

JOURNEY TO THE LIGHT

WASH situation analysis in Uttaran's program area



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A healthy life for all.



Uttaran

Overall Supervision

Shahidul Islam

Study Team

Gouranga Nandy
Jahin Shams Sakkhar
Zahid Amin Shashoto
Hasina Parvin
Hedayet Ullah
Nazma Akter
Rushayed Ullah

Cover

Md. Hafizur Rahman

Published by

Uttaran

House # 32(1st Floor), Road # 10/A,
Dhanmondi R/A, Dhaka-1209, Bangladesh.
Tel: 88-02-9122302, Cell: 88-01711828305
e-mail: uttaran.dhaka@gmail.com,
web: www.uttaran.net

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Forward

For the past 35 years Uttaran has been working for the rights of the underprivileged communities around the coastal region of Bangladesh. Uttaran is a people centered grass root organization with a vision to establish a society with gender, class, and caste equality.



Uttaran works with the most extreme poor, landless and climate vulnerable communities who constantly suffers from water logging, sedimentation of river, frequent cyclone and tidal surge, drinking water crisis and extreme salinity. In the past decade, the situation here is further aggravated due to climate change and sea level rise coupled with poor planning and coastal infrastructure.

Since our inception ensuring people's basic need "Water, Sanitation and hygiene" has always been a key priority of Uttaran. Due to Southwest's climate vulnerability and frequent disaster this has always been a major challenge especially for the underprivileged communities. Over the years our work for the overall development of WASH facilities around the Coast has been praised nationally and internationally. Our key strategy does not only limit to providing WASH service rather we prioritize our activity through a right based approach and creating a market system for ensuring the development and availability of WASH facilities for people from all walks of life.

For the past few years Uttaran with the assistance of Netherland Government and Simavi has been implementing a project to improve the overall WASH conditions of Satkhira and Barguna district. In recent times, the project has become an exemplary action to develop the WASH facilities in climate vulnerable regions.

This report is produced under the project and provides key insights about the WASH situation of the project's implementing area which is examined through the third lens. The report also looks through the key obstacles to achieve 100 per cent WASH target and what needs to be addressed.

I am very much grateful to the Netherlands Government who have always been a great friend for the people of Bangladesh and now have extended their cooperation and continuing support to the development of the coastal people. I truly believe the project will play an integral role in achieving 100% coverage around the coast of Bangladesh.



Shahidul Islam

Director, Uttaran

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Abbreviations

DPHE	Department of Public Health Engineering
FGD	Focus Group Discussion
LGED	Local Government Engineering Department
LGIs	Local Government Institutions
MHM	Menstrual Hygiene Management
MP	Member of Parliament
PWD	Public Works Department
SDG	Sustainable Development Goal
SE	Socio-Economic
UNICEF	United Children Fund
WASH	Water Sanitation and Hygrine
WHO	World Health Organization

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Executive Summary

This report describes the Uttaran's WASH program which is implemented in Satkhira and Barguna districts of Bangladesh.

Data, collected from February to April 2020, provides a study of WASH access, continuity, quality, quantity, reliability and sustainability, multiple-use services and child-wellbeing. The long-term goal is to assess the outcomes and impacts of WASH interventions in that areas.

The study was based on surveys in households, waterpoints, schools and water quality sampling and observations in each of the settings. After a brief introduction about the general approach and methods, this document describes the results of each of these instruments.

It was conducted among 800 households, 12 waterpoints, 8 schools and included 120 microbiological water quality samples arsenic tests. A random sample was utilized to ensure consistent, generalizable data collection.

On an average, 81% of Uttaran's households have accessed around the year improved drinking water source, 76% have accessed improved sanitation and 54% always had water and so a present for hygiene purposes. On an average, 62% of households have microbiological water quality of low to intermediate-risk and 33% have accessed to improved water that is within 30 minutes collection-time.

Regarding water points the data collected randomly. On an average,

26% of waterpoints are in the low risk category for fecal contamination; however, some samples far exceed the WHO guidelines for drinking water for arsenic. Sanitary risk assessment identifies actual and potential sources of contamination of a water supply.

On an average, 76% schools have accessed to an improved water source within 30 minutes collection time and 75% have accessed to improved sanitation. 70% schools have accessed to all five recommended services for Menstrual Hygiene Management (MHM) – separate washrooms, clean water, door, lock for the door, and waste disposal.

In school regression models, we find specific WASH factor that predict reduced fecal contamination in drinking water in schools. They are:

- Improved water source, the presence of handwashing materials, and water source collection time within 30 minutes;
- Improved water source and access to improved sanitation.
- Improved sanitation;
- Improved primary water source;
- Access to handwashing facilities that always or sometimes had soap.

It has been observed also:

Households

1. Improved hygiene, safe water storage and sanitation access in all areas.
2. Improved children's health through improved safe water removal practices and consistent use of soap and drying for handwashing.
3. Resources are not available for maintenance and operation through presence of all water committees.

Water Points

4. Enhance the sustainability and quality of water points by increasing the number of water committees.

5. High levels of arsenic in drinking water, critical risks to human health in drinking water.

Schools

6. Improve access to primary improved water source was significantly better.
7. Health in schools has been improved with an increase in availability of water, soap, and drying materials.
8. An increase in the number of latrines for girls and latrines/urinals for boys on schools' premises, according to the WHO recommended 25:1 girl per latrine and 50:1 boy per latrine/urinal, could help to decrease open defecation and increase access to menstrual hygiene management.
9. Menstrual hygiene management has been improved with separate -sanitation facilities, doors with locks, clean water and waste disposal.

1. Background

Uttaran has been implemented a project related to WASH to increase awareness of the people in specific area. The main target of the work is raising household and community level awareness on integrated WASH rights and practices, involvement with key public sector (LGIs, DPHE, MP - Member of Parliament, Ministry of Education, and LGRD) and facilitate private sector at the local level. This program deals with poor and socially excluded community, women, children and PWDs so that no one is left behind. The program has specific target towards achieving universal access to water and sanitation services by 2030 under the Sustainable Development Goals (SDGs) agenda.



The program has been implemented in Satkhira Sadar Upazila where 410,355 people are living in 14 unions. For the first two year the project worked in 3 unions which are Balli, Jhaudanga and Agardari Union (below detail, Table 01 and 02) where population are 15,859, 33,471 and 37,654 respectively. Another three areas are Satkhira, Kalaroa and Baguna Pourashavas where

populations are 113,322, 27250 and 32235 respectively. The area is vulnerable to climate change and is regularly affected by natural disasters. Most of the water sources in the area are either contaminated by Arsenic, iron or E-coli. Some areas are also affected by salinity. Around 41% of the total population was Basic Water access and the rest were drinking water from unimproved water sources.

