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Safe Drinking Water and Sanitation Facilities in the Coastal Area: A Study on Two Upazilas in Bangladesh

Habib Ullah[1] and Muhammad Mahmudur Rahman[2]
[1]Lecturer, Department of Political Science, Chndkhali Mosharraf Hossain Degree College, Betagi, Barguna-8720, Bangladesh, E-mail: aqmhabibullah@gmail.com (Gazette for Lecturer, Political Science, Bangladesh Civil Service-Education Cadre in the 43rd BCS)
[2]Professor, Department of Political Science, University of Rajshahi, Rajshahi 6205, Bangladesh. E-mail: mahmud_polsc@ru.ac.bd; mahmud_polsc@yahoo.com, https://orcid.org/ 0009-0007-9515-7287

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Abstract: This research aims to state the safe drinking water and sanitation facilities in the coastal areas of Bangladesh and to identify the main challenges to ensure harmless water and sanitation amenities for all in these coastal areas. The paper begins by describing the nature of safe drinking water and sanitation status in the coastline areas of the country. The study adopts a quantitative technique to provide a comprehensive understanding. Both primary and secondary data sources were used in the research. The study was based on a field investigation where 100 respondents were selected randomly from four Union Parishads of two coastal Upazilas in the Barguna district of Bangladesh. A structured questionnaire was administered to a representative sample of households across different areas of this district. Existing data from government reports, academic publications, and relevant databanks were analyzed to supplement primary data and provide context for the study. Bangladesh has made some progress in the last few years in ensuring safe drinking water and sanitation facilities but at the marginal part, especially in coastal areas, it remains a big challenge. This research exposes that, 54% of citizens think that they use safe water for drinking and cooking, 22% opine that the water they use for drinking and cooking is not safe and the rest of 24% are not sure that the water they use for drinking and cooking is safe or not. The study reveals that 18% of residents have a clear idea about the diseases that can be affected by unsafe water and sanitation, 64% of dwellers have a rough idea and the rest of 10% don't have any idea about it. This research also displays that, 76% of inhabitants use sanitary latrines and 24% of individuals don't use sanitary latrines at their homes. In this study, it is clear that a number of people living in the coastal areas are deprived of safe drinking water and sanitation comforts and they have no clear idea about the consequences of waterborne illnesses.

Keywords: Coastal region; Upazila and Zila (District)

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Introduction

The United Nations has set a global target to achieve the SDGs or sustainable development goals by 2030. There are a total of 17 Goals and among them, goal number 6 is to ensure that everyone has access to safe water and sanitation (UN, 2022, https://sdgs.un.org/goals/goal6, Retrieved 18.12. 2024.). Bangladesh has made unprecedented achievements in various socio-economic indicators in the last few years but ensuring safe water and sanitation for all, especially in coastal areas, still remains a major limitation. As per the report of the Water organisation, in Bangladesh, 60% of people have access to safe water and 31% have access to safe toilets. (water.org, 2024). Another report by WaterAid shows that 40.9% of people in Bangladesh use contaminated water. 40.7% of people in Bangladesh do not have a decent toilet of their own. Only around 11.27% of people have improved sanitation facilities connected to sewers. (WaterAid, 2024). According to the Population and Housing Census 2022 carried out by the BBS, 21 lakh people in Bangladesh practice open defecation (Bangladesh Bureau of Statistics, Population and Housing Census, 2022). It is an overall picture of the entire Bangladesh. The picture of the coastal region of Bangladesh is a little dissimilar. There is also still a big challenge in clean water and sanitation. It is a major problem, especially for the river and seashore residents (the Daily Star, 2022). Getting clean water is difficult for the people here due to various reasons. These include excessive salinity of water, regular cyclones, dangerous arsenic, etc. The pictures of hygienic latrine users are also different in shoreline zones compared to other areas of Bangladesh. Here, hygienic toilets for all families are still a challenge for various reasons categorically for poor people and the river and seashore residents. Due to regular cyclones and floods, it is difficult to build sustainable latrines for the poor residents of these areas. It can be seen that even once installed, they do not have the ability to repair. Besides, there is the matter of illiteracy and superstition. However, this research aims to state the clean water and sanitation facilities in the coastal areas of Bangladesh and to identify the main challenges to ensure clean water and sanitation ingress for all in this coastal part.

