailed questionnaire survey has been carried out in household level and simple random sampling technique has been used in sampling process. The study has revealed that all the households use rain water as primary source and 77.14% households use sweet pond water as secondary source for drinking and cooking purposes. The study has found that the sanitation condition is abundantly unhygienic, because 61.42% households use hanging toilet and almost all the households directly dump children feces into the river or tidal water. People have not sufficient supply of washing materials that is why 41.42% households wash their hands after defecation and before taking any food using soil. On the other hand, outbreak of water born diseases is in severe level and 76% respondents have considered skin disease in rank one and 60% respondents have considered the outbreak of diarrhoea in rank two. The study has also showed priority based community demands on various water supply and sanitation issue for the development of these systems as 59.67% respondents place water tank and dram supply and reconstruction of embankments (75%) as first priority.

Key words: Water, sanitation, health, community demand.

Introduction

Safe water and sanitation contribute to enhance the quality of life through improving general health conditions of the people. Due to lack of safe water and sanitation, incidences of water and excreta related sicknesses result in periodical outbreak of cholera and a high rate of diarrhoeal diseases accounting for over a quarter of a million lives every year (DPHE, 1999). Bangladesh is one of the highest disaster prone countries which experiences frequent natural disasters causing huge lose of lives and properties every year due to its geographical location and climatic condition. The horrible disasters, for instance, flood, cyclone, tornado, tidal surge, river erosion, drought, land slide, earthquake etc are exacerbating the socio-economic, demographic and environmental problems (DAM and CUB, 1998). In Bangladesh, 96% of the population use tube-well water for drinking but while due to use unsafe sources for personal and domestic purpose, incidences of morbidity and mortality from water borne diseases are still high and achievement in behavioral changes in sanitation leaves much to be desired (LGED, 1998). The coastal belt of Bangladesh is identified as saline area where complex hydro geological situation makes drinking water supply difficult compared to other parts of the country. Due to direct affect of cyclones and tidal surges, water and sanitation facilities are damaged; tube wells are either broken or partially damaged and become unusable due to submergence; ponds and other water bodies all are contaminated by the onrush of saline water. These damages of sanitation facilities and infrastructures are thereby leading to serious crisis of drinking water in the coastal areas. As a result, outbreak of waterborne diseases e.g. skin diseases, diarrhoea, fever, dysentery, etc. in the affected areas claim numerous human lives (Rahman and Bux, 1995). Cyclone Aila hit the south-western coast of Bangladesh on 25 May 2009. The people of the Aila affected area received the highest amount of sufferings from drinking water shortage and destruction of sanitation facilities soon after Aila had attacked. However, the affected people are still suffering from shortage of pure drinking water. Aila devastated all the drinking water sources (ponds, PSF and tube wells). During Aila, high tidal surges contaminated all fresh water sources with polluted saline water. Many people are compelled to drink such polluted water as they do not have any other option and consequently suffer from water borne diseases such as allergy, skin disease, cholera and diarrhea. Supply of drinking water has now become the most striking challenge for the affected area (Kumar and Masud, 2010).

Materials and Methods

The study has been completed in Kamarkhola union, the north-eastern part of Dacope upazila under Khulna district, Bangladesh. The study area lies between 22°52' to 22°56' north latitude and 89°24' to 89°30' east longitude. It is bounded by the Tildanga and Pankhali union in the north, the Sutarkhali union in the south,

the Dacope and Koilashgong union in the west (BBS, 2006). The survey has been conducted in five coastal villages under Dacope upazila named Kamarkhola, Sreenagar, Kalinagar, Joynagar and Parjoynagar from 1st to 15th August, 2010. To complete the study both primary and secondary data have been collected in which primary data are collected through interview of household head with a detailed questionnaire based on different water, sanitation and health matters such as present water sources (drinking, cooking, bath), latrine coverage, human waste management, common diseases, medical facilities and community demands on development of water and sanitation system in the study areas. A total of seventy (N= 70) pretest structured and semi-structured questionnaire have been used and households are selected through simple random sampling technique. The total households in the study area are 1660 (BBS, 2006). The sample size for data collection from the study area has been obtained from the following equation (Kotheri, 2009).

$$n = \frac{z^2 pqN}{e^2 (N - 1) + z^2 pq}$$

Secondary sources are governmental organization (GO), NGOs, published and unpublished literature. Collected data have been coded, compiled and analyzed to achieve the objectives of the study.