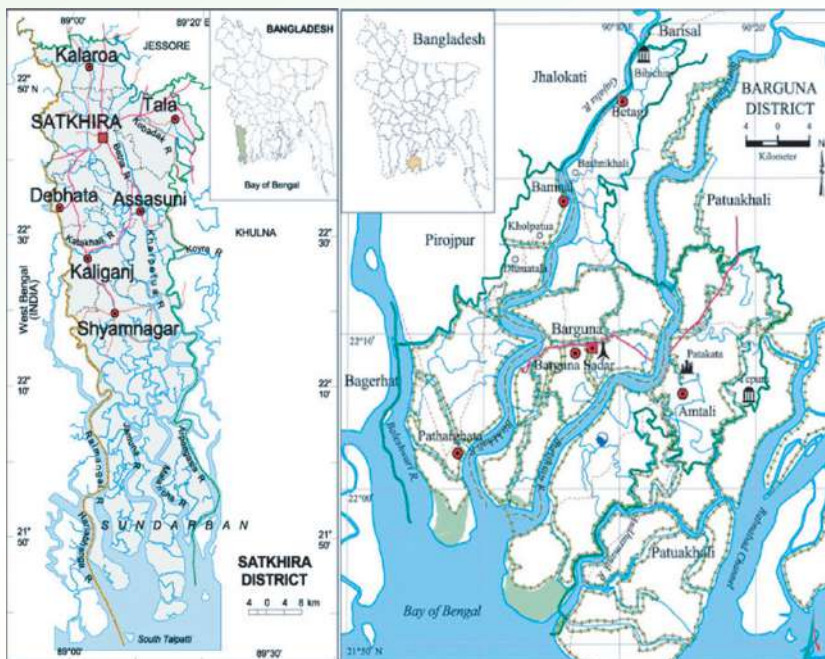


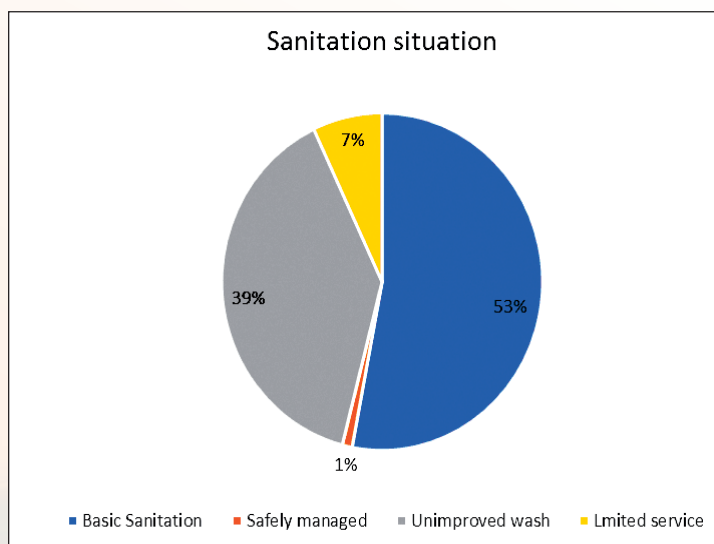
Table 01. Working area and population

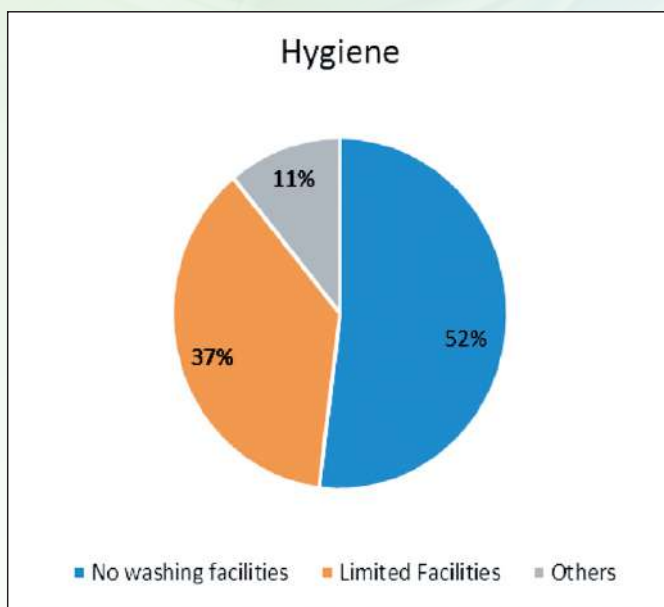
Sl	Name of the Union/ Pourashava	Number of the village/ward	Name of the District	Populations
01	Balli	21	Satkhira	15,859
02	Agardari	23		37,654
03	Jhaudanga	21		33,471
04	Satkhira Pourahsava	09		113,322
05	Kalaroa Pourashava	09		27,250
06	Barguna Pourashava	09	Barguna	32,235
Total-				172,807

Table 02. Involved school and students in activity

Sl	Name of the area	Nature of the Schools	Number of the schools	Number of the students		
				Boys	Girls	Total
01	Balli, Agardari and Jhaudanga	High school (General)	10	2,296	2,720	5,016
02	Satkhira, Kalaroa and Barguna Pourashava	High school (General)	31	7,764	10,990	18,754
		Madrasha	3	485	750	1235
Total			44	10,545	14,460	25,005

There was no open defecation in this area and 53% of the total population was using basic sanitation services with 1% managing it safely. But still a large portion of the community (39%) was using unimproved WASH services. Around 7% were using limited sanitation services since they were sharing their latrines with others. The hygiene was the biggest concern for this area as 52% of people had no hand washing facilities at home and 37% was limited facilities which mean they did not have soap at their premises.





This report is trying to understand the behavioural change and practise regarding health and personnel hygiene among the community where the program has been implemented. To realise the situation, we have gone through the all kinds of documents related to project and personal interview has been taken. Focus Group Discussion - FGD and observations has also been considered.

