



Assessing  
Clean Water Accessibility  
And Rate of  
Water-borne Disease  
in the  
Kallayanpur Slum Area

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**BRIGHTERS**   
For The People and Planet

# Acknowledgement

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# Executive Summary

In the Kallayanpur slum area of Dhaka, the study evaluated the availability of clean water and its relevance to problems with sanitation and health.

Most of the households in Dhaka City get their drinking water from WASA tubewells. However, the water supply is only available for 1-2 hours per day, which is insufficient to meet their demand. Adding to the challenges, the quality of the water is poor due to contaminants like iron and bleaching powder that degrades the water. On top of the insufficient supply and poor quality, the monthly water bills charged by WASA, ranging from 301 to 500 taka, put a financial strain on families with low incomes. Providing clean, sufficient drinking water is a basic human right, yet the majority of families in Dhaka do not have access to enough safe drinking water in their residences. This is an injustice that must be addressed through policy changes and infrastructure investments to increase supply, improve quality control, and consider subsidized rates for low-income households. Access to sufficient, clean drinking water is essential for health and should be a top priority for the government to ensure for all citizens. Poor sanitation and lack of access to clean water contribute to frequent outbreaks of waterborne diseases like diarrhea and cholera in Dhaka. This year alone, 39% of reported disease cases were attributed to contaminated water sources. Only 34% of residents have access to a hygienic, functional toilet facility, with some toilets shared by 11-15 families at once. Waste disposal services and drain cleaning happen only sporadically, leaving sewage accumulation. The problem of open defecation is exacerbated by toilets that lack running water.

Handwashing facilities and water treatment systems are scarce, even though 33% of residents reported receiving hygiene training from NGOs. This lack of infrastructure makes it difficult to prevent the spread of disease, even if awareness is present. When people do fall ill, most have to wait a long time for care at overcrowded government hospitals.

The state of Dhaka's water and sanitation systems is the product of years of insufficient financial and technical assistance from government agencies and NGOs. These organizations have failed to make adequate investments to improve water delivery, sanitation systems, hygiene facilities, and access to preventative care. As a result, the human right to health is being disrupted on a daily basis as waterborne diseases spread through communities at an alarming rate.

To reduce the prevalence of diarrhea, cholera, and other diseases, increased funding and improved policies are urgently needed. Investments must focus on upgrading water and sewer systems, increasing toilet access, improving waste disposal, expanding access to handwashing and water treatment, decreasing hospital wait times, and raising awareness. With coordinated efforts between

the government, NGOs, and the communities themselves, Dhaka can work to guarantee citizens' right to both clean water and healthcare.

Qualitative insights indicate that residents, particularly women, are concerned about safety, harassment, and time poverty due to the distance and long waits at tubewells. Although these exist, communal taps are thought to be unreliable and dirty. Also they addressed the male members are never involved in the water collection. Only the female members are involved and sometimes it leads to domestic violence too.

Enhancing WASA supply duration and quality through infrastructure upgrades is one of the main recommendations. Other suggestions include funding alternative sources like water booths (target 15), filters, and piped connections; building more individual and communal toilets with water access; managing waste by segregating sewage; providing facilities and hygiene education; and forming partnerships with the government, non-governmental organizations, and communities to expand interventions.

In conclusion, getting clean water and sanitary facilities is extremely difficult for people living in the Kalyanpur slum. In order to protect their rights and well-being through collaborative, long-term solutions, multisectoral methods are essential.

# Chapter 1: Introduction

## **1.1 Background of the project**

After Pakistan and India, Bangladesh has the third-largest population in South Asia. As stated by BBS (2011), Bangladesh's urban population makes up little over 28% of the country's overall population, or around 4,19,43,532. Furthermore, after the freedom, the population of cities has increased rapidly. 1971 and now, 2.96% each year (BBS 2011). By 2015, the country's urban population is probably going to be close to 50 million. Large urban cities have seen a significant increase in the number of impoverished individuals from rural areas due to migration. These impoverished migrants frequently seek refuge in slums and squatter communities upon arrival. Slums and squatter settlements can be found in all of Bangladesh's major cities, with Dhaka having the highest concentration, followed by Chittagong, Khulna, and Rajshahi.

In this instance, the majority of Dhaka's slums are dealing with a number of issues that are getting worse every day. These issues include unlivable housing conditions, a lack of basic amenities like clean water, sanitary conditions, and medical care, a lack of educational opportunities, a lack of tenure security, a lack of utility services like gas, electricity, and piped water supply, and an improper disposal system for solid waste. The majority of slum inhabitants suffer from a variety of waterborne and seasonal illnesses.

The Kalyanpur slum has been selected as a case study due to its location in the central part of Dhaka and the extremely low living conditions of its residents. There aren't enough restrooms for multiple families, and the upkeep is getting worse every day. It is also one of the slum regions in Dhaka city with the highest population density. This prompts us to evaluate the situation of the local population's availability of clean water and sanitary facilities.

## **1.2 Objectives of the project**

The objectives of this study is to do the following-

1. Assessing the accessibility of clean drinking water in the Kallyanpur slum area.
2. Addressing the rate of waterborne disease and sanitation issues in the area.

To achieve these objectives, we have set some research questions to indicate our study outcome properly. These are following-

1. What is the scenario for accessible clean water?
2. What is the correlation between waterborne disease and sanitation systems in the slum area?

### **1.3 Scope of the study**

The study was carried out on government land in the Kallyanpur slum of Dhaka City. Consistent with the majority of extant literature, the Kalyanpur slum's water supply and sanitation were the factors employed in the analysis. The Kallyanpur slum is located in Bangladesh's Dhaka district. It has a 15-acre land area, 40,000 people living there overall, and 1600 families. To gather primary data for the study, a structured household questionnaire survey, interviews with community members and groups, and projects pertaining to sanitation were used. Between the ages of 40 and 49, households from the slums were randomly selected and surveyed. A further 6.6 percent of the population was older than 50. Due to their participation in various training programs, it was discovered that respondents between the ages of 20 and 29 had the highest level of sanitation consciousness among all respondent categories.