Aims and Objectives of the Study

This study aims to explore the state of the safe drinking water and sanitation facilities in the coastal areas of the country. The specific objectives of this research are:

- To detect the real picture of the safe drinking water and sanitation facilities in the coastal areas of Bangladesh.

- To examine the current challenges for getting safe water and sanitation facilities for all in this coastal part.
- To identify the awareness level among the general people of the coastal areas about safe drinking water and sanitation.

Methodology

The study adopts a quantitative technique to provide a comprehensive understanding of the real picture of the safe drinking water and sanitation facilities in the coastal areas of Bangladesh. In this research two sources of data have been used; primary source and secondary source. In this research, four Unions from two coastal upazilas of Barguna district of Bangladesh have been selected as the study area. Kazirabad and Sarishamuri Unions of Betagi Upazila; and Kathaltali and Kalmegha Unions of Patharghata Upazila have been selected. A structured questionnaire is administered to a representative sample of households across different areas of this district. This study was based on a field investigation where 100 respondents were selected randomly from the 4 unions of the two coastal Upazilas. 50 respondents from each Upazila and 25 respondents from each Union were selected. Existing data from government reports, academic publications, and relevant databases is analyzed to supplement primary data and provide context for the study.

Literature Review

A review of the literature is indispensable for the research (Abedin, 2005). There are several studies have been conducted in the matter of clean water and sanitation in Bangladesh but none of them is directly related or concerned to this research. From them, some ideas, and guidelines, were taken for a conclusive completion of this research. Barua Roy and Munna (2019) brilliantly discussed the real situation of drinking water quality and sanitation facilities in the two selected Upazilas of the Noakhali district of Bangladesh. In their research article, they explained the current state of drinking water quality and sanitation facilities in the district. However, the real picture of the safe water and sanitation facilities in the coastal areas of Bangladesh, the current challenges of getting clean water and sanitation facilities for all, and the awareness level among the general people of the coastal areas about safe drinking water and sanitation was not stated clearly. Haque and Ansari (2010) discussed water, sanitation, and health conditions of Aila affected coastal area of Bangladesh. In their research, they emphasize the Ayla Ayla-affected area but the coastal areas of Bangladesh

were not broadly discussed. In their research, the present challenges for getting clean water and sanitation facilities for all in the coastal area were not stated clearly. Hoque, et al. (2021) stated the drinking water facilities in the coastal zone of Bangladesh. They emphasize institutional framework, financing, and information systems. However, the real situation of sanitation facilities in the coastal parts of Bangladesh and the present challenges for getting safe water and sanitation facilities in this area were not discussed particularly. Khan, et al. (2011) have tried to assess salt intake from drinking water bases and to identify the impact on Maternal Health in the Coastline area of Bangladesh. However, the sanitation facilities in the coastal areas of Bangladesh and the current challenges of it were not stated specifically.

Justification of the Study Area

It is very time-consuming and expensive to collect the data from all the coastal area's citizens of Bangladesh. The researchers select only two upazilas in the Barguna district. There are a total of 19 coastal districts in Bangladesh and Barguna is one of them (WARPO, 2003). In this study area, there are various professionals including, government and non-government employees, businessmen, teachers, farmers, day laborers, households etc. We think that it can give an overall idea of clean drinking water and sanitation services for citizens living in the coastal areas of Bangladesh in the other parts of the country. Moreover, the researchers permanently live in Barguna so, this area has been selected for the time-consuming.