Specific objectives of this study as follows :

- a. To assess the behavioural change of the community
- b. To assess the consciousness level of WASH and
- c. People attitude towards WASH

From February to April 2020, a field level activity was conducted in Satkhira where Uttarn has implemented WASH program. The goal is to measure WASH impact in the community. Internationally accepted WASH indicators, guideline was used to assess the perception of the community including source type, access, quantity, quality, continuity, reliability and sustainability.

Uttaran was performed with overall objectives in mind :

Sustainably improving access to and use of sanitation and improving hygiene behaviours for at least 2 million women, girls, boys and men, and access to and use of safe drinking water for at least 450,000 women, girls, boys and men in the coming five years.

The three WASH objectives, as identified by Uttaran WASH Strategic Framework, which are focusing six points are given below:

1. Increase access to wash facilities,
2. Empower communities to sustainably manage wash systems,
3. Increase access to adequate sanitation,
4. Improve hygiene knowledge and practices,
5. Improve the enabling environment for WASH, and
6. Strengthening the wash governance and institutional framework.

During the enumerators collected data on continuity, quality, quantity, reliability, and sustainability of WASH access. Data were collected in program areas using surveys developed by ourselves households, waterpoints, schools and health facilities. Water samples were also taken and tested for fecal contamination in households, water points, schools and arsenic levels (waterpoints only).



2. Methods

2.1 Survey Design

We use a set of sample surveys to evaluate WASH access, within and across populations. Survey questions used indicators of international standards and guidelines in WASH from WHO and UNICEF guidelines, where standards existed. To inform study and survey design, a framework was created from a review and synthesis of past Evaluations and other WASH evaluation in view of Uttaran programmatic goals and objectives.

The following key Uttaran objectives were addressed in the through surveys and water quality testing in households, water points and schools.



Water

- Access to improve drinking water sources;
- Access to a water source within 30 minutes;
- Access to sufficient quantity water (20 l/p/d);
- Access to lower intermediate risk water quality;
- Continuity of water service (hours of water service per day/week);
- Reliability of water service (water-point break downs);
- Sustainability of water service and
- Access to multiple-use services.

Water Points

- Water quality;
- Sanitary Risk and
- Sustainability.

Sanitation

- Access to improved sanitation sources;
- Usage of available sanitation and
- Sustainability of sanitation.

Hygiene

- Access to water, soap and drying materials for handwashing
- Knowledge of critical handwashing times
- Access to menstrual hygiene management (MHM)

2.2 Sampling Design

To ensure consistent, generalizable data collection over the working area of Uttaran, we have developed a questionnaire. Based on this randomly selected households, waterpoints and schools.

2.3 Sample Sizes

The target sample sizes were calculated using standard estimates for the comparison of two proportions. Based on an expected response rate of 85% in households and 95% in schools, the sample sizes in Table 3.

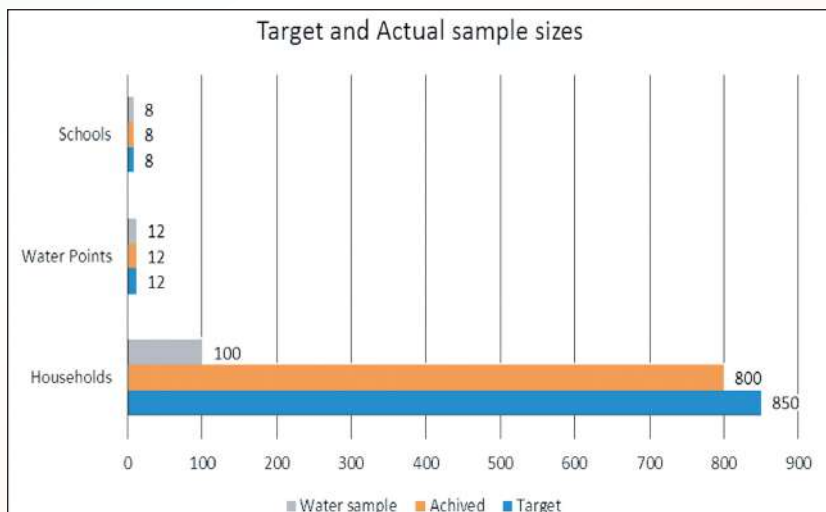
Table 3. Summary of Target and Actual Sample Sizes

Description	Target Sample Size	Sample Size Achieved	Water Sample Achieved
Households	850	800	100
Water Points	12	12	12
Schools	8	8	8

2.4 Water Quality Sampling

Water samples were taken of stored water at every fifth household and at every water point mentioned in household surveys. Water quality samples from schools have been collected and examined. The target water sample size for households was achieved. Water samples were analyzed for arsenic, because of their health risk to humans in drinking water.

Arsenic analysis was to be taken at all waterpoints in program area. Samples were sent to a certified government laboratory where electrothermal and electrometric methods were used.