## **Chapter 2: Literature Review**

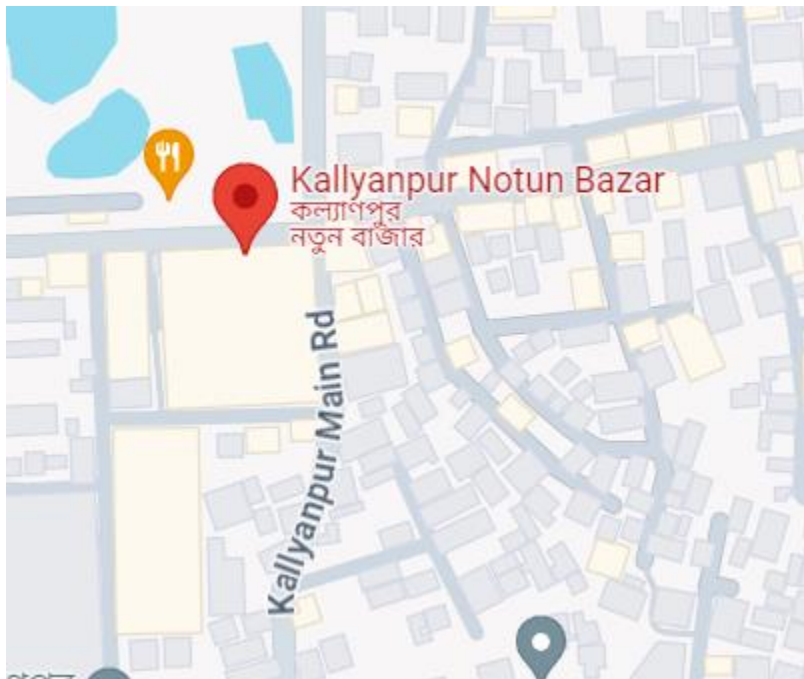
As per a study conducted at Kalyanpur slum area, Dhaka, during October 2015 to March 2016, 60 households were surveyed, finding illiteracy and limited sanitation knowledge. Drinking direct WASA water led to 56% suffering from diarrhea. Open defecation is prevalent among 93.33%, causing unhygienic conditions. Despite 80% dissatisfaction with toilets, financial constraints hinder upgrades (i).

A mixed-method study on Kalyanpur slum dwellers (68 respondents) revealed deprivation of basic needs, including food and housing problems, poor sanitation, inadequate education, and a lack of utility services. Most families live in unhygienic conditions, with occupations like garment workers (24.2%) and rickshaw pullers (19.2%). Limited income (Tk 6,000-10,000) is primarily spent on food (61.39%), contributing to health issues like fever, asthma, and diarrhea. The study highlights the immediate impact of poor socio-economic status and urban service inadequacy on health. (ii)

## Chapter 3: Research Methodology

### 3.1 Study Area Profile

The Kalyanpur slum, also known as Pora Basti, is located in Kalyanpur mahalla in the Kalyanpur ward of Mirpur Thana in the district of Dhaka. It was chosen as the study area. The pora basti (slum) of Kalyanpur is situated between latitudes  $23^{\circ}47'05''\text{N}$  and longitude  $90^{\circ}21'49''\text{E}$ . Thana Mirpur is located in the Dhaka district's zone no. 4 of the Dhaka North City Corporation. This thana consists of 57 mahallas and 8 wards. Kalyanpur ward is located at word no. 11 among the eight wards. This ward has four mahallas within it. According to BBS (2011), these are Dakshin Paikpara, Madya Paikpara, Paikpara, and Kalyanpur mahalla. There are 42,801 people living in Kalyanpur mahalla overall, of whom 55.79% are men and 44.21% are women. There are 2,184 households and 8,129 people living in the Kalyanpur slum (also known as Pora Basti).



### 3.2 Target Population

The study is to assess the scenario of accessibility of clean water and sanitation for the mass population of the Kallyanpur slum area. To remain aligned with the objective, our target population was selected by some criteria, like resident of the slum of all ages, gender equity as per health crisis, etc.



### **3.3 Survey Design**

We have selected a total of 299 survey samples for the quantitative study, and for the qualitative study, 2 focus group discussions, 1 key informant interview, and 1 in-depth interview have been conducted. The population originated from places like Bhola and Rajshahi, and mostly they are migrant people. Their socio-economic condition is also not standard compared to their past lives.

#### Qualitative Sampling Techniques

The qualitative techniques are mentioned below:

Method	Participants	Participant Type
Focus Group Discussion	20	-Female -Adolescent
In Depth Interview	1	Pre-school Teacher
Key Informant Interview	1	Ward Councilor
Case Study	1	Adolescent

#### Quantitative Sampling Techniques:

Sample Size	Participant Type	Number of Questions
299	-Male -Female -Children -Adolescent	39

### **3.4 Finalization of Data Collection Instruments**

A structured questionnaire was developed with the target groups in slum areas. Feedback based on the survey was incorporated into the final version of the questionnaire. Afterwards it was used to record the respondent's data to conduct the study.

### **3.5 Data Collection, Cleaning, and Data Management**

A structured questionnaire was developed and reviewed for the target groups based on the literature

Data management: GRM and MJF were assigned to monitor the progress and quality of survey work. They did quality checks and field visits during the data collection.

### **3.6 Quality Control Mechanisms**

The first pillar of our data quality assurance system was rigorous training for data collectors/enumerators. The study tool was covered in the training sessions, which were followed by role-playing and mock surveys in the training room. Furthermore, team members performed companion checks, spot checks, and back checks while on the job. These checks ensured that any systematic error committed by a given enumerator was swiftly addressed in the field. Enumerators were also trained by three of the GRM-trained members.

### **3.7 Ethical Considerations**

Before starting the structured survey, informed consent from the intended respondents was sought in written format. Ethics were taken into consideration, and ethical procedures were upheld during the survey period.

### **3.8 Limitations and Challenges of the study**

Although we completed both the quantitative and qualitative survey in the field, we found some challenges and limitations on the ground, like-

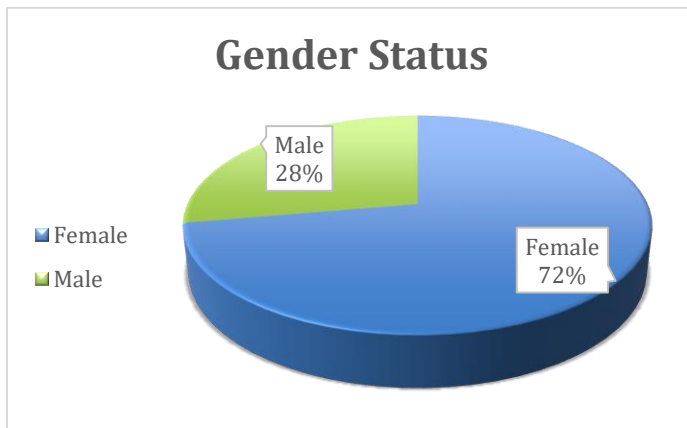
- The time period was before the national election, so it was a little risky to go to a crowded area where political parties remained active in election campaign.
- As the target population was from a lower income class, we found comparatively fewer men in the study than women.
- Some of the female respondents were a little intimidated, as they first thought this information might go to the government.