Conceptual Clarity

Coastal area of Bangladesh

In the south area of the country, the coastal area of Bangladesh is situated. The coastal area of Bangladesh lies within the tropical zone between 21-23° N and 89-93° E. The coast of Bangladesh is about 700 km long and can be broadly separated into three areas (Banglapedia., NEB, https://en.banglapedia.org/index.php/Local_Government, Retrieved 18.12. 2024). There are a total of 19 districts in these coastal regions. The overall socio-economic condition of these districts is not almost the same as the other parts of Bangladesh. The standard of living of the people in this region is different compared to other regions of the country. Naturally, the standard of living of the people is different here. Here nature controls many things related to the daily life of the people of these regions.

Upazila and Zila/ District

There are two types of administration in Bangladesh; Central administration and local administration. Local administration has three units; division, District, and Upazila administration. A district is the main administrative unit of the local administration in Bangladesh and an Upazila is an administrative unit that functions as a part of the district in the local area. A Deputy Commissioner (DC, district administrator) serves as the executive head of the district and an Upazila Nirbahi Officer (UNO) serves as the executive head of the upazila. There are 64 districts and 495 upazilas in Bangladesh. On the other hand, 'Upazila Parishad' and 'Zila Parishad' ('Parishad' is a Bengali word that means council) are the regional body of local government in Bangladesh. Basically, there are two types of local governments in Bangladesh; Rural or Regional local government and urban local government. Rural or regional local government has three tyres which are Zila (district) Parishad, Upazila Parishad, and Union Parishad (UP), (Banglapedia., NEB, https://en.banglapedia.org/index.php/Local_Government, Retrieved 18.12. 2024).

Data Analysis and Findings

The use of different sources of water for drinking and cooking

Figure 1 shows that the basis of water for drinking and cooking of the majority people of in the coastal region of Bangladesh is not the same, in Figure 1 we can see that 18% people use water from the same source for drinking and cooking and 82% people don't use water from the same source for drinking and cooking. It's clear that most of the people of the coastal region don't use the same source of water for drinking and cooking. The main cause of using different bases of water is the scarcity of harmless drinking water. As safe water is scarce, people use safe water only for drinking.

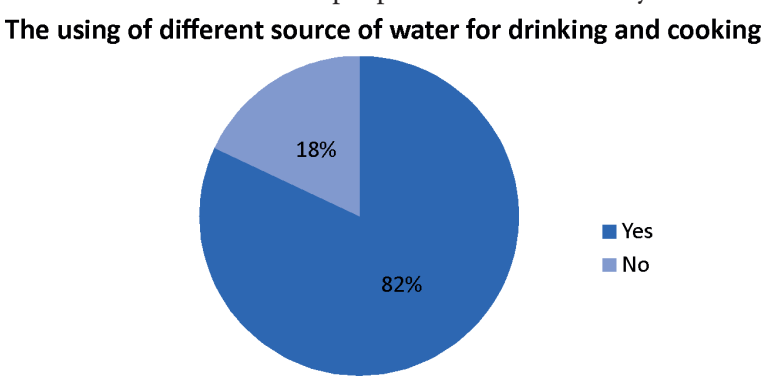

Figure 1: The use of different sources of water for drinking and cooking

Source: Field survey, 2024

The sources of drinking water

Figure 2 shows the various sources of drinking water, 46% of people drink tube well water, 20% of people drink rainwater stored for long periods, 22% of people drink Pond, canal, or river water by purifying in different ways, 4% people drink Pond, canal or river water directly and 8% people drink supplied water by paying monthly. In this research, it's clear that the people of the coastal region use various sources of water for drinking. As the water in different places has different problems, everyone doesn't drink the water from the same source.