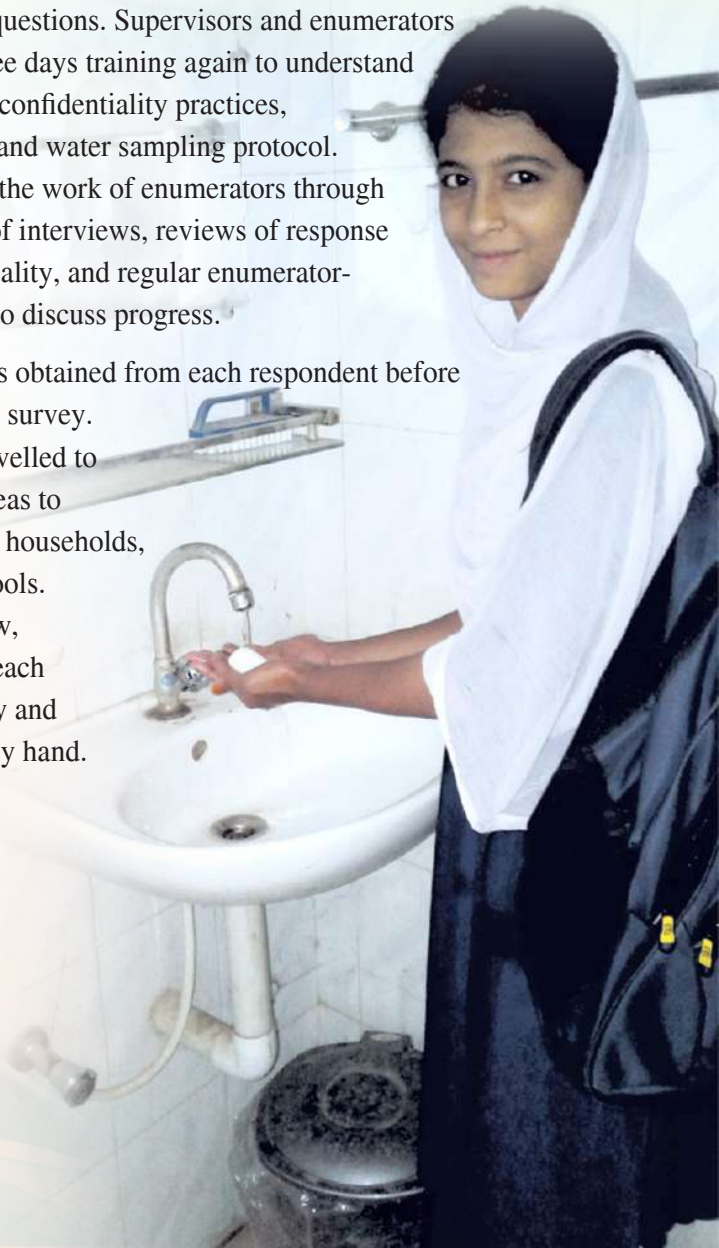
2.5 Observation and personal interview

Observation and personal interview were the major tools to understand the behavioral change and attitude.

2.6 Data Collection

Consultant were hired to carryout data collection. Supervisors and Uttaran staff received a three days training on study design, sample size and selection, data collection tools, and roles of enumerators and supervisors. Interviews were pretested in each area, resulting in modifications to survey questions to minimize ambiguity and misinterpretation of questions. Supervisors and enumerators then underwent a three days training again to understand to understand ethics, confidentiality practices, interview technique, and water sampling protocol. Supervisors checked the work of enumerators through random verification of interviews, reviews of response rates and response quality, and regular enumerator-supervisor meetings to discuss progress.

Informed consent was obtained from each respondent before proceeding with each survey. Enumerators then travelled to randomly selected areas to administer surveys at households, water points and schools. During each interview, the enumerator read each question in the survey and recorded the results by hand.



3. Households

3.1 Introduction

main objectives assessed in the Uttaran for households are:

1. Increase access to safe, sufficient and proximate water sources,
2. Empower communities to sustainably manage water systems,
3. Increase access to adequate sanitation,
4. Improve hygiene knowledge and practices, and
5. Improve child wellbeing.

This chapter provides the results of the data collected on household water (type, quality, quantity, continuity, reliability, safe storage and treatment, and sustainability), sanitation (type and sustainability) and hygiene (access to water, soap, and menstrual hygiene facilities) and will be vital in identifying current gaps in water coverage, as well as planning future interventions for Uttaran.

3.2 Methods

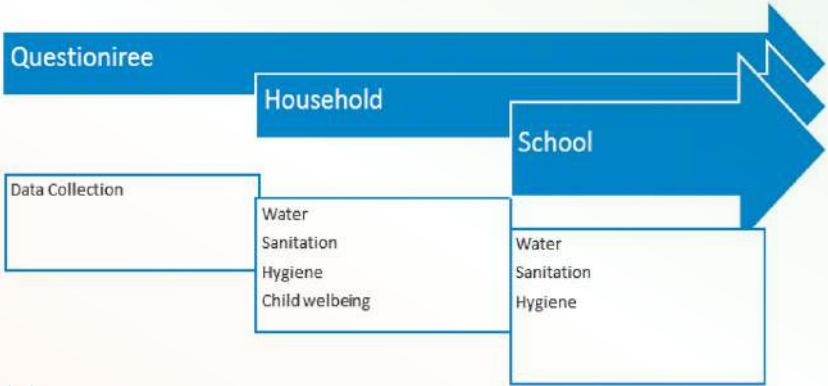
Household Selection

Households were selected, probability proportionators. Data collection comprised household surveys with the female head of household, water quality samples of every fifth houses and direct observation. The household interview included questions on water, sanitation, hygiene and child wellbeing. Water questions included: source type in rainy and dry season, access, quantity (l/p/d), quality (E. coli/100ml), storage, treatment, continuity, reliability, and multiple-use services. Sanitation questions included: facility type, functionality, and sustainability. Hygiene questions included: presence of water, soap and drying materials and knowledge of critical handwashing points. Child

wellbeing questions assessed included: diarrhea in children under five, missed school, and reasons for missed school.

Data Analysis

The household data were weighted to account for probabilities of selection. Categorical variables were analyzed as proportions, while continuous variables were analyzed for minimum and maximum values, mean, and median. Results presented are from Uttaran program areas.



3.3 Results

Demographics

The households were comparable across socioeconomic (SE) variables. The SE variables assessed included: respondent education, household characteristics (make of roof, floor, walls), household utilities (electricity, fuel), household amenities (telephone, bicycle, refrigerator, etc.), and animal ownership. This points to the comparability across groups when analyzing this data.

Water

Water Source

On average, 82% of households have access water in program areas. In rural areas water source is tube well but water supply system is in Pourashava areas. In the rainy season, on average, 78% of households

have access to an improved water source. The primary water source in the rainy season for households is tube wells in all areas.

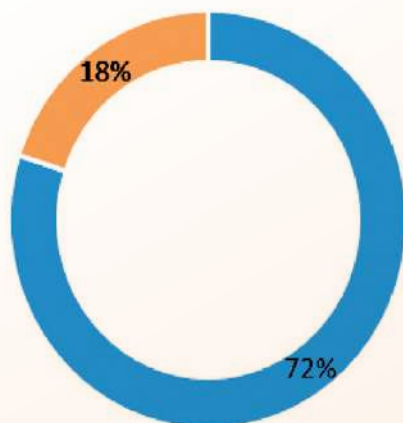
Distance to Source

On average, 73% of household's report around trip time from the household to the water source and back of 30 minutes or less.

Quantity

On average, 35% of Uttaran households have access to greater than 20 l/p/d of water per day. Water quantity (l/p/d) is calculated by dividing the number of people in the household by the number of total liters carried. The total number of liters carried is calculated by an assessment by the respondent of the number of liters per container used to carry water on the previous day and multiplying this by the number of trips made by each container, as per responses from a sequence of questions. In pourashava areas it is calculated discussed with the respondents.

Water Quality



■ Low Intermediate risk ■ High risk

Quality

On average, 72% of households in Uttaran program are as have access to low-intermediate risk water quality. High to very high-risk water quality is found in 18% of households. A sample of water was taken in every fifth house, teams could take these samples and analyze them.