## Chapter 4: Analysis and Findings

### 4.1 Quantitative Data Analysis and Finding

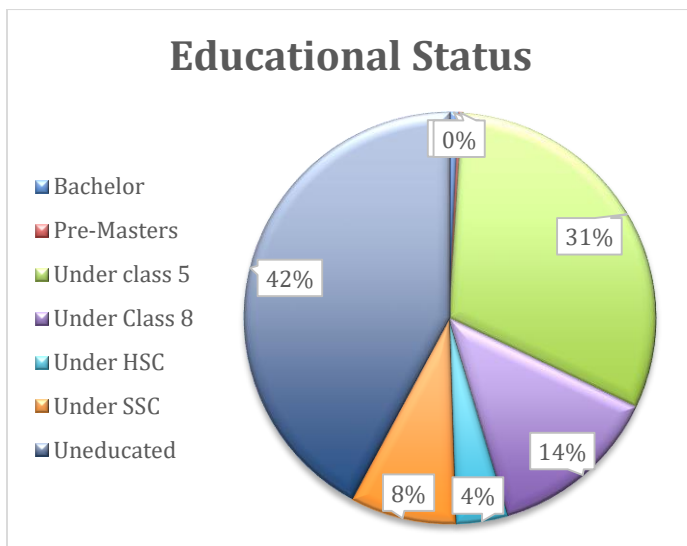
The quantitative data was collected through survey and 39 questions were in the questionnaire. The respondents were quite prompt to share their responses.

Gender:



In the study area of Kallayanpur Pora Bosti, most of our respondents were female. More than 70% of the total population were female whereas 30% were male.

Educational Status of the respondents:



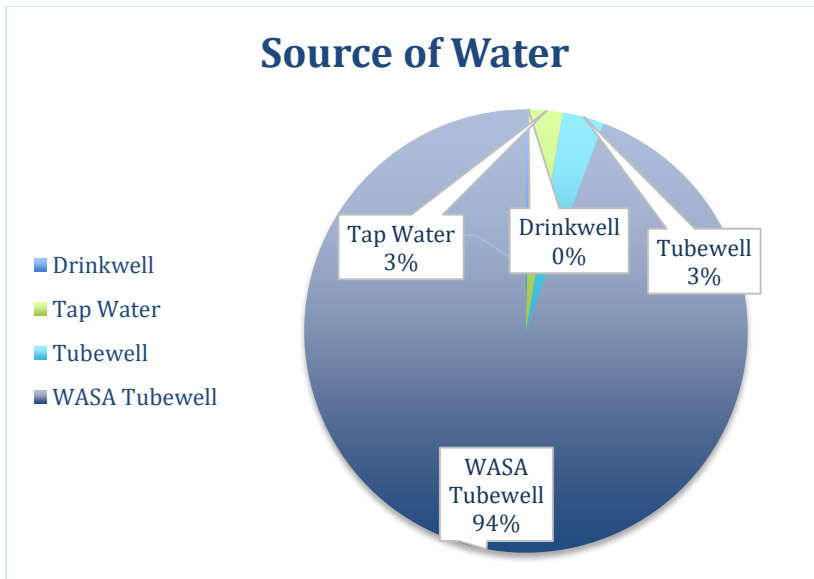
Among the respondents, 42.1% were uneducated. Whereas, around 32% of participants were dropped out of class 5.

**Household Income:**

As it was a slum area, most of the people were laying in the low income line and not having a very much permanent source of income. Only 101 people were earning more than 10,000 per month, whereas the study found 13 people earning less than 5000 a month.



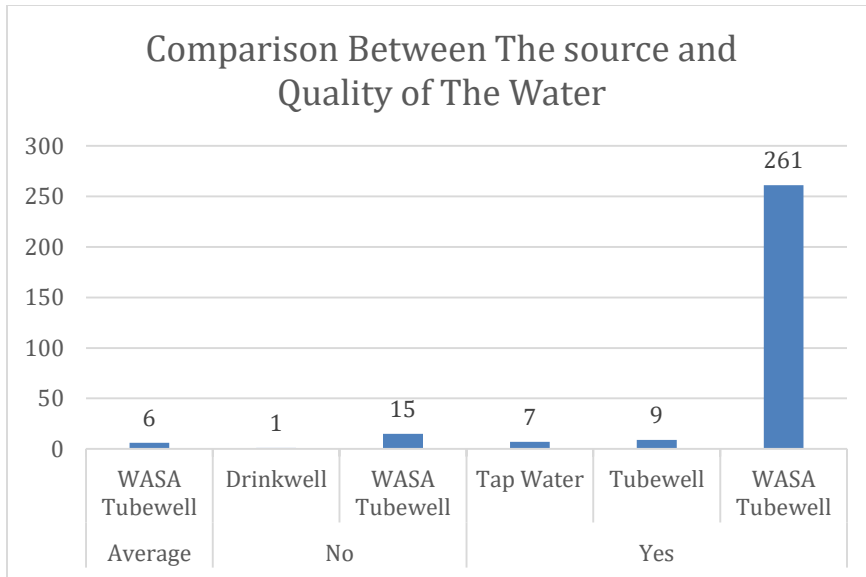
**Source of Water Collection:**



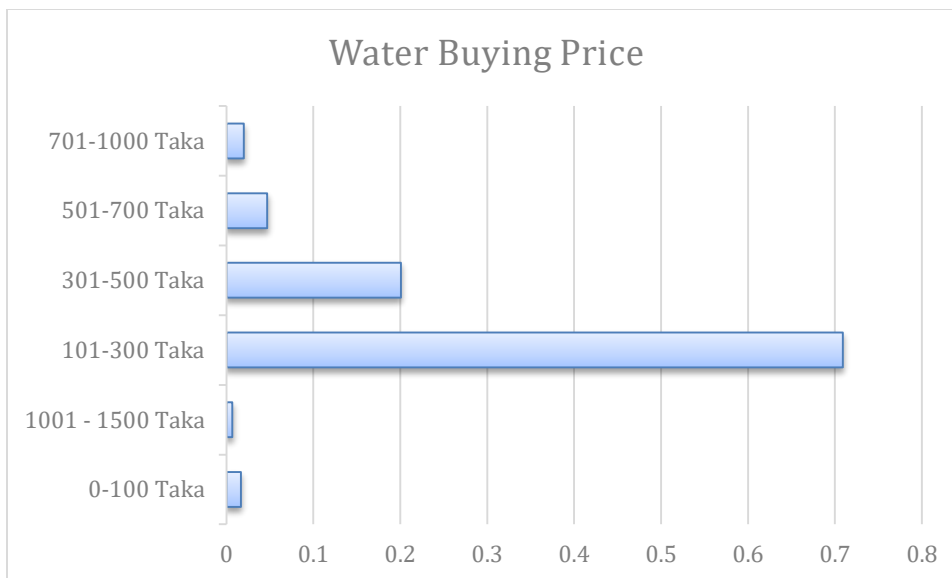
The study shows that around 94% of people from Kallayanpur Porabosti collect their drinking water from WASA tubewells, but only 3% collect the water from local unhygienic taps. Although 3% of them have their own tubewell sources.