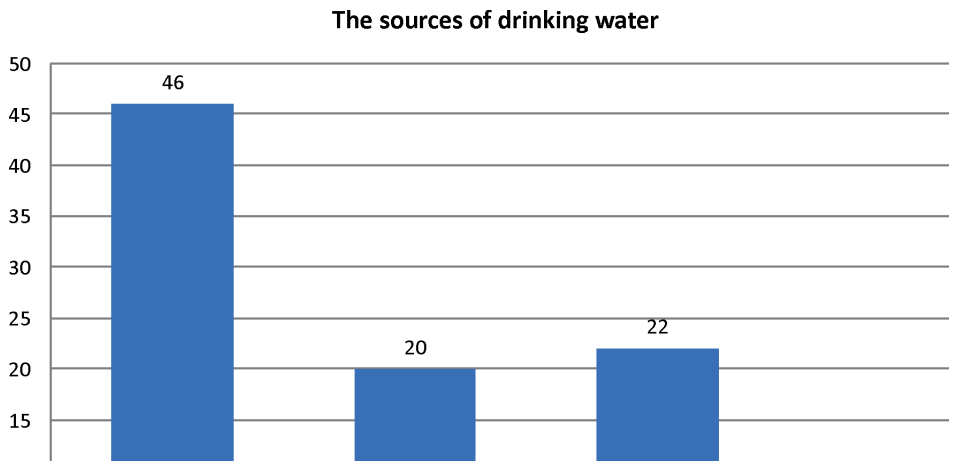

Figure 2: The sources of drinking water

Source: Field survey, 2024

The sources of cooking water

Figure 3 demonstrates that 24% of people use tube well water for cooking, 10% of people use rainwater stored for long periods, 14% of people use pond, canal, or river water by purifying in different ways, 42% people use pond, canal or river water directly and 10% people use supplied water by paying monthly. From this research, it is obvious that, due to the lack of safe water most of the people of the coastal area use pond, canal, or river water directly for cooking.

Real picture of taking safe water

Figure 4 illustrates that 54% of citizens opine that they use safe water for drinking and cooking, and 22% opine that the water they use for drinking and cooking is not safe. The

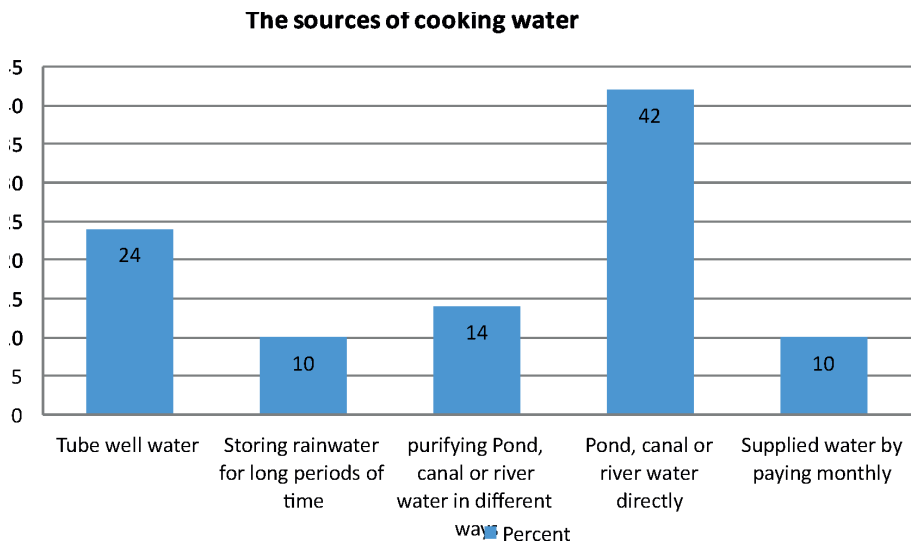

Figure 3: The sources of cooking water

Source: Field survey, 2024

rest of the respondents, 24% are not sure whether the water they use for drinking and cooking is safe or not. In this research, we can see that a significant number of people use unsafe water and some people are not sure whether the water they use for drinking and cooking is safe or not. The people of the coastal region have a lot of lack of awareness.