Results and Discussion

Disaster prone coastal areas are continuously vulnerable for the people for poor water, sanitation and health aspect. In 2009, cyclone Aila destroyed most of the water sources and initiated various diseases in Dacope upazila. The study has attempted to find out present water and sanitation status with relevant health hazard in the community after one year of cyclone Aila. To represent overall situation of the study, findings have been discussed under three broad headings such as safe water supply coverage; sanitation and health status; and community demand for the development of water supply and sanitation condition.

Safe water supply coverage: Before the cyclone Aila, the major drinking water sources in the study area were shallow tube-wells, wells, deep tube-wells, ponds, PSFs etc. Among all sources, the ponds were exceptionally predominant (BBS, 2006). According to local DPHE office, after the Aila about 98% of water sources have been either broken or partially damaged and become unusable due to submergence. Ponds and other water bodies all have been contaminated by the intrusion of saline water thereby leading to serious crisis of drinking water and that situation is still continuous.

Water consumption pattern: The study has found that rain water collection and storage is the only hope for safe water source and almost all the respondents are using rain water in their drinking and cooking purposes which also depend on availability of rainfall. Among all, 76% have big or small muddy pot for storage and others have not good facility to store rain water for days. Although most of the ponds are flooded by saline water, people are still using that source as cooking water (77.14%), washing and bathing purpose. Almost all PSF technologies have been partially or totally broken down but community is using this water as a secondary source of drinking purpose (22.86%). On the other hand, domestic water needs (washing 76%, bathing 84%) are being fulfilled with river water shown in Table 1. Rahman and Jahan (1997) as quoted in Persson (2000) stated that approximately 16% of all households use tubewell for domestic purposes besides drinking in Bangladesh.

Table 1. Water consumption pattern of PSF users (Field Survey, 2010)

Water sources	Drinking and Cooking (%)		Washing (%)	Bathing (%)
	Primary source	Secondary source		
Rain water	100	-	-	-
Pond water	-	77.14	24.29	15.71
River water	-	-	75.51	84.29
PSF water	-	22.86	-	-

Distance of water sources and collection status: Due to inundation of safe water sources people have to go adjacent unaffected areas that vary from less than 1 km to more than 1.5 km. The study has found that, 37.14% respondents collect sweet pond water and 27.14% respondents collect PSF water from a distance of less than 1 km, 44.28% respondents collect sweet pond water and 52.86% respondents collect PSF water from a distance of 1-1.5 km, 18.58% respondents collect sweet pond water and 20% respondents collect

PSF water from a distance of more than 1.5 km shown in Fig.1. According to the latest assessment by an alliance of INGOs (2010) the average distance of drinking water sources from beneficiary's household is about 2.4 km. The study has grouped water collector in three classes as female, male and children. It has been found that the prime rain water collectors are female and sometimes both female and children. In case of sweet pond water, 55.72% collectors are female, 34.28% are children. PSF water is mostly collected by female (57.15%) and 30% children. Relief water has been collected by female (54.28%) and children (27.15%). So female are mostly involved in household safe water management in the study area. Kumar and Masud (2010) have also found that females are involved in water collection then men in the Aila affected coastal areas.