Goals

Uttaran has four primary WASH programing goals to bring 100% access to improved water, that is within 30-minute collection time, greater than 20 l/p/d, and of no more than intermediate risk water quality to 100% of households where they work. On average, 8% of households meet these goals. The first two goals, improved access and distance to source, have higher rates of achievement. On average, 53% of households meet the first two goals.



Water Storage and Treatment

On average, 82% of Uttaran households cover their stored water sources; however, safe removal of water from storage containers is a common problem—on average, only 19% safely remove water from storage containers (as observed by enumerators). Observed safe water removal occurs in fewer than 35% of households.

Continuity

On average, Uttaran households report 10 hours of water access per day during the dry season. In the rainy season, the average is 12 hours/day. On average, 71% of household's report access to a 24 hour per day water service during the dry season. A scheduled service (scheduled service of hours of water per day or week) is reported in an average of 62% of Uttaran households during the dry season and in 33% of households during the rainy season. This discrepancy between continuous and scheduled water service may be in the way that the question was asked, and will need to be clarified in subsequent evaluations.

Reliability

On average, 15% of households report a breakdown of their primary water source in the past two weeks. On average, the breakdowns reported are 20 days.

Sustainability

To assess sustainability of water services, we assessed if households paid for their water service, had a WASH committee, and if they were satisfied with their water source. Households that are not satisfied with their water source may in turn not pay for the service. In communities where households do not pay for their service, maintenance and operation of the water service can suffer. The most common reasons

for dissatisfaction with the water source, included: not enough water quantity.

Multiple-Use Services

Multiple-use service questions provide evidence of access to sufficient water quantity for domestic and small-scale enterprise, beyond basic access. While this is not an extensive multiple-use services study, the presence of a vegetable garden and the use of water in a small business were analyzed in households.

Sanitation

Sanitation Facilities

On average, 76% households have improved sanitation. When the types of sanitation are looked at no sanitation facilities or open defecation is present. On average, 97% households have access to any type of sanitation.

Sanitation Sustainability

In households, sustainability of the sanitation facility is documented by assessing sanitation use, functionality, breakdown, fee payment, and condition. Of those that have sanitation facilities, an average of 87% households have a functional sanitation facility.

On average, 14% households report that their sanitation was not functional or unusable in the past year. The most common sanitation facility is a pit latrine. Most households do not pay to use the sanitation facility. On average, 5% of households pay to use their sanitation facility.

Enumerators also recorded observations of the latrine condition. On average, 63% of latrines are normal and less than 12% of latrines were VIP latrines. Observed evidence of cracking or damage to the latrine was found, on average, in 10% of households. Hygiene supplies present

(water and soap) close to the sanitation facility are common and were observed 57% households.

Hygiene

Access

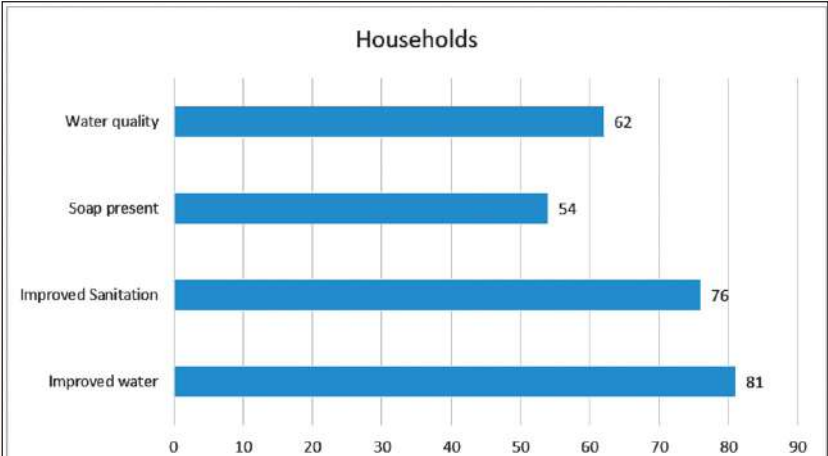
On average, only 34% households report hygiene materials (water and soap/ash) always present. The limiting factor is often soap. Soap is always present in just 38% households. The presence of drying materials is even less common. On average, only 12% households always have access to drying materials for handwashing. Fewer than 22% of households mentioned they washed their hands at all five critical handwashing times-after using the latrine, before cooking, before eating, after cleaning a baby and after taking care of a sick person. Most mentioned 1 or 2 of the 5 CRITICAL hand washing times, but few household heads mentioned all 5.

3.4 discussion, Summary of Results

On average, 81% households have access to a year-round improved drinking water source, 76% have access to improved sanitation, and 54% always have water and soap present for hygienic hand washing. On average, 62% of households have microbiological water quality of low to intermediate-risk and 53% have round trip water service that is within 30 minutes collection time. On safe storage, 82% of households cover their stored water, but only 18% of households are safely removing water from storage (as observed).

On average, 78% of households have access to some type of sanitation, however, 76% of households have access to improved sanitation. The lack of a slab latrine on many household pit latrines is the reason for the low rates of improved sanitation access. Observations of sanitation facilities documented the lack of adequate cleansing materials in sanitation facilities, hygiene supplies close to the sanitation facility, and appropriate discharge of excreta.

Several WASH, household, and socio-economic variables were found to best artistically significant in predicting household water quality, although no one specific variable predicted household water quality across the program areas. Results were run where we had sufficient data. We find specific WASH, household and socioeconomic variables that predict reduced fecal contamination in multivariate regression models.



Improved primary water source, safe water storage, distance to water source, continuous water source to households, improved sanitation, presence of water and soap at handwashing facilities, and household water quality were not associated with diarrhea in children under five this study in Uttaran’s program area where sufficient data were available.

4. Water Points

4.1 Introduction

The main objectives assessed in the Uttaran for water points are

- Increase access to safe, sufficient and proximate water sources, and
- Empower communities to sustainably manage water systems.

The Uttaran aims to quantitatively assess both technical functionality, potential for long-term sustainability, and quality at waterpoints, as well as operational and financial management of rural water supplies in this study. This chapter provides the results of the data collected on waterpoints: type, quality, continuity operation and maintenance, technical support, and sanitary inspection.

