



# **Study on Drinking Water Consumption Behavior of People Away from Residents**

A Dissertation Submitted in Partial Fulfillment of the Requirements  
for the Bachelor of Science Degree in Civil Engineering

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Dhaka, Bangladesh



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## **APPROVAL**

This is to certify that the thesis submitted by MD. Sumsudoha, Shehabur Rahman and S.M. Rafew entitled as “**Study on Drinking Water Consumption Behavior of People Away from Residents**” has been approved by the supervisor for the partial fulfillment of the requirement for the degree of Bachelor of Science in Civil Engineering, Islamic University of Technology (IUT), Gazipur, Bangladesh in October 2013.

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## **DECLARATION**

We hereby declare that the undergraduate project work reported in this thesis has been performed by us and this work has not been submitted elsewhere for any purpose (except for publication).

**October, 2013**

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## **ABSTRACT**

Now a day's safety & quality of drinking water is an important public health concern. Working People spend substantial amount of time outside their residence, it is likely to be the norm rather than an exception. These floating people usually face some difficulty in choosing water source for drinking purpose. Previously some study has been conducted on the water supply availability & consumption behavior of a particular area and people. But as a majority of the population spends a significant amount of time outside home, our purpose is to find out the water consumption behavior of floating people, which is quite rare in the context of Bangladesh. Depend on educational background & economic condition people chose different type of source for drinking water for consumption. At present, there is inadequate information on quality of the water sources the drink water from and it is important that the consumers can be assured of their quality and safety. In Bangladesh and most of the bottled drinking water in the market does not conform to the international safe drinking water protocol. From the study we found that the source of water bottled for marketing was mostly ground water while some of the brands had used water supplied by the Dhaka Water Supply and Sewerage Authority (WASA). These large closed containers are directly attached to dispensing mechanics & after dispensation the water is provided to the consumers in small glass. Clean and healthy drinking water is important for life. Access to safe drinking water has been an important national goal in Bangladesh and in other developing countries. Water plays a major role in overall disease profile of Bangladesh. Diarrhea & gastro intestinal disease account for nearly a quarter of all illness in Bangladesh- about 12% by diarrhea and 10% by gastro-intestinal diseases (ICDDR). So in order to find the necessary information that affects their drinking water choice we designed a questionnaire survey which includes their income, conception about the water they take away from home, water sources they drink water from. We conduct our survey on some locations where we can find floating people in a large amount. Our basic survey locations are stations and market places at several point of Dhaka city. We conducted the survey on a total of 220 people. Our questionnaire was designed as close ended questions. Then the data collected are being analyzed by using Microsoft excel to obtain the graphical information. Finally we analyzed the data by using SPSS 16.0 software which is a

Windows based program that can be used to perform data entry and is capable of handling large amounts of data for analysis. By implementing this regression Analysis we have found some positive and negative factor regarding their choice as well as awareness about the water consumption practice. From this study we have observed that people's income has a significant impact on choosing their source of drinking water while they are away from their residence. Their education level and age also affect their choice of drinking water. There are also other factors working behind their choice. Accessibility to the water source is another important reason. About 41% of the respondents choose their drinking water source because of absence of alternative sources. From study we have also found that a high percentage of people 25% prefer to drink bottle water as they think it is so far the safest source of water to drink while travelling outside. The increase in demand for these corporate labeled water products is driven by few factors like changes in fashion towards the consumption of designer water increased concerns about the contamination of the piped water supply and an increased influx of people at railway and bus stations and in markets as well as at restaurants, with a requirement for good drinking water. It is a matter of concern that a vast portion about 41% of our survey participants have no idea about the water they are taking is treated or not. The high prevalence of diseases such as diarrhea, typhoid fever, cholera and bacillary dysentery among the populace has been traced to the consumption of unsafe water and unhygienic drinking water production practices. As 58% of our survey participants take water outside their home, the amount of water they consume outside their home is not negligible and is a significant portion of daily water consumption. In conclusion we can say that the study was designed in a exploratory way and sought to explore away from home drinking water practice using qualitative methods supplemented by a questionnaire survey and regression analysis of the data collected from the survey. Thus despite of the limitations of the design, this study makes a significant contribution by documenting the away from home drinking water consumption practices and factors that affects significantly.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 General

Water is a vital element for human survival, health and dignity and a fundamental resource for human development. Human history can generally be considered as water centered. Safe drinking water is an essential element for our body as it's a principle chemical component that makes up about 60% of the human body weight. But resource-poor settings microbial contamination has been described as vehicles for the prevalence of microbial diseases. In such settings water sources are communal and either unimproved or improved. From large number of studies it has been clearly shown that improving the microbiological quality of water on site or point-of-use and safe storage in improved vessel reduces diarrhea and other waterborne diseases. A large number of technologies have been developed for the treatment of drinking water, including physical and chemical methods and are being used in many parts of the world.