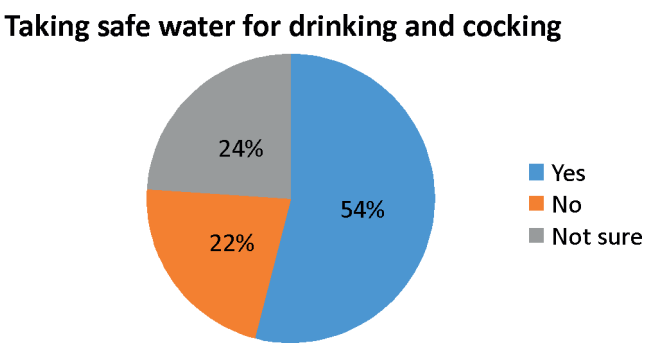

Figure 4: Real picture of taking safe water

Source: Field survey, 2024

Different Types of Toilets

Figure 5 shows that 22% of people use Safe disposal with flushing/ pouring water latrine, 14% of people use unsafe disposal with flushing/ pouring water latrine, 54%

people use Pit latrine with slab, 8% people use Pit latrine without slab and only 2% people use Open/ hanging latrine. Figure 6 shows that 72% of people opine that they have sanitation facilities and 28% of people don't have sanitation facilities at their homes. Bangladesh has achieved remarkable progress in eliminating uncovered excretion applies to almost nil in 2019 (1.5%) but ensuring safe sanitation facilities for all is far behind.

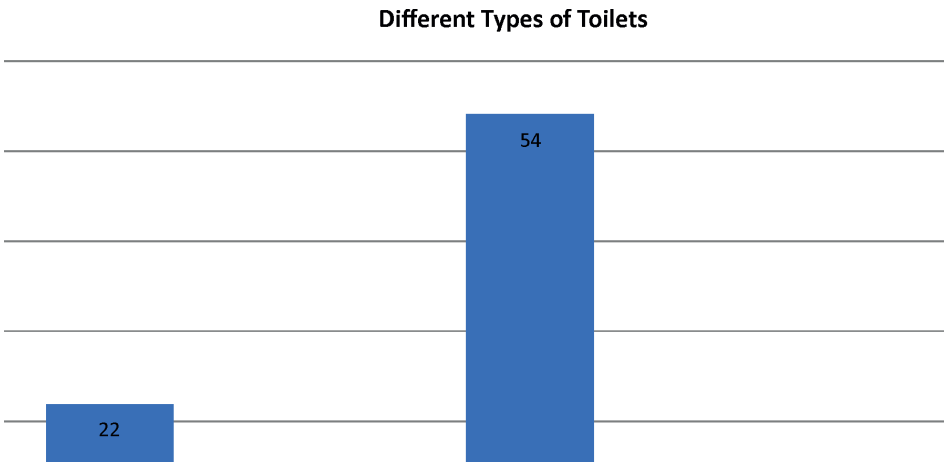

Figure 5: Different Types of toilets

Source: Field survey, 2024

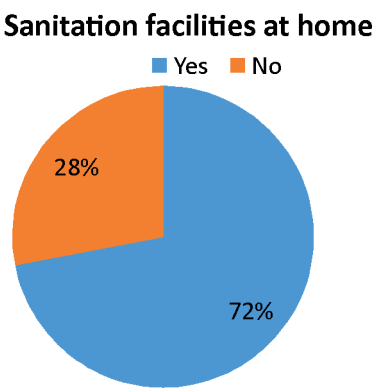

Figure 6: Sanitation facilities at home

Source: Field survey, 2024

Challenges of Getting Clean Water Facilities

Table 7 shows the various challenges of getting clean water facilities, 16% of people opine that the water of tube wells is excessively saline and unusable for drinking,

and 31% people think, during summer the water in the pond dries up so there is an extreme water shortage. 26% of people say, that at a certain time of the year, the water of rivers and canals becomes salty and therefore unusable, and 8% of people opine, that there is no system to retain rainwater throughout the year. 10% of people opine, that government ponds are far away so it becomes very difficult to collect water from these ponds. 9% of people think water purification filters in government or private enterprises are often useless due to lack of regular maintenance.