4.2 Methods

Water Point Selection

Enumerators went to preselected households to request interviews. During the interviews, questions were asked to determine the primary waterpoint that was functioning and the last used nonfunctioning waterpoint. The enumerators were responsible for locating the functioning and nonfunctioning waterpoints mentioned in the interviews other at the waterpoints could be sampled. Enumerators were instructed to survey the functional and nonfunctional water points in the cluster. At least one waterpoint was surveyed in each cluster. In each area, 15 clusters were identified and have surveyed as well.

Data Collection

A member of the water or WASH committee, if present, was

interviewed. If the water or WASH committee was not present, a community leader in the community was identified and the water point interview administered. The water point was then visited, a sanitary survey administered, and the water quality sample was taken from the waterpoint.

Water point surveys included questions on :

- Access to safe water
- Water system sustainability
- Sanitary risk
- Water quality

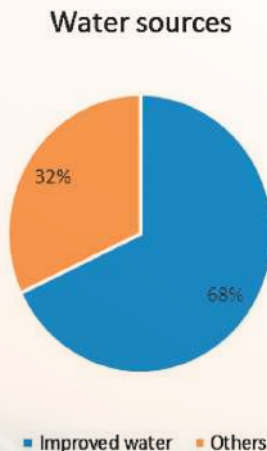
Water Sampling

Enumerators sampled most of the waterpoints selected for survey to test for fecal contamination (E. colie numeration, arsenic and fluoride).

4.3 Results

Water Source Type

On average, 68% of waterpoints have access to an improved water source, are salt that is much higher than in the representative household data. The most common water source type surveyed is a tube wells across the whole area.



Water Quality

The WHO classifies the presence of E. coli/100 ml in four groups representing the degree of fecal contamination and potential risk to human health: low risk, intermediate risk, high risk and very high risk. On average, 36% waterpoints sample dare in the low risk category for microbiological contamination.

33% of waterpoints did not meet arsenic guidelines. There are some water samples that have quite high levels of arsenic in the area.

Sanitary Risk

Sanitary inspections identify actual and potential sources of contamination of a water supply. Scores area long a 10-point scale based on ten selected indicators. The ten indicators include observations of waterpoint distance to latrine, placement of latrine, sources of pollution, ponding and drainage close to water source, and observations of the condition of the cement floor at the waterpoint. A score of 10 indicates the highest possible risk, and a score of zero represents the lowest possible risk. The total score estimates contamination risk level. It is noted that Satkhira and Barguna Pourashava are comparatively high risk of contamination than Kalaroa Pourshava.

Continuity and Reliability

On average, 69% of water points surveyed supply continuous uninterrupted 24-hour water service. On average, 72% of waterpoints are functional.

Operation & Management

On average, of surveys conducted, a water committee manages 63% of waterpoints in program area. This is much higher than reported in household surveys, again suggesting that waterpoints were randomly selected. On average, 85% waterpoints surveyed have at least one

woman serving as a member of the committee.

4.4 Discussion and Result

This was a unique opportunity to assess waterpoint access, quality, operation, management and access to technical support. However, the results of this study are limited. The results of this study provide valuable insights on the general strengths and weaknesses of Uttaran waterpoint management.

Some limitations exist with the data collection process. Data collection was to beat every functional waterpoint and every used nonfunctional waterpoint, up to five waterpoints in each cluster. These waterpoints were to be randomly selected; however, when the data for waterpoints are compared to the household data, waterpoints election for survey was biased toward functional and improved waterpoints. The lack of electronic data collection made it impossible to identify this is surly on in the study.

Additionally, some of the questions asked on surveys had low response rates. With respect to water quality analysis, some of the areas opted to not test for arsenic due to lack of sampling facilities.

Furthermore, sanitary inspections scores were calculated based on available data. Responses that were missing or categorized as “don’t know” were coded as “0” values. The final scores out of the possible 10 points may be higher. While it is unlikely that missing data or “don’t know” responses had a large impact on final scores, this should be taken into consideration when looking at sanitary inspection scores.

Here it can be mentioned that Kalaroa Pourashava is comparatively advantage position than other two pourshava because government body is implementing water supply project which is expecting cover all residents but sanitation facility is lower than expectation.

5 Schools

5.1 Introduction

Experts are opined that schools are critical settings for access to WASH for several reasons. First, children spend a substantial portion of day time hours in school. Second, children are more vulnerable to water-related diseases than adults. Third, schools are centers of learning, making them ideal locations for teaching safe WASH practices.

The main objectives assessed in the Uttaran for schools are:

- Increase access to safe, sufficient and proximate water sources,
- Increase access to adequate sanitation, and
- Improve hygiene knowledge and practices.



5.2 Methods

Uttaran's WASH program was studied through a random sample of schools. Data collection included a school WASH survey, water quality tests, and direct observation. WASH indicators addressing access, continuity, quality, quantity and reliability.

School Selection

Schools were listed in where Uttaran implements its WASH program. The cluster sampling method resulted in a lower sample size of schools than designed, with fewer than 20 total schools selected.

Data Collection

Data collection included a school WASH survey, water quality tests, and direct observation. A specialized school WASH survey was developed and was the primary means of data collection from schools. The survey contained sections covering the following areas: school demographics; water (source type, access, continuity, quality, quantity, reliability); sanitation (type, quantity, quality); and hygiene (access to hand washing facilities and menstrual hygiene facilities). Trained enumerators conducted the surveys with school administrators using paper surveys.

Microbiological water quality samples were taken from the source of water at each school. Water samples were either tested immediately. Limited observation data was also used in data collection, specifically in the problem conditions of latrines and in the presence of materials for handwashing (water, soap/ash, and drying materials).

To avoid nonresponse, enumerators were permitted to sample head teachers or head administrators and four visits were required if no one was present on the original day of surveyor on subsequent visits to recruit selected schools into the study.

Modeling

Regression models were run to determine the WASH factors that predict water quality in schools. A negative binomial model was

used to determine incidence rate ratios for WASH factors predictive of water quality. The dependent variable in the model was E. coli coliform count per 100 mL, which serves as a means of estimating risk for diarrheal disease. Indicator variables that reflected presence of a facility (water source, storage, sanitation, handwashing, and hygiene), access (distance to water source, student-to-latrine ratios), and water treatment were included in a list of explanatory variables to test in the model.

5.3 Results

Water

Water Source

Secondary water sources are not commonly utilized in schools sampled. Between 20% and 33% of schools had a secondary source, and between 15% and 22% have an improved secondary source.