Point-of-use interventions to improve the microbiological quality of drinking water have been recommended for improving water quality in resources at poor settings. In settings where people spend a substantial part of their day outside their homes looking for means of livelihood, away from home drinking water consumption is likely to be normal rather than an exception.

As a common characteristic of the urban areas of Bangladesh availability of sufficient and pure water is a major problem. These shortages become more acute during the dry seasons. Dhaka, the capital city, is one of Asia's fastest growing cities, with a population currently around 15 million. The poor from the rural areas continue to migrate to the urban areas with the hope of being able to earn large amount of money to support their families. A large number of people take their meals in various roadside restaurants. The micro-biological safety of drinking water has become a burning issue & public awareness is gradually increasing regarding waterborne diseases. In order to meet the ever increasing demand of safe drinking water, Dhaka Water Supply Authority (DWASA) of Bangladesh has installed a number of deep

tube-wells that tap the upper aquifers. However, in most parts of Dhaka city, the current ground water abstraction exceeds the recharge rate. Besides Some incidents of contamination of municipal water supply from various sources & poor maintenance of pipe line failed to ensure supply safe drinking water. Again, surface water along these peripheral rivers are known to be highly polluted due to municipal and industrial untreated waste water discharge. So if the water contains pathogenic or diseases causing micro-organisms then water are unsafe for human consumption. Although costly, bottle water from different companies has become an option. But a popular, low cost alternative is the large closed containers by various companies. These large closed containers are directly attached to dispensing mechanics & after dispensation the water is provided to the consumers in small glass. But most of the bottle drinking water in the market is unsafe, as they do not confirm to the international safe drinking water protocol. The level of inorganic elements declared in the label of some bottles exceeded the recommended level for human consumption.

Now-a-days safety & quality of drinking water is an important public health concern. The high prevalence of diseases such as diarrhea, typhoid, cholera and basically dysentery among the populace has been traced to the consumption of unsafe water. Microbial water analysis is a method of analyzing water to estimate the numbers of microbe's present & if needed to find out the type of microbes.

The reporting project will look to resolve the microbial quality of drinking water and source water of dispensers in different road side restaurants from different location of Dhaka city. The result of this study could be used as a tool to develop necessary policy for the production, availability of safe drinking water and have shown that there is a need to focus attention on floating people drinking water consumption practice.

## **1.2 Objectives of the Study**

The study includes the following objectives

1. To survey the drinking water consumption behavior of people who are away from their residence.
2. To survey the effect of peoples profession and monthly income on their choice of drinking water away from home.

3. To investigate about any diseases or inconvenience they face while drinking this water.
4. To analyze the physical and micro-biological quality of these water samples.
5. To survey whether the water they drink is treated or not and also the treatment procedure.
6. Finally, to enquire about people's awareness about their behavior of drinking water when they are away from residence.

### **1.3 Survey Locations**

The survey work is to be carried out in basically two public locations.

1. Station
  - Bus stand
    - Board bazar
    - Station road, Tongi
    - Abdullahpur
  - Train
    - Tongi station
2. Marke
  - Rajlokkhi, Uttora
  - Board bazar, Gazipur

### **1.4 Scope of this Study**

This study will produce a sample data about the practice of drinking water by people on a daily basis while away from their places of residence. This study will also help to determine the source in terms of water quality and thus will help to locate most reliable sources of drinking water. It also helps to take necessary steps for the production and availability of safe drinking water.

## **1.5 Limitations of this Study**

A questionnaire survey has been done for collecting the primary data. The survey sheets have been filled up as per response of the people. Some people showed interest during the survey and helped to answer all the questions. But some people had shown less interest and answered the questions in a hurry. So there is a significant chance of different response as human choice is very distinctive in nature.