Table 1: Challenges of getting clean water facilities

Challenges of getting clean water facilities	*Frequency*	*percentage*
The water of tube wells is excessively saline and unusable for drinking	16	16
During summer the water in the pond dries up so there is an extreme water shortage	31	31
At a certain time of the year, the water of rivers and canals becomes salty and therefore unusable	26	26
There is no system to retain rainwater throughout the year	8	8
government ponds are far away so it becomes very difficult to collect water from these ponds	10	10
Water purification filters in government or private enterprises are often useless due to lack of regular maintenance	9	9
Total	100	100

Source: Field survey, 2024

Awareness level among the general people of the coastal areas about safe drinking water and sanitation

The United Nations has set a global target to attain the SDGs or sustainable development goals by 2030. There are a total of 17 Goals and among them, goal number 6 is to ensure that everyone has admittance to safe water and sanitation (UN Goal 6, https://sdgs.un.org/goals/goal6). The general people of Bangladesh have little idea about SDGs as well as their goals. Figure 8 demonstrates that 18% of citizens have a clear idea about SDGs as well as its goal 6: like, Clean water and sanitation, 26% of citizens have a rough idea and the rest of 56% don't have any idea about SDGs. Figure 9 illustrates that 26% of people have a clear idea about the diseases that can affected by unsafe water and sanitation, 64% of citizens have a rough idea and the rest of 10% don't have any idea about it. In this research, it is clear that most of the people of this area have no idea or have a rough idea about the diseases that can affected by using unsafe water and sanitation.

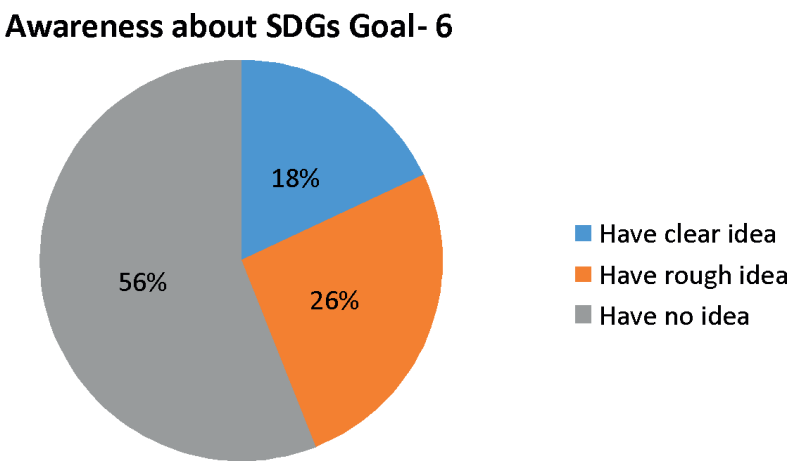

Figure 7: Awareness about SDGs Goal 6

Source: Field survey, 2024

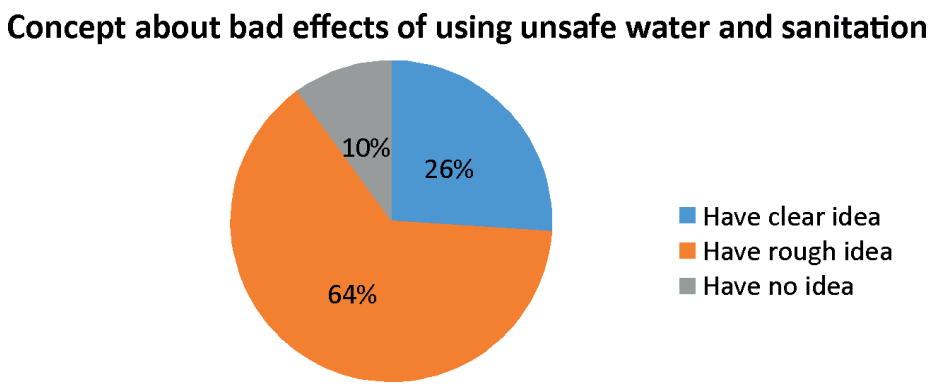

Figure 8: Concept about bad effects of using unsafe water and sanitation

Source: Field survey, 2024

Findings

This research illustrates that most of the people of the coastal region don't use the same source of water for drinking and cooking. The main cause of using different sources of water is the scarcity of safe drinking water. As they are not always able to use safe water for cooking, they try only to drink safe water. In Figure 1 we can see that 18% of people use water from the same source for drinking and cooking and 82% of people don't use water from the same source for drinking and cooking. Most of the people in the research area drink tube well water and store rainwater as a source of clean water. Some people drink Pond, canal, or river water directly which is unsafe and unhealthy.