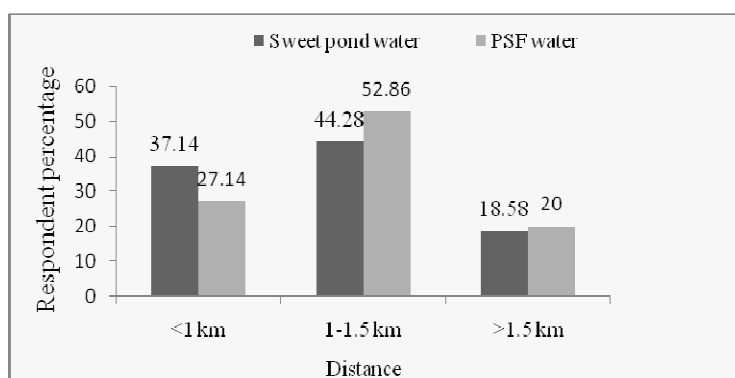


Fig.1. Distance of water sources

Sanitation status: Cyclone Aila has destroyed all latrines even brick-built latrines have malfunctioned since they had been submerged into stagnant water of tidal surges. On the other hand, there has no adequate latrine facility available in the cyclone shelters and other centers where most people have taken shelter for a considerable long period. Their health vulnerability is increasing because of growing open defecation. Whereas the sanitation coverage was about 50-60% before Aila in the study area (BSS, 2006)

Washing status: The study has found that 84% respondents wash their hands after defecation or before taking any food regularly, 16% sometimes wash their hands after defecation or before taking any food. The study has grouped different hand washing materials as soap, ash, soil and only water. It has been found that only 10% households have the ability to wash their hands with soap after defecation or before taking any food shown in Fig.2. The study also shows that maximum number of people is conscious about hand washing, but it is very difficult to maintain the proper hand washing for the people because of the post severe condition of Aila affected areas. HISBSB (2008) evaluated that 55% of rural people wash their hands with soap or ash after defecation and only 17% has observed to do so.

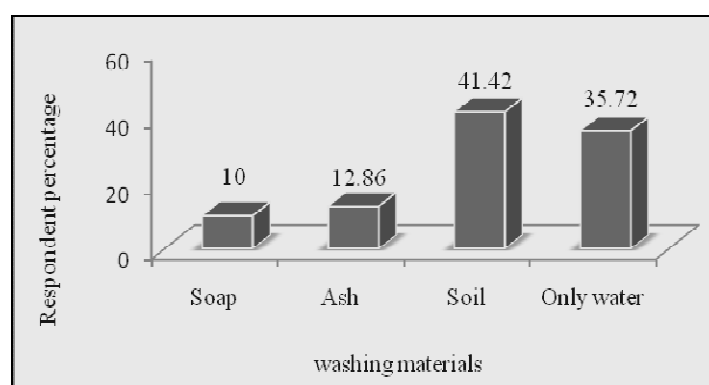


Fig. 2. Hand washing by soap, ash, soil and only water

Category of latrine: There are two types of latrine existing in the study area now as temporary (2, 3 ring slabs) latrine and hanging. The study has depicted that 61.42% households use hanging toilet; 30% use ring slab latrines and only 8.58% use open space shown in Fig.3. It has been found that most of the latrines do not maintain hygiene because of the flow of the tidal water. In the study area children feces and waste materials are directly dumped into the river or tidal water. According to BBS (2006), 38.83% of dwelling households had sanitary latrines before cyclone Aila in Dacope upazilla.

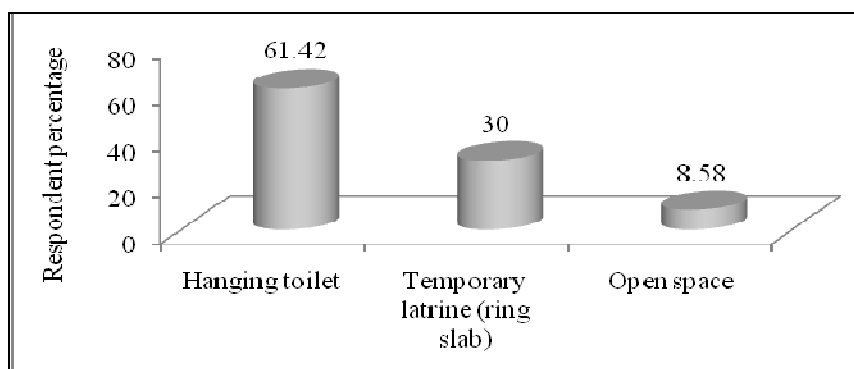


Fig. 3. Category of latrine

Health status: The study has assessed the present health situation through the following headline as outbreak of diseases, frequency level of affected people by diseases, sources of medical service in the post Aila affected area.