# CHAPTER TWO

## LITERATURE REVIEW

### 2.1 General

Water consumption rate is increasing when people are away from home in Bangladesh over the last three decades along with the growth and expansion of cities and towns. But water accessibility facilities are very much unsatisfactory for them due to lack of proper water supply and treatment. That's why, essential goal of the study is to investigate of water consumption behaviour.

People go outside for various purposes. As a result people take water when they are away from home. Somebody carry water from home or somebody take bottle water. Some people think clean water is safe for consumption on other hand some people take water from clean water container as they think it's safe for consumption.

### 2.2 Availability of drinking water

The past decade has seen a dramatic increase in the consumption of bottled and, more especially, plastic-bagged drinking water. But most of the bottled drinking water in the market is unsafe, as they do not conform to the international safe drinking water protocol. The level of inorganic elements declared in the label of some bottles exceeded the recommended level for human consumption (The Daily Star, 2003).

The bottled water in different names is being sold in the city streets, bus and launch terminals for a long time where the bottle carried information about minerals and others constituents which were not well founded (Dhaka Mirror, 2012). So if the minerals found excessive the water is not proper for human consumption. For instance, sodium was found in excess, which may lead to high blood pressure.

From the study we found that the source of water bottled for marketing was mostly ground water while some of the brands had used water supplied by the Dhaka Water Supply and Sewerage Authority (WASA) (The Daily Star, 2003).

Water covers 71 percent of the earth's surface but only three percent is fresh water out of which 69 percent is "trapped" as ice, mainly in the two polar regions. The remaining fresh water occurs in rivers, lakes and aquifers which human being, plants and other animal species can use. The distribution must be carefully managed to avoid irreversible depletion of the resource (WHO/UNICEF JMP, 2010).

Ground water resources of an area typically are closely related and are interconnected by the hydrologic cycle. Some ground water sources may be subjected to contamination from surface waters. (Scribd)

A popular, low cost drinking water source is the large closed containers by various companies. These large closed containers are directly attached to dispensing mechanics & after dispensation the water is provided to the consumers in small glass. Besides, small shop-owners and vendors are also selling drinking water from jars at roadside shops and hotels, which undoubtedly pose a health risk to city dwellers (Dhaka Mirror, 2012).

From several study dispensers water is not suitable for human consumption because in term of TC, FC, HPC & due to the fact that potentially pathogenic microorganisms were present (Moniruzzaman, Akter, Islam, Mia, 2011)

### **2.3 Major water sources**

The past decade has seen a dramatic increase in the consumption of bottled and, more especially, plastic-bagged drinking water. But most of the bottled drinking water in the market is unsafe, as they do not conform to the international safe drinking water protocol. The level of inorganic elements declared in the label of some bottles exceeded the recommended level for human consumption (The Daily Star, 2003).

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#### **2.4 Various effects of contaminated water Source**

The surface water along these peripheral rivers is known to be highly polluted due to municipal and industrial untreated wastewaters that are discharged. It contains pathogenic, or disease-causing microorganisms which is prevalence of diseases such as diarrhea , typhoid fever, cholera and bacillary dysentery (Mahbub, Nahar,Ahmed,2011)

# CHAPTER THREE

## STUDY APPROACH AND METHODOLOGY

### 3.1 Methodology

The methodology of this study includes-

- **Concept generation:** Water is an indispensable natural resource for human survival. We have to know the information of the whole water consumption pattern when people are away from home.
- **Collection of Information:** Information has been collected about the existing condition of sources of water when they are away from home in the peripheral areas of Dhaka city.
- **Preparation of a Questionnaire:** A questionnaire has been prepared including all the inquiries required for the analysis of this study.
- **Questionnaire Survey:** Surveys of local people have been performed to collect the required data. 220 participants were surveyed from the study areas.
- **Data Sorting:** The collected data have been arranged and sorted out for the analysis.
- **Analysis:** The data have been analyzed for correlation by Microsoft excel & SPSS.

### 3.2 Questionnaire

The methodology of this survey consists of practical field observation and field based data collection of water consumption behavior when people are away from home through structured and non-structured questionnaire and formal and non-formal interviews. The questionnaires includes all necessary inquiries such as the factors influencing the selection of water sources of the survey participants and also help to find out the reason behind choosing that type of water. From questionnaire survey we also find out the peoples conception about the water they take is safe for consumption or not. It also helps to find out the amount of water take when they are away from home. Finally, it finishes with the opinion of people about the present situation of available water sources and supply. The relevant secondary data for this study was collected from published and unpublished sources. The survey was, therefore, undertaken to explore the nature and many other habitation problem and different

reason to choose different source of water when they are away from home. The questionnaire will be included in appendices.