The research shows that 46% of people drink tube well water, 20% of people drink rainwater by Storing it for long periods, 22% of people drink Pond, canal or river water by purifying in different ways, 4% of people drink Pond, canal or river water directly and 8% people drink supplied water by paying monthly. In this research, it's clear that the people of the coastal region use various sources of water for drinking. As the water in different places has different problems, everyone doesn't drink the water from the same source.

In this research, some challenges to getting clean water have been identified. Table 7 shows the various challenges of getting clean water facilities, 16% of people opine that the water of tube wells is excessively saline and unusable for drinking, and 31% people think, during summer the water in the pond dries up so their is an extreme water shortage, 26% people say, at a certain time of the year the water of rivers and canals becomes salty and therefore unusable, 8% people opine, there is no system to retain rainwater throughout the year, 10% people opine, government ponds are far away so it becomes very difficult to collect water from these ponds and 9% people think, Water purification filters in government or private enterprises are often useless due to lack of regular maintenance.

Bangladesh has achieved remarkable progress in eliminating exposed excretion practices to nearly nothing in 2019 (1.5%) but ensuring safe sanitation facilities for all is far behind. Figure 6 indicates that 72% of people opine that they have sanitation facilities and 24% of people don't have sanitation facilities at their homes.

In this research, it is obvious that most of the people of this area have no idea or have a rough idea about the diseases that can affected by unsafe water and sanitation. According to Figure 9, only 26% of people have a clear idea about the diseases that can affected by using unsafe water and sanitation, 64% of citizens have a rough idea and the rest of the 10% don't have any idea about it. There is still a lot of lack of awareness among the general people about the use of safe water and sanitation.

Conclusion

Bangladesh has made remarkable progress in its various socio-economic sectors and has made particular developments in ensuring safe drinking water and sanitation facilities for its citizens but at the marginal level, especially in coastal areas, it still remains a big challenge. Most of the people of the coastal region don't use the same source of water for drinking and cooking because of the shortage of safe drinking water. The people of this region are facing various challenges of getting clean water like, excessive salinity of

tube wells water, extreme water shortage during the summer season, water of rivers and canals becomes salty at a certain time of the year and many other challenges. A number of the people of these areas have no access to sanitation facilities because of various limitations like the lack of awareness among the general people, illiteracy, economic crisis, regular cyclones, floods and other natural disasters. However to overcome this situation and to ensure safe drinking water and sanitation facilities for all citizens Bangladesh's government should take urgent and sustainable initiatives.

Recommendations

(i) In the areas where the salinity of water is too high, alternative freshwater sources should be ensured.

(ii) Ponds are one of the sources of fresh water, most of the ponds dry up during the dry season so these ponds need to be dug regularly and effective measures should be taken so that the water of the ponds is not contaminated with garbage, animal excrement or harmful pesticides.

(iii) Pond water purification filters should be installed by government or private enterprises. As the water purification filters are often useless due to lack of regular maintenance they should be regularly maintained.

(iv) Awareness should be raised among the general people regarding the use of safe water and sanitation and people should be encouraged not to use pond, canal, or river water directly.

(v) People should be made aware of all the diseases that can be caused by not using clean water and sanitary latrines.

(vi) There are still a lot of superstitions among the general people regarding the use of fresh water and hygienic toilets; they need to be made aware of them.

(vii) In areas where rainwater is the main source of fresh water, sustainable arrangements should be made to store rainwater throughout the year.

(viii) Sometimes irregularities are observed in the allocation of government benefits, which should be strictly monitored.

(ix) For those who are living below the poverty line, it is important to take certain programs so that they can get better from that situation soon.

(x) Foreign donor organizations and domestic NGOs should be more encouraged to be partners in the government`s initiatives.

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