Comparison Between The Source and Quality of The Water:

Although the study found that 94% people are relying on the WASA tubewell as their primary water source, not many of them think it is a good quality source. The graph shows the comparison between source and quality assessment of the water used for drinking in Kallayanpur Pora Bosti.

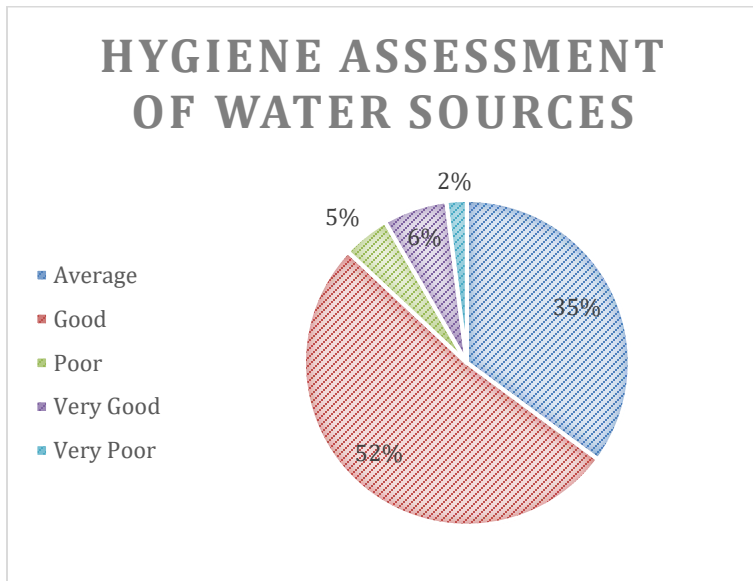


The price of Water:



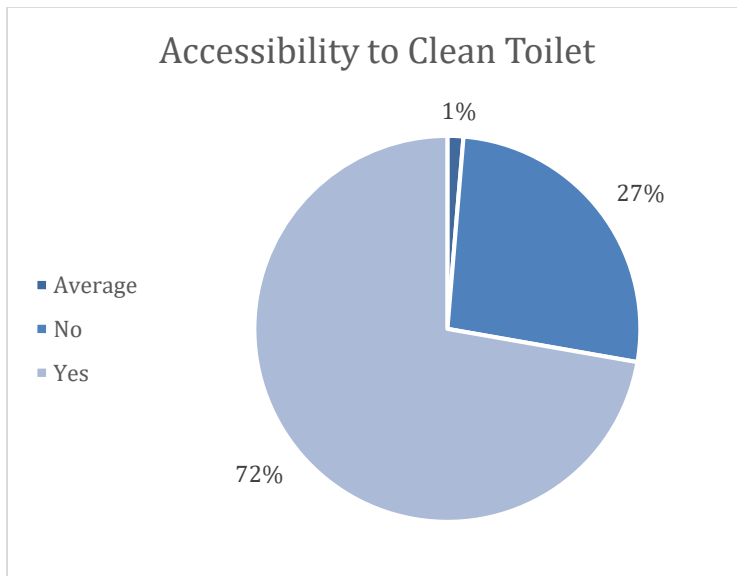
The graph shows that the residents of Kallayanpur Pora Bosti pays a little much price to get drinking water for daily life. Monthly more than 70% of them pays 300 Bangladeshi Taka to get safe drinking water. Whereas, even 2% people spend more than 700 Bangladeshi Taka too.

Hygiene of Water Sources:



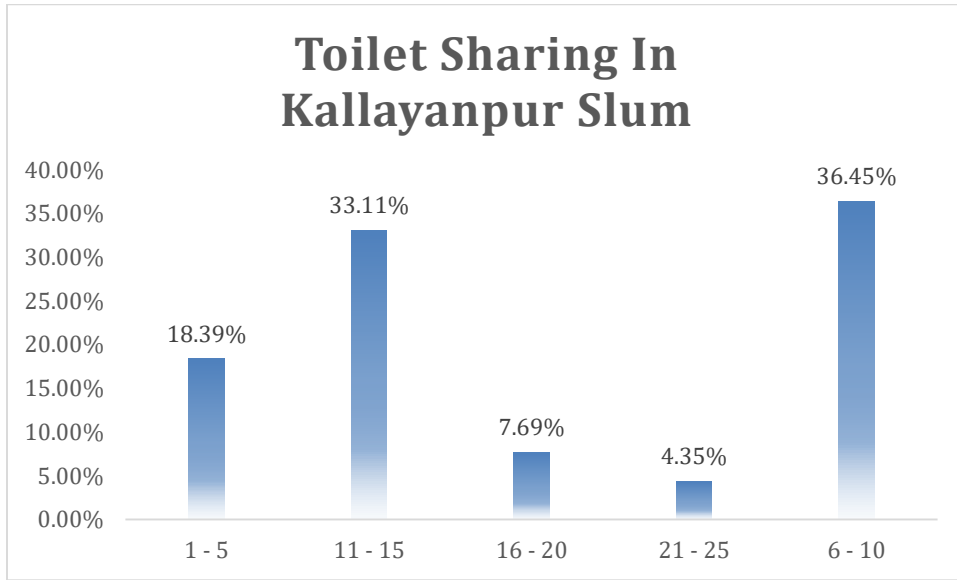
Although the water source is mostly WASA Tubewell, more than 50% of the respondents think that the water hygiene is good, 35% think that it is average and 2% people have opinion that the water is totally poor.

Accessibility to Clean Toilet:



Study shows that 72% of the respondents feel they have accessibility to clean toilet and 27% only thinks that it is not hygienic.