Distance to Source

On average, 76% of schools have access to an improved water source within 30 minutes collection time.

Quality

In assessing water quality from the samples that were taken, most schools have low risk water quality. A significant difference between low and higher risk categories, where a significantly greater number of Uttaran supported schools has low risk water quality.

Sanitation Hygiene

Handwashing facilities

Soap for hand washing was observed in a lower range of schools. Materials for drying were the least commonly observed on the day of the survey.

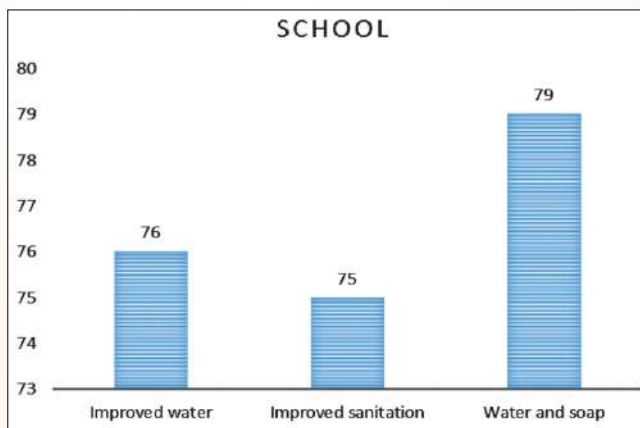
Menstrual Hygiene Management facilities

It is estimated that more than a quarter of the worldwide population

is made up reproductive age; these individuals need access to sanitary products to manage menstruation each month. When facilities for menstrual hygiene management (MHM) are neglected, girls may resort to unhygienic methods, such as using pads for extended lengths of time without being able to clean or change them. To meet the crisis, schools established safe and private MHM facilities which contribute to improve health, dignity, and gender equity; as a result, MHM in schools increased access to education for girls because girls can come to school during her menstrual cycle.

5.4 Discussion and Summary of Results

On average, 76% schools have access to an improved water source within 30 minutes collection time, 75% have access to improved sanitation and 79% had water and soap on the day of the survey.



The models focused on factors relating to access and existence of WASH facilities that are associated with better water quality. Another relationship to be tested in the future is that of intermittency of water supply with water quality, as there is some suggestion intermittent supplies lead to more storing of water, which leads to more opportunity for contamination.

It can be noted that some questions regarding latrine condition, hand washing facilities and MHM were not answered.

6. Health Facilities

6.1 Introduction

Access to water, sanitation, and hygiene has been widely recognized as vital to household health. Increasingly, extra-household settings, including health facilities, are receiving more attention. WASH access has significance in health facilities because these facilities are responsible for providing health care to communities.

The first step to improving WASH access in health facilities is assessing the current level of access for different services.

The main objectives assessed for health facilities are

- Increase access to safe, sufficient and proximate water sources,
- Increase access to adequate sanitation, and
- Improve hygiene knowledge and practices.

6.2 Results

Water

Water Sources

Health facilities report that they have access to a secondary water source; however, these secondary sources are less likely to be an improved water source.

Accessibility

Health facilities may have access to a water source on-plot. The quantity of water available at the health facility is dependent on how much and how often health workers can travel to the waterpoint: this might limit

the amount of water available for sick patients to drink, as well as for handwashing among workers to prevent the spread of disease.

Hygiene

Presence of water and soap

Access to materials for hand hygiene is moderate across all area. Of the health facilities that report the presence of a handwashing facility, they always have access to water for handwashing. However, regular access to soap is common. Finally, access to hygienic drying materials, such as paper towels, is low. An average of 88% reported access to water, 72% reported access to soap, and 22% reported access to hygienic drying facilities.

When access to all three types of handwashing materials are considered in combination with each other, we find that consistent access to supplies for hand hygiene is very low. Access to water is typically more common than access to soap or hygienic drying materials. It is worth noting that even if a health facility has high levels of access to soap and drying materials, handwashing can still be limited by an unclean or nonfunctional water source. A lack of any of these materials—water, soap, or drying—can limit the usefulness of the others.

Menstrual Hygiene Services

Access to menstrual hygiene management services (separate boys and girls' facilities; clean water for washing; closing door; lock for door; waste disposal such as an incinerator or trash bin) tends to be low across all areas.

6.3 Discussion

The results of this study on health facilities are limited because of problems in data collection—namely low sample sizes and response rates on certain questions. The response rate of questions regarding hygiene MHM are low in all area.

7. Conclusions

In summary, 820 surveys were conducted across households, water points, schools and 120 water quality samples were taken in total working area of Uttaran.

A significantly greater number of households have access to year-round improved drinking water in program households. Program areas that has access to some type of sanitation, improved sanitation, functional sanitation, and use of the sanitation (as observed). People's attitude towards sanitation has been significantly changed and their behavioral change has also been reflected as well.

There are significantly more schools in program areas with year-round access to improved drinking water that is within 30 minutes.

- Schools in program areas have significantly access to improved sanitation;
- Primary water sources for households are tube wells and surface water;
- Significantly more households have access to quality drinking water, have a WASH committee;
- Most households have access to improved sanitation
- Primary household water sources are public tube well;
- Significantly more households with access to improved water in the rainy and dry season and improved water that is within 30 minutes collection time;
- Significantly more households with water and soap always present;

Households and waterpoints

We find that on average, 82% of households have access to a year-round improved drinking water source, 76% have access to improved sanitation, and 54% always have water and soap present. When Uttaran goals are assessed together in households, 58% meet all four goals—access to an improved water source, within 30-minute collection time, supply of at least 20 l/p/d, and water that is of low-intermediate risk for fecal contamination. On average, 63% of households have access to improved water within 30 minutes collection time and 62% of households have microbiological water quality of low to intermediate risk.

Schools and health facilities

On average, 76% of schools and 86% of health facilities have access to improved drinking water source within 30 minutes collection time. Access to basic hygiene, water and especially soap is available. Menstrual hygiene management services are also present in school. Majority schools have access to an improved sanitation facility.

Water Quality

Arrange of WASH, household, and socioeconomic variables are found to be statistically significant changed in predicting household and school water quality, although no one specific variable predicted household or school water quality.

In schools, specific WASH predictors of reduced fecal contamination in drinking water in schools are improved water source, the presence of hand-washing materials and water source collection time within 30 minutes.