Outbreak of diseases: Health condition has been found as vulnerable where the outbreak of water borne diseases like skin disease, diarrhoea, dysentery, cholera, fever are very common. The present study has ranked the diseases according to community experience. It has been found that skin disease, diarrhoea, dysentery are in first rank among which skin disease is mostly prioritized (76%), 60% have preferred diarrhoea in rank two and 76% considered dysentery in rank three in the study area. Cholera and fever are also in ranking process. The study has found that children (75.71%) and aged people (24.29%) are mostly affected. Kumar and Masud (2010) have also estimated almost similar ranking of water borne diseases.

Table 2. Ranking status of outbreak of diseases

Fever (%)	Cholera (%)	Dysentery (%)	Diarrhoea (%)	Skin disease (%)	Rank
-	-	8	16	76	First
-	-	16	60	24	Second
-	-	76	24	-	Third
32	68	-	-	-	Fourth
68	32	-	-	-	Fifth

Sources of taking medical service: People in the study area are not getting proper medical services because of the destructive effect of cyclone Aila. There exist some sources of medical services such as pharmacies, village doctors, community health workers, and doctors of government hospital for health care services. The study has found a gradual increase of demand for proper medical services although reliable sources are not available. It has been found that 41.42% are taking medical services from pharmacies, 38.58% from village doctors, 8.57% from community health workers, 11.43% from government hospital and some NGOs are also giving medical services in the affected areas; these attempts, however, are insufficient compared to community demands.

Community perception

Development of water supply: The study has found priority based community demands for the development of water supply system where 59.67% respondents have given first priority for the water tank and dram to collect and store water, 50.38% given second priority for the reconstruction of embankments,

46.29% given third priority for the dewatering and re-excavation of ponds, 39.36% given fourth priority for the reconstruction of PSF, 36.86% fifth priority for the repair of tube-well, 66.67% respondents have given sixth priority for more supply of relief water.

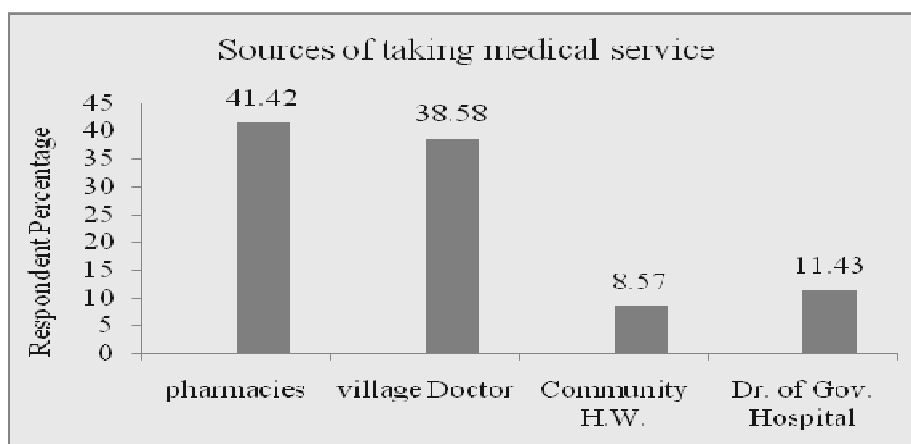


Fig. 4. Sources of taking medical service

Table 3. Community demand for the development of water supply

Relief water (%)	Repair of tube-wells (%)	Reconstruction of PSFs (%)	Dewatering and re-excavation of ponds (%)	Reconstruction of embankments (%)	Water tanks and drams (%)	Rank
-	-	11.52	-	28.81	59.67	First
-	3.99	15.41	-	50.38	30.22	Second
-	14.53	23.25	46.29	5.82	10.11	Third
-	30.52	39.36	15.13	14.99	-	Fourth
33.33	36.86	10.46	19.35	-	-	Fifth
66.67	14.1	-	19.23	-	-	Sixth