Toilet Sharing:



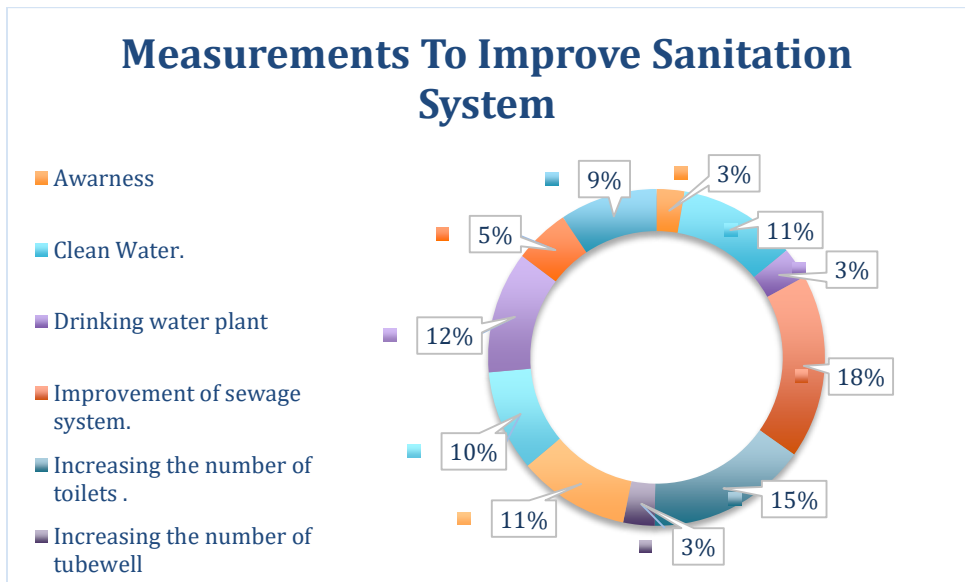
The study finds that more than 33% of the respondents share toilets with 11-15 families whereas only 18% have accessibility to share toilets with 1-5 families.

Training Received On Sanitation:



Although huge amount of the residents use shared toilet facilities, only 33% of them received trainings on sanitation. In most cases, trainings were provided by BRAC, DSK and WaterAid.

Measurements to Improve Sanitation System:



At the end of the study, we asked the residents to share how the sanitation can be improved. They have shared some of these measures, like increasing numbers of toilets, Infrastructure development, installing drinking water plant, reduce water bills and etc.



## **4.2 Qualitative Data Analysis and Finding**

### **Key Informant Interview:**

During the research, Dewan Abdul Mannan, the councilor of the area was the key informant. Some of the key points from the discussion with him are following-

- In general, the slum has enough water supply, although during the summer, there are summertime shortages. WASA pipelines and nearby tube wells supply filtered water. In order to increase supply, a three-layer pipeline was recently built in the slum.
- Uncertainty about eviction results from slum inhabitants' lack of land rights, who are migrants from rural to urban areas displaced by climate change.
- The slum needs more restrooms, but there aren't enough of them due to space issues. Building communal restrooms is being assisted by NGOs. There needs to be more teaching on proper hygiene habits.
- Priority was given to youth involvement in awareness-raising, particularly with regard to women's health and safety. For young people living in slums, there are few educational options.

Also the councillor said, 'BRAC and other NGOs are very supportive in this initiative to install new tubewells. They want to work more but the space is not enough. Also, we need more assistance from DNCC.'

### **Insights from Case Study:**

Tanzila, a young women, was the respondent of the Case Study.

Tanzila has been living in the Kallyanpur Notun Bazar Pora Bosti for last 5 years and she has been a vibrant activist while the issue was about human rights.

Tanzilla reports that the water occasionally turns red, smells foul, and has a high iron content—all signs of pipe contamination. Water needs to be hauled from residences because there is only one toilet shared by 90 families and no piped water connection to the toilets. Each year, the councilor's money is used to clean the larger drainage lines; however, householders are responsible for paying to clean the smaller ones.

Tanzilla has been trained in hygiene, but considering their living circumstances, it is challenging for them to adhere to all the regulations. Due to issues with water and sanitation, diseases like dengue, cholera, and diarrhea are prevalent. Sanitation problems have caused Tanzilla's family more suffering than water-borne illnesses. When ill, they have to wait a lengthy time in government hospitals.

The residents haven't worked together to create amenities like common restrooms or tube wells. The only outside assistance is provided by sporadic NGO initiatives. The councilor contributes to the annual drainage cleaning budget to the best of his limited ability.

She also said, 'This place is not standard to live in because of the poor sanitation mostly. We had problems of water earlier and it was really dense but now that has been solved to an extent. But the sanitation situation is not still up to the mark. DNCC and the policy makers should draw attention to this issue.'

### **Focus Group Discussion:**

02 Focus Group Discussions were conducted with two different groups.

The discussions focused on the water and sanitation issues faced by residents of a slum area. On water supply, the main problems highlighted were contamination from iron, sand and bleaching powder in the WASA lines, leakages causing wastage, and high bills. Some support has been provided by NGOs like WaterAid, DSK and BRAC in the form of tubewells, training etc. To improve the situation, residents suggested reducing iron and bleaching powder content in WASA supply, and installing more water booths (target of 15) for alternate access. One of the discussants added, 'It would be beneficial for us if we can get at least two water booths in the main market area and in front of slum to tackle the water fetching problems. But the price should be in our range, otherwise it will be of no use.'

Regarding sanitation, the same water is used for all purposes including drinking and bathing due to lack of separate pipelines. Drainage gets clogged during monsoons as there are open drains. Toilet water drains into canals causing pollution. The counsellor cleans drains only once a year.

Solutions suggested by the residents include: separate pipelines for clean and drainage water, water taps fitted in toilets, more space for building toilets, and greater unity among residents to demand solutions from authorities. Main asks were reducing water bills, improving WASA supply quality, frequent drain cleaning, and safe drainage of sewage.

In summary, the group discussion highlights issues of contaminated water, poor drainage and sewage management, and potential community-driven solutions to mitigate these problems facing the urban poor in slum areas. It provides insights into grassroots perspectives on improving water and sanitation conditions.

### **Insights from In Depth Interview**

The in depth interview was conducted with a pre-school teacher Mousumi Islam. According to her, the water situation in our slum is very concerning. The supply is contaminated with sand, stones and has a bad odor. It causes health issues like itching, hairfall, allergies and skin diseases. Also, the women face problems washing clothes when men come to bathe.

NGOs like BRAC, DSK and WaterAid have installed some tubewells and toilets here. They also provided training on handwashing. But the water quality hasn't improved much. We've complained to the

councilor several times but solutions from WASA are inadequate. Earlier, DSK gave water purification tablets which helped control diarrhea when we used them diligently.