### **3.3 Factors Influencing People's Selection of Water Source**

Although human mind and choice is unique, there must be some factors that have an influence on the selection of water sources when they are away from home. Availability of fresh water source comes first in the list. The other factors are discussed below.....

#### **3.3.1 Gender**

Difference in gender defines the difference accessibility when they are away from home. For example, a male person can take dispensations water, but in case of a female person it is difficult.

#### **3.3.2 Occupation**

Occupation represents the level of experience and awareness that has an influence on people's selection of water source. For example, a doctor or a teacher will not drink water from any regular source they get it from, but a driver or a mechanic may drink it.

#### **3.3.3 Age**

Age represents the maturity level of a person that can influence the decision making about the selection of water source.

#### **3.3.4 Level of Education**

It is a vital factor that has great influence in selecting what is beneficial and what is harmful. Educated people generally make valuable decisions.

#### **3.3.5 Economic Condition**

Economic condition represents the status of a person in the society, economic condition also influence decision making. If a person is economically solvent it has more opportunity to get fresh water than an economically insolvent person.

#### **3.3.6 Consumption behavior**

Consumption behavior has a impact on Selection of Water Source.

### **3.4 Data Collection from Survey Areas**

Primary information has been collected through questionnaire survey of the following areas...

### **3.4.1 Bus station**

A bus station is a place where buses stand or stop for some time to let people in and out. We survey on-

- Boardbazar bus station
- Tongi bus station &
- Abdullahpur bus station

People use bus stand for their daily activities. Beside this some people business is related to bus stand. So we can get a large amount of people who take water when he or she away from home.

### **3.4.2 Train station**

Train station is a place where train stop for some time to let people in and out. Everyday a lot of people use train to move one place to another place for their livelihood. Beside train station is the business place for some people. People who come from another place and people who leave the place for move another place both take water in journey time. So that this person is helpful to find out our require information. We survey on-