Strengths and Limitations

The limitations of this study are low sample sizes schools and health

facilities, and low response rates on certain questions regarding menstrual hygiene management in schools and health facilities and hygiene in households, schools and health facilities.

The strengths of this study are the standardized methods, randomized selection, generalizability to the larger rural population. The detail and number of questions in each survey also allows us to describe water, sanitation, and hygiene e access in depth in households, you schools, health facilities and at waterpoints.

Need to be addressed

Based on results, programming opportunities are outlined to help improve WASH outcomes and impacts in households, waterpoints and schools.

Households

1. Improve hygiene, safe water storage and sanitation access in all areas.
2. Improve children's health through improved safe water removal practices and consistent use of soap and drying for handwashing
3. Improve resources available for maintenance and operation through presence of water committees.
4. Improve access to sanitation slabs that are durable and can be cleaned through sanitation marketing and improved sanitation programming. This could help improve rates of access to improved sanitation, sustainability of sanitation, and cleanliness of sanitation facilities

Water points

5. Enhance the sustainability and quality of waterpoints by increasing the number of water committees.

6. Develop an arsenic policy to reduce high levels of arsenic in drinking water.
7. Sanitary risk assessments could be used to identify potential risks to contamination at water points.

Schools

8. Health in schools could be improved with an increase in availability of water, soap and drying materials.
9. An Increase in the number of latrines for girls and latrines/urinals for boys on school's premises, according to the WHO recommended 25:1 girls per latrine and 50:1 boys per latrine/urinal, could help to decrease open defecation and increase access to menstrual hygiene management.
10. Menstrual hygiene management could be improved with separate-sex sanitation facilities, doors with locks, clean water and waste disposal.



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Annexure 01

Hygiene Practices enhanced Doly's Family Status

Nilufa Yasmin Doly, a housewife of 42 years old. Her husband Md. Mosharrof Hossain is a businessman. They have five family members; live in Godokhali village, 3 no ward of Kalaroa municipality. She and her family members were very unconscious on health issues and water borne diseases. They didn't know proper hand washing which is the prime issue before cooking, taking meals, after excretion to live a healthy life and didn't know the bad impacts of not washing hands properly.



She is a member of Community Based Monitoring of Uttaran WAI WASH project at Kalaroa municipality. This project is financed by Netherlands government, supported by the organization SIMAVI in Bangladesh. She attended in the meetings of mother gathering regularly with her neighbors. In this meeting, four important topics were discussed on Water, Sanitation, Hygiene and Menstrual Hygiene Management.

Uttaran WAI WASH project field facilitator of Kalaroa municipality showed them that five procedures of washing hands practically with us. He also discussed the good and negative effects of hand washing properly. After attending on several meetings at mother gathering, she started to change her behavior. She usually washes hands properly with soap or hand-wash before started to cook, before taking meal, after excretion now. She also tries to maintain the five systematic procedures of hand-washing and teach her family to follow the procedures too.

Now, the health and hygiene condition has been improving of my family members. Water-borne diseases have been decreased which lead to lower monthly budget for medical services. She and her family members are now concerned on hygiene related issues also. They maintain proper hygiene management personally, within family and surroundings. They are grateful to Uttaran WASH project to support them for improving their health status.

Annexure 02

IMPROVED HEALTH STATUS OF SURMA'S FAMILY

Surma Begum, a housewife of 30 years old, lives in Charkalni, 1 no ward, Barguna Pourashava. Her husband Al-amin Howladar is a shopkeeper of 38 years old at Barguna bazar. She lives with her husband, one son and mother-in-law in her family. Her two years old son always felt sick mainly from diarrhea and other water borne diseases. Because of being sick frequently, her husband had to buy lots of medicine for their son. They were much tensed about the sickness of son and didn't find any reason why this was happening. Previously, she collected water from local tube-well, didn't wash the water jar clearly and don't cover up the



jar rather kept it open. She washed the utensils and clothes from nearby ponds. She and her family members didn't use shoes in the latrines and washed hands properly.

One employee from Uttaran WAI WASH SDG program visited her ward at Barguna municipality and talked with people to form a Ward WATSAN committee. Surma became the member of the Ward WATSAN committee and attended in the meetings regularly. From the meetings, she came to know about safe water, safe water using procedure and the bad impacts of not using the safe water. After attending several meetings, she started to practice the procedures. She also started to collect safe water from nearby tube-well which is green colored, wash the jar properly before pouring water and after collecting water, covered the jar with a clean lid. Now, she uses safe water to wash utensils and clothes. All my family members now use shoe for the latrine and wash their hands properly before taking meals and after using latrines.

She participated at one training session with other WARD WATSAN committee members and attended in the meetings regularly now she realized those practices are improving the health condition of her family members. Their son doesn't become sick as before and they don't have to buy lots of medicine now. She decided to practice all those good habits and become conscious on health and hygiene issues for her family.

She is grateful to Uttaran WAI WASH SDG program to take this great initiative to make local people aware on water, sanitation and hygiene issues as well as Menstrual Hygiene Management.

Annexure 03

The Story behind Changing Behavior of Shahanara's Family

Shahanara Begum is a housewife. Khalilur Rahman is her husband who used to sell their labor for their livelihoods. They live in Jhaudanga union, 2 no ward, Patharghata village of Satkhira Sadar upazila. In her family, they have five members including two sons and one daughter. Her husband must work hard to maintain a big family which two are school going children. They didn't know proper hygiene management. Her two years old daughter left excretion here and there on the open yard and she just remove it and throw in the backyard of their house.



She had to work alone in her family to maintain good health of her children and sometimes, it was not possible to maintain properly.

She heard Uttaran is working in her village for water, sanitation and hygiene management and Menstrual Hygiene Management. She went to talk with them and they made her the member of Village WASH committee as she showed her interest to know about this. After attending several meetings, they made her the president of that committee. She was also very happy to know about proper management of safe water, sanitation and hygiene. She changed her practice i.e. washing hands, drinking and using safe water and moreover she tried to change regular behavior of her three children and his husband. Now, they clean their nails, clean and comb hair, maintain their personal cleanliness. She also keeps her house and latrine clean and don't throw the dirt rather bury it.

Surprisingly, her family members don't fall in sick frequently mainly by diarrhea and dysentery. She maintains the guidelines, keeping her family healthy and encourage his neighbors to improve their health status through maintaining the exact directions from the WASH project officers. She wants to thank to Uttaran WASH project to make her the president of the Village WASH committee and improving the family status of her family and neighbors.