Getting water from booths is difficult - long queues, additional cost, insufficient quantity for the whole family. During COVID-19 we got filters but those were only for storage, not purification.

She also added, 'Even I was primarily the victim of the eve-teasing while waiting for the water in the queue. My students are also the victim of this issue.'

The government needs to urgently address the water contamination. Checking water quality, replacing old pipes, fining polluters can help. We also need more tubewells, public taps and filters at subsidized rates. Health camps and free medicine distribution will help tackle the diseases caused by polluted water. Providing purified drinking water in schools will help our children. We are ready to contribute labor if government and NGOs come forward to improve the water services here.

## Chapter 5: Democracy and Human Rights Alignment

This study acts as a powerful tool for advocacy and policy reform within the democratic process. By exposing the vast disparities in access to clean water, sanitation, and healthcare between different segments of the population, the research makes visible how the most vulnerable communities are excluded from realizing the fundamental human rights that democracy aims to provide equally to all citizens.

This study reveals how slum dwellers negotiate to live without reliable access to clean drinking water, functional sanitation, hygienic living conditions, and timely medical care. This results in markedly higher rates of waterborne illnesses and preventable deaths among the urban poor compared to wealthier neighborhoods in the same city.

Upholding the right to health and the right to clean water and sanitation are central tenets of human rights and priorities that any truly democratic society must address. Yet the findings lay bare how marginalized groups like slum residents are denied these basic rights, highlighting significant shortcomings in how democratic ideals are put into practice.

By amplifying the voices of those excluded from the benefits of democracy, the study can inform the policy makers and spark reform to remedy these injustices. The evidence equips lawmakers, officials, and advocates with the information needed to enact policies and direct funding towards initiatives that expand access to clean water, improve sanitation and waste systems, increase availability of hygiene resources, upgrade healthcare facilities, and invest in illness prevention across all communities, focusing especially on historically neglected areas.

Real, sustainable change will require coordinated efforts between government agencies, NGOs, and grassroots community organizers to implement both top-down policy and bottom-up advocacy approaches. With the insights from this study, targeted interventions can be developed, drawing upon the knowledge and experiences of people directly affected by lack of access. Their active participation and leadership in reform efforts will be key.

At its core, democracy is meant to give power to all citizens, regardless of socioeconomic status. This research spotlights where that promise is failing and gives momentum to the work of creating a more just society, where the basic dignity and rights of all people are valued and protected. By boldly revealing injustice, the study forwards the democratic principles of inclusion, representation, and advocacy for the marginalized so that the freedoms of democracy can truly extend to all.

## Chapter 6: Recommendations

Slum life means a sub-human life being that is deprived of fundamental constitutional rights. From the observations, opinion of the respondents, NGO workers, government workers, local and government representatives and previous data, it is clear that the slum dwellers are not facilitated of important fundamental rights, especially housing and health facilities, job opportunities, sanitation facilities, education, etc. Some socioeconomic characteristics of slum dwellers, such as low literacy, poor housing, and lower educational status, may have had an impact on their health. However, low levels of income, inadequate sanitation services, substandard housing, and the cramped environment in the slums studied might have impacted the environment, which led to higher morbidity among the slum dwellers. After identifying the problem, conducting a thorough and extensive evaluation of the area, and considering the welfare of this slum area, the following recommendations could be implemented:

1. Increase supply and improve quality of piped water from WASA by replacing old pipes, regular testing, and reducing contaminants like iron, sand and bleaching powder.
2. Install more water booths, public taps and subsidies for water filters to provide alternate sources of clean drinking water. Target installing 15 new water booths.
3. Build more communal toilets with sewage connections. Attach water taps and pipelines to existing toilets. Provide space for new toilet construction.
4. Ensure separate pipelines for supplying drinking water and draining wastewater/sewage to prevent contamination.
5. Promote good hygiene practices through training and awareness drives, especially for women and children. Distribute free hygiene products like soaps.
6. Facilitate partnerships between government, NGOs and community to improve amenities. Mobilize youth groups for awareness campaigns. Enable community contributions.

## Chapter 7: Conclusion

The observations and conclusions drawn from the conversations, secondary data, and interviews provide an unsettling picture of the state of the water and sanitation systems in Kalyanpur Pora Bosti for the urban poor. Some of the biggest issues affecting public health and quality of life are sewage management, inadequate drainage, a shortage of functional toilets, and contaminated piped water supplies.

Because of the unsanitary environment, the residents—especially the women and children—suffer from illnesses like cholera, allergies, and diarrhea. Access and financial limitations also restrict their health-seeking behavior. Inadequate utilities, cramped living quarters, and low salaries combine to create an unhealthful atmosphere that can easily transmit communicable diseases.

Diverse sectors must work together to protect the rights and welfare of the marginalized slum inhabitants. The main goals of the proposals are to enhance drainage systems, sanitation facilities, water availability and quality, access to preventive care, and hygiene awareness. Effective solutions can be made possible through collaborations between NGOs, communities, and government authorities. Creating awareness and organizing the community are demands that cut across all areas. It is critical to act quickly to give the urban poor access to clean water and sanitary facilities, which are necessities for a dignified living.

## Chapter 8: Reference

- (i) June 2017, Water supply and sanitation situation of Kalyanpur slum area in Dhaka by **Mehnaz Abbasi Badhan** .
- (ii) September 2016, Socio-economic and health status of slum dwellers of the Kalyanpur slum in Dhaka city, by **Mahmuda Binte Latif** .

## Chapter 9: Annexure

### **Quantitative Data Collection Tools:**

Here the survey questionnaire for the quantitative data collection is mentioned:

#### **Demographic Questions:**

1. Name (নাম):
2. Age (বয়স):
3. Gender (লিঙ্গ):
4. Education (শিক্ষা):
5. Employment Status (কি করেন-পেশাগত অবস্থান)
6. Profession (পেশা)
7. Household Income (পারিবারিক আয়)
8. Household Size (পরিবারের সদস্য সংখ্যা)
9. Religion (ধর্ম)
10. Disability Status (পরিবারে কোনো প্রতিবন্ধী ব্যক্তি আছেন কিনা)

#### **Indicator Question:**

##### **1. What is the scenario of accessible clean water?**

11. Do you have access to a reliable source of clean drinking water within a 5-minute walk from your residence? (আপনার বাসা থেকে ৫ মিনিট হাঁটা দূরত্বের মধ্যে সুপেয় পানির সুব্যবস্থা আছে কিনা)

Option:

- a. Yes (হ্যাঁ)
- b. No (না)
- c. Others (অন্যান্য)

12. How many hours per day does your household have access to clean water for drinking and domestic use? (আপনার বাসায় সুপেয় পানির সরবরাহ দিনের কতো ঘন্টা করে থাকে?)