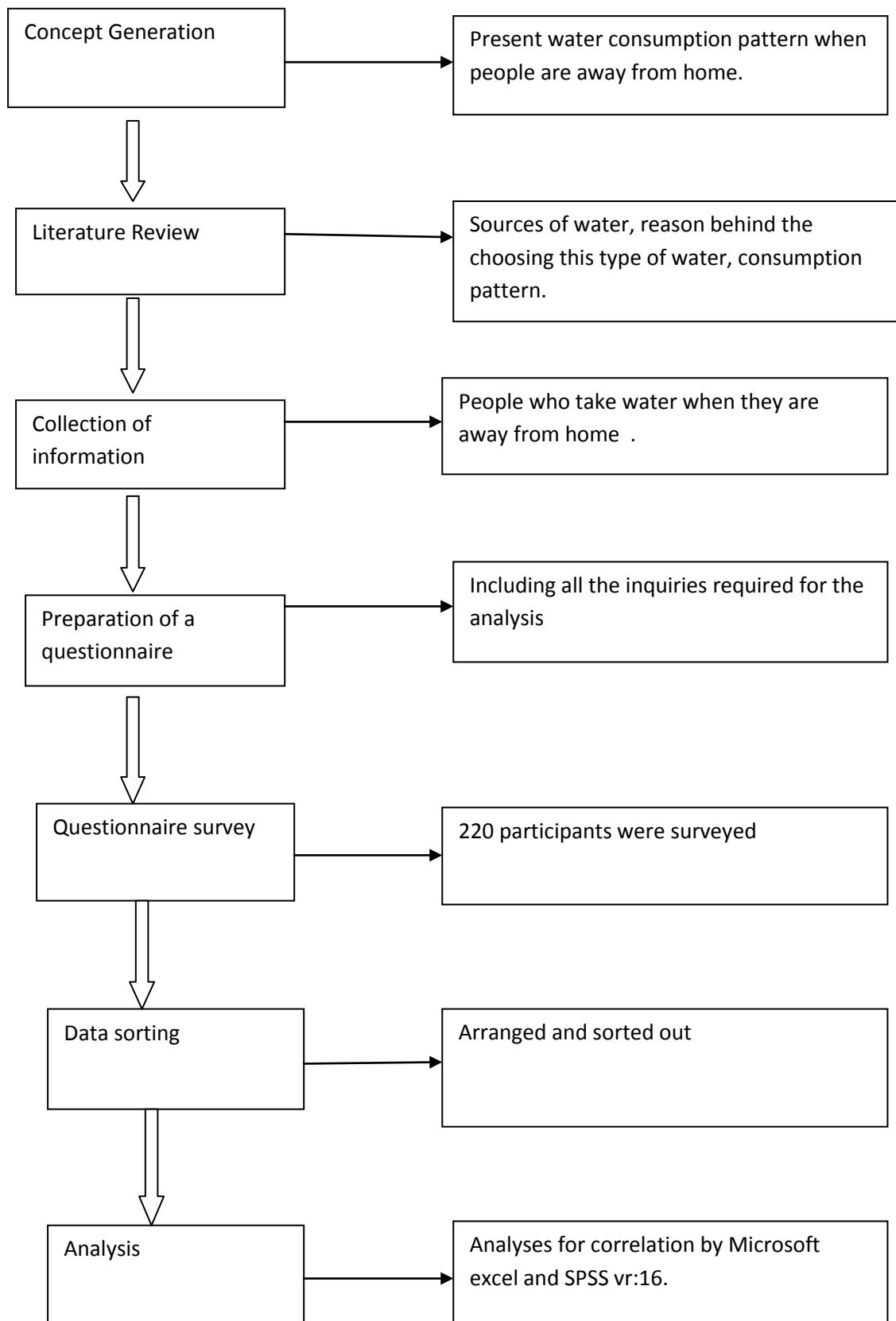
- Tongi train station

### **3.4.3 Market**

Market is the place where all age's people come to fill their requirement. Here one person comes to sell his goods and another person comes to buy his requirement goods. So market is a common place where people take water. We survey on-

- Boardbazar market
- Uttara market

Methodology is shown at a glance:



# CHAPTER FOUR

## DATA SORTING AND ANALYSIS

### 4.1 Sorting of Collected Data

All the data have been categorized and sorted out by numerical values in the following manner before analyzing with SPSS software...

#### 4.1.1 Gender

Based on gender the survey participants are categorized by the following numeric values-

Male.....	1
Female.....	2

#### 4.1.2 Age

Based on age, the survey participants are categorized by the following numeric values-

Below 15 years.....	1
Between 16-30 years.....	2
Between 31-45 y.....	3
Between 46-60 years.....	4
Above 60 years.....	5

#### 4.1.3 Occupation

Based on occupation, the survey participants are represented by the following numeric values-

Primary student.....	1
Secondary student.....	2
Higher secondary student.....	3
Under-Graduate student.....	4
Govt. Service holder.....	5
Non-govt. Service holder.....	6
Teacher.....	7
Doctor.....	8
Engineer.....	9
Chief.....	10
Factory worker.....	11

Rickshaw puller.....	12
Driver.....	13
Street hawker.....	14
Construction worker.....	15
Trader.....	16
Garments worker.....	17
House-Wife.....	18
Others.....	19

#### **4.1.4 Education**

Based on level of education the respondents are represented by the following numeric values-

Illiterate.....	1
Primary.....	2
S.S.C.....	3
H.S.C.....	4
Graduate.....	5

#### **4.1.5 Economic Condition**

The economic condition of the survey participants were defined by the condition of their monthly income. The economic condition of the respondents are represented by the following numeric values-

Below 5000 TK.....	1
5000-10000 TK.....	2
10001-20000 TK.....	3
20001-30000 TK.....	4
Above 30000 TK.....	5

#### **4.1.6 Consumption Behaviors**

Based on behavior of respondents outside of their home the following numeric values-

Everyday.....	1
Occasionally.....	2
Never consumed.....	3

#### **4.1.7 Sources of Water**

The different water sources are represented by the following numeric values-

Carry from home.....	1
Bottle Water.....	2
Supply Water.....	3
Restaurant stall.....	4

Dispensation Water.....	5
Source unknown.....	6

#### 4.1.8 Restaurants Water Source

The numeric values of type of water respondents take in restaurants or tea stall-

Tap water.....	1
Bottle water.....	2
Filter water.....	3
Stored water.....	4

#### 4.1.9 Reasons behind choice of water

Based on respondents choice the condition are represented by the following numeric values-

Cleanliness.....	1
Taste.....	2
Smell.....	3
Water Container Cleanliness.....	4
Water source.....	5

#### 4.1.10 Amount of Consumption

Based on the amount of water consumed (L/day) the numeric values-

0.5 L/day.....	1
1L/day.....	2
1.5L/day.....	3
2 L/day.....	4

#### 4.1.11 Other Drinks

The numeric values of other type of drink-

Coffee.....	1
Tea .....	2
Soft-drinks.....	3
Milk.....	4
None.....	5

#### 4.1.12 Peoples Conception

People's conception about whether the water they take is treated or not the numeric values are-

Don't know.....	1
Surly treated.....	2



Not treated.....3

#### **4.1.13 Visible Characteristics**

Considering visible clear water as clean for drinking the numeric values are-

Yes.....1

No.....2

#### **4.1.14 Impact of Water Accessibility**

The numeric values of accessibility has an impact on drinking water choice-

Yes.....1

No.....2

#### **4.1.15 Water safety consideration**

The numeric values of water safety consideration-

Safe for consumption.....1

Unsafe for consumption.....2

#### **4.1.16 Causes of Choice**

The numeric values of causes behind choosing this type of water-

No alternative source.....1

Economic condition.....2

Not interested in other sources.....3

#### **4.1.17 Diseases**

Suffer from any diseases the numeric values are-

Diarrhea.....1

Typhoid .....2

Cholera.....3

Dysentery.....4

Not suffer.....5

#### **4.1.18 Overall Awareness**

Respondent's overall awareness has been defined by their choice of water from various sources while they are outside of home the numeric values are-

Not aware.....	1
Partially aware.....	2
Aware.....	3

## 4.2 Survey Participants' Characteristics

A variety of people live in the areas under this research. It was found that a large number of people are connected to livelihood in the survey areas. Economic condition of the survey participants was good. Most of the survey participants were male as female interact less with outsider person. The people participated in this survey were mostly middle-aged. Overall level of education is also good. Totally 220 peoples were surveyed for the study in the above areas. The survey participants' characteristics are given below in a tabular form-

**Table 4.1:** Survey participants' characteristics

<b>Respondent's Characteristics</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
Gender		
1. Male	153	69.5%
2. Female	67	30.5%
Age		
1. Below 15	4	1.8%
2. 16-30	132	60%
3. 31-45	64	29.1%
4. 46-60	16	7.3%
5. Above 60	4	1.8%
Occupation		
1. Primary student	4	1.8%
2. Secondary student	20	9.1%
3. Higher secondary	28	12.7%

student		
<b>Respondent's Characteristics</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
5. Govt. service holder	13	5.9%
6. Non-govt. service holder	17	7.7%
7. Teacher	7	3.2%
8. Doctor	4	1.8%
9. Engineer	5	2.3%
10. Chief	1	0.5%
11. Factory worker	10	4.5%
12. Rickshaw puller	5	2.3%
13. Driver	6	2.7%
14. Street hawker	8	3.6%
15. Construction worker	13	5.9%
16. Trader	17	7.7%
17. Garments worker	33	15.0%
18. House-Wife	7	3.2%
19. Other	2	0.9%
Economic condition		
1. Below 5000 TK	42	19.1%
2. 5001-10000 TK	50	22.7%
3. 10001-20000 TK	20	9.1%

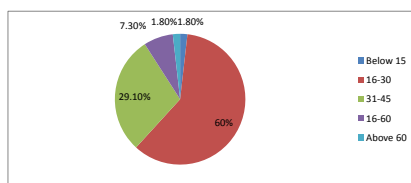
Respondent's Characteristics	Frequency (f)	Percentage (%)
5. Above 30000 TK	34	15.5%
6. None	64	29.1%
Level of education		
1. Illiterate	30	13.6%
2. Primary	45	20.5%
3. SSC	48	21.8%
4.HSC	33	15%
5. Graduate	64	29.1%

### 4.3 Analysis and Results

After sorting out, the categorized data have been put into the Microsoft Excel software & the SPSS 16.0 software for analysis considering the factors affecting the selection of water sources as the independent variables and the selected sources of water and people's awareness in choosing them as the dependent variables. The obtained analysis is presented below.