Table 4. Community demand for the development of sanitation condition

Stopping shrimp farming (%)	Medicine and medical services (%)	Ring slabs latrine (%)	Reconstruction of embankments (%)	Rank
6.25	3.13	15.63	75	First
15.62	12.50	46.88	25	Second
9.38	59.38	31.25	-	Third
68.74	25	6.25	-	Fourth

Development of sanitation condition: The present study has assessed the community demands for the development of sanitation system in the affected areas. Here community demands are ranked according to their priority basis as highest percentage of respondents (75%) give first priority on the reconstruction of embankments in the surrounding areas, 46.88% have given second priority on ring slab latrine, 59.38% have third priority on medicine and medical services availability. The study has also found that people in the affected areas are not supporting shrimp culture and second highest numbers of respondents (68.74%) have given their fourth priority on quitting shrimp culture in the study area.

Conclusion

- I. Due to inundation (98%) of water sources households are now using rain water as a primary source (100%), on the other hand, sweet pond water (77.14%) and PSF (22.86%) water are being used as a secondary source of drinking water and cooking.
- II. In case of washing and bathing, community people are mostly using river water (average 80%) and pond water (average 20%).
- III. Household water management is mostly done by female.

- IV. The main type of latrines used in the locality is hanging toilet (61.42%) and children feces (100%) are dumped into the river which is so unhygienic for the people.
- V. The outbreak of water-borne diseases like skin diseases, diarrhea, and dysentery are in severe level in the study area.
- VI. In order to develop water supply and sanitation system, community prefers more water tanks to be installed and water storage drums to be provided and embankments to be reconstructed in their first priority.

References

- An alliance of INGOs, 2010. One year on from Cyclone Aila, People are still struggling to survive, the latest assessment. Oxfam International. On line document, Retrieved on June 26, 2010.
- Banglapedia, 2006. National encyclopedia of Bangladesh, Asiatic Society of Bangladesh, Dhaka
- BSS (Bangladesh Bureau of Statistics), 2006. Zila Series, Khulna. Bangladesh Population Census 2001.
- DAM (Dhaka Ahsania Mission) and CUB (Concern Universal Bangladesh), 1998. Disaster Friendly Water and Sanitation: A brief introduction. Irish Aid, ECHO and CORDAID. Pp.1. Retrieved on June 19, 2010.
- DPHE, 1999. Evaluation of the rural water supply and sanitation programme Bangladesh. Pp.95. On-line document, Retrieved on June 17, 2010.
- HISBSB (Health Impact Study Baseline Survey Bangladesh), 2008. Sanitation, Hygiene, Water supply. UNICEF, icddr'b, DFID.
- Kothari, C.R. 2009. Research Methodology, 2nd edition. New age international (P) Limited. New Delhi, India. Pp.179.
- Kumar, U. and Masud A. Al. 2010. Cyclone Aila: One Year on Natural Disaster to Human Sufferings, Unnayan Onneshan. Pp.15. Retrieved on July 22, 2010.
- LGED, 1998. National policy for safe water supply and sanitation, Local Government Division, Ministry of Local Government and Rural Development and Co operatives, Dhaka, Bangladesh. On line document, Retrieved on July 22, 2010.
- Persson, T.H. 2001. Demand for Water and Sanitation in Bangladesh. Pp.1-2. On line document, Retrieved on June 17, 2010.
- Rahman, M.M. and Bux, M.K. 1995. Post disaster situation of water supply and sanitation. Journal of the civil engineering division the institution of engineers, Bangladesh, Vol CE23, no.1. Pp.91-93. Retrieved on July 22, 2010.