Option:

- a. Less than 1 hour (এক ঘন্টার কম)
- B. 1-2 hours (১-২ ঘন্টা)
- c. 3-4 hours (৩-৪ ঘন্টা)
- d. 5-6 hours (৫-৬ ঘন্টা)
- e. 7-8 hours (৭-৮ ঘন্টা)
- f. Others (অন্যান্য)

13.a. How many liters of water do you drink every day? (প্রতিদিন আপনি কতো লিটার পানি পান করেন?)

- a. below 2 liters (২ লিটারের কম)
- b. above 2 liters (২ লিটারের বেশি)
- c. Others –(অন্যান্য)

13. b. What is the primary source of your household's drinking water, and how would you rate its cleanliness and reliability? (আপনার পরিবার প্রাথমিকভাবে কোথা থেকে খাবার পানি সংগ্রহ করে এবং সেটাকে আপনি কতোটুকু ভালো মনে করেন?)

- a. Tubewell (টিউবওয়েল)
- b. Tap Water (ট্যাপের পানি)
- c. WASA (ওয়াসা)
- d. Drinkwell (পানির এটিএম বুথ)
- e. Others (অন্যান্য)

14. How much does your household spend on purchasing clean water on a monthly basis? (প্রতি মাসে খাবার পানি কেনার জন্য কতো টাকা খরচ করেন?)

- a. Less than 100 (১০০ টাকার কম)
- b. 101-300 (১০১ট-৩০০ট)
- c. 301-500 (৩০১ট-৫০০ট)
- d. 501-700 (৫০১ট-৭০০ট)
- e. Others (অন্যান্য)

15. Do you face any difficulties or safety concerns when collecting water from your primary source? Please specify. (প্রাথমিক উৎস থেকে পানি সংগ্রহ করতে গিয়ে আপনি কোনো ধরনের সমস্যার সম্মুখীন হন কিনা, হলে সেটি কী ধরনের?)

- a. Long distance from the house (দূরত্ব সমস্যা)
- b. Physical Harassment (শারীরিক হয়রানি)
- c. Eve-teasing
- d. Snatching (চুরি/ছিনতাই)
- e. Physical weakness (শারীরিক দুর্বলতা)
- f. Others (অন্যান্য)

16. Are there water supply points or communal taps available in your slum area, and how do you rate their accessibility and cleanliness? (আপনার এলাকায় পানি সংগ্রহের জন্য কোনো কমন ট্যাপ আছে কিনা, থাকলে সেটি কতোটুকু পরিষ্কার ও ভালো?)

Scale:

- 1. Very Poor (খুবই খারাপ)
- 2. Poor (খারাপ)
- 3. Average (মোটামুটি)
- 4. Good (ভালো)
- 5. Very Good (বেশ ভালো)

17. Have you received any government or NGO assistance related to water and sanitation in the past year? If so, please describe the type of assistance received. (আপনি কি বিগত বছরে পানি ও স্যানিটেশন সম্পর্কিত কোনো সরকারি বা এনজিও সহায়তা পেয়েছেন? যদি তাই হয়, অনুগ্রহ করে প্রাপ্ত সহায়তার ধরণ বর্ণনা করুন।)

- a. Financial assistance (আর্থিক সহায়তা)
- b. Technical assistance (প্রযুক্তিগত সহায়তা)
- c. Community outreach (এলাকাভিত্তিক প্রচারাভিযান)



d. Others (অন্যান্য)

18. How satisfied are you with the current availability of clean water in your slum area? What is your opinion about it? (While , 5 Very bad and 1 very good) (আপনার এলাকায় পানির প্রাপ্যতা নিয়ে আপনি কতটা সন্তুষ্ট,সন্তুষ্টিনিয়ে আপনার অভিমত কি, যেখানে ৫ খুবই খারাপ, ১ খুবই ভালো?)

19. What improvements or measures do you believe would enhance the accessibility of clean water in your slum area? (আপনার মতে কোন বিষয়গুলো আপনার এ সুপেয় পানি সমস্যার সমাধান করতে পারে ?)

**Indicator Question:**

**2. What is the correlation between waterborne disease and the sanitation system in the slum area?** (পানিবাহিত রোগ এবং এ এলাকায় স্যানিটেশন ব্যবস্থার মধ্যে সম্পর্ক কী?)

20. Have you or any member of your household experienced waterborne diseases (e.g., diarrhea, cholera) in the past year? (আপনি বা আপনার পরিবারের কোনো সদস্য কি গত বছরে পানিবাহিত রোগে (যেমন, ডায়রিয়া, কলেরা) আক্রান্ত হয়েছেন?)

- a. Diarrhoea (ডায়রিয়া)
- b. Cholera (কলেরা)
- c. Typhoid (টাইফয়েড)
- d. Others (অন্যান্য)

21. How frequently have waterborne diseases occurred in your household in the past year? (গত বছরে আপনার পরিবারে কতবার পানিবাহিত রোগ হয়েছে?)

- a. Never (কখনো না)
- b. Once (একবার)
- c. Twice (২ বার)
- d. Three times (৩ বার)
- e. Four times (৪ বার)
- f. Others (অন্যান্য)

22. Do you have access to a functional, safe, and clean toilet facility in your household? (আপনি কি পরিষ্কার, নিরাপদ ও ভালো টয়লেট ব্যবহার করতে পারেন ?)

- a.Yes (হ্যাঁ)
- b.No (না)
- C. Others (অন্যান্য)

23. How many households in your slum area share the same toilet facility as your household? (আপনাদের এখানে কয়টি পরিবার মিলে একটি টয়লেট ব্যবহার করে ?)

24. Are the toilet facilities in your slum area is cleaned and maintained? (এখানে কি টয়লেট পরিষ্কার পরিচ্ছন্ন থাকে ?)

- a.Yes (হ্যাঁ)
- b. No (না)

C. Others (অন্যান্য)

25. How often is the toilet facility you use cleaned and maintained? (কতদিন পরপর আপনাদের টয়লেট পরিষ্কার করা হয়?)

- a. Per 2 days (দুইদিন পরপর)
- b. Per 7 days (৭ দিন পরপর)
- c. Others (অন্যান্য)

26. Is there a proper system for the disposal of waste in your slum area? (এখানে কি ময়লা পরিস্কারের কোন ব্যবস্থা আছে?)

- a. Yes (হ্যাঁ)
- b. No (না)
- C. Others (অন্যান্য)

27. How often is garbage collected in your slum area? (এখান থেকে কতদিন পরপর ময়লা নেওয়া হয়?)

- a. Daily (প্রতিদিন)
- b. Per 2 days (দুই দিন পরপর)
- c. Per 7 days (৭ দিন পরপর)
- d. Others (অন্যান্য)

28. Do you think there is a connection between the unhygienic sanitation facilities and the occurrence of waterborne diseases in your area? (আপনি কি মনে করেন, আপনার এলাকায় অপরিচ্ছন্ন টয়লেট ব্যবস্থার সাথে পনিবাহিত রোগের সম্পর্ক আছে?)

- a. Yes (হ্যাঁ)
- b. No (না)
- C. Others (অন্যান্য)

29. Are there open defecation practices in your slum area, and do you think they contribute to waterborne diseases? (আপনাদের এখানে কি কেউ কেউ যেখানে সেখানে মলত্যাগ করে? যদি করে থাকে, তবে আপনার কি মনে হয়, এর থেকে কি পানি বাহিত রোগ হতে পারে?)

- a. Yes (হ্যাঁ)
- b. No (না)
- C. Others (অন্যান্য)

30. Have you received any education or training on proper sanitation and hygiene practices? (আপনি কি শিক্ষা ও স্বাস্থ্যকর ল্যাট্রিন বিষয়ক কোন প্রশিক্ষণ/ট্রেনিং পেয়েছেন?)

- a. Yes (হ্যাঁ)
- b. No (না)
- C. Others (অন্যান্য)

31. If yes, who provided the education or training? (যদি, প্রশিক্ষণ পেয়ে থাকেন, তবে কে/কারা আপনাকে এ প্রশিক্ষণ/ট্রেনিং দিয়েছে?)

32. Do you have access to handwashing facilities with soap and clean water in your household? (আপনার পরিবারের কি সাবান ও পরিষ্কার পানি ব্যবহার করে হাত ধোয়ার সুযোগ আছে?)

- a.Yes (হ্যাঁ)
- b.No (না)
- c.Others (অন্যান্য)

33. Are there any water treatment or purification methods used in your household to make water safe for consumption? (আপনি কি বাসায় পানি বিশুদ্ধ করার জন্য কোনো ধরনের পদ্ধতি ব্যবহার করেন?)

- a.Yes (হ্যাঁ)
- b.No (না)
- c.Others (অন্যান্য)

34. If yes, what are those? (যদি করে থাকেন, তাহলে সেগুলো কি কি)

35. How do you tackle or do the treatment after getting infected? (অসুস্থ হওয়ার পরে আপনি কোথায় চিকিৎসা নেন?)

- a.govt hospital (সরকারি হাসপাতাল)
- b.home (বাসায়)
- c.pharmacy (ফার্মেসি)
- d.private hospital (প্রাইভেট হাসপাতাল)
- e.local (স্থানীয় হাসপাতাল)
- f.others (অন্যান্য)

36. What are the problems you often face during treatment? (চিকিৎসা নেওয়ার সময় আপনারা কী ধরনের সমস্যার সম্মুখীন হন?)

37. Do you get any type of support from GO/NGO regarding disease treatment? (সরকারি/বেসরকারী সংস্থা থেকে আপনি কী কোনো ধরনের সহায়তা পান? পেলে বিস্তারিত বলুন)

38. How satisfied are you with the sanitation conditions in your slum area, on a scale from 1 (very dissatisfied) to 5 (very satisfied)? (আপনার এলাকায় পয়ঃনিষ্কাশন ব্যবস্থা নিয়ে আপনি কতটা সন্তুষ্ট,সন্তুষ্টি নিয়ে আপনার অভিমত কি, যেখানে ৫ খুবই খারাপ, ১ খুবই ভালো?)

39. In your opinion, what measures or improvements could help reduce the incidence of waterborne diseases in your slum area? (আপনার মতে পানিবাহিত রোগ কমাতে কী ধরনের ব্যবস্থা নেওয়া উচিত?)

### **Qualitative Data Collection Checklist:**

**Here the Discussion Points for the qualitative data collection is mentioned:**

#### **Focus Group Discussion:**

1. What are the primary sources of water in your households, and how would you describe their cleanliness and reliability?
2. How far do you need to travel to access clean water, and what challenges do you face in doing so?
3. Are there communal water points in the slum area, and how accessible and safe are they for use?

4. Have you or your family members experienced any waterborne diseases in the past year, such as diarrhea or cholera?
5. What do you think is the relationship between the quality of water sources and the health of residents in the slum area?
6. How much do you spend on purchasing clean water on a monthly basis, and how does this impact your household budget?
7. Have you ever received financial assistance or subsidies related to water access?
8. Can you describe any safety concerns or difficulties you face when collecting water from your primary sources?
9. Are there any issues related to water theft, contamination, or improper use in your community?
10. Have government or non-governmental organizations provided any support or interventions related to water access in the slum area? Please share your experiences.
11. What do you believe could be done to improve the accessibility and quality of clean water in your slum area?
12. Are there any community initiatives or solutions you think could be implemented to address water-related challenges?
13. What are your main takeaways from this discussion, and do you have any final thoughts to share regarding clean water accessibility in the slum area?

### **Key Informant Interview:**

1. Key Informant's Name and Affiliation:
2. Role and responsibilities related to water accessibility in the slum area
3. What is the current state of water accessibility in Kalyanpur Slum? What is your opinion on your experience?
4. Are there reliable sources of clean water available within the community, and how accessible are they to residents?
5. Are there any communal water points or distribution systems in place, and if so, how effectively do they serve the community?
6. What is the quality and safety of the water sources available within the slum area?
7. What are the barriers to accessibility of clean water in this slum?
8. How do economic factors, such as the cost of water, impact accessibility for the community?
9. Have government agencies or non-governmental organizations initiated any projects or interventions to improve water accessibility in the slum area? Such as water plants or tube wells.
10. Have these interventions made any impact on the slum dwellers?
11. Are there any notable community-led initiatives or solutions aimed at addressing water accessibility challenges?
12. In your opinion, how do the accessibility and quality of water sources affect the health of residents in the slum area?
13. Are there reports or studies that link water quality to the incidence of waterborne diseases in the community?
14. Based on your expertise, what recommendations do you have for improving water accessibility and quality in the slum area?
15. From your institution, can you share one actionable solution to reduce this problem in the Kallayanpur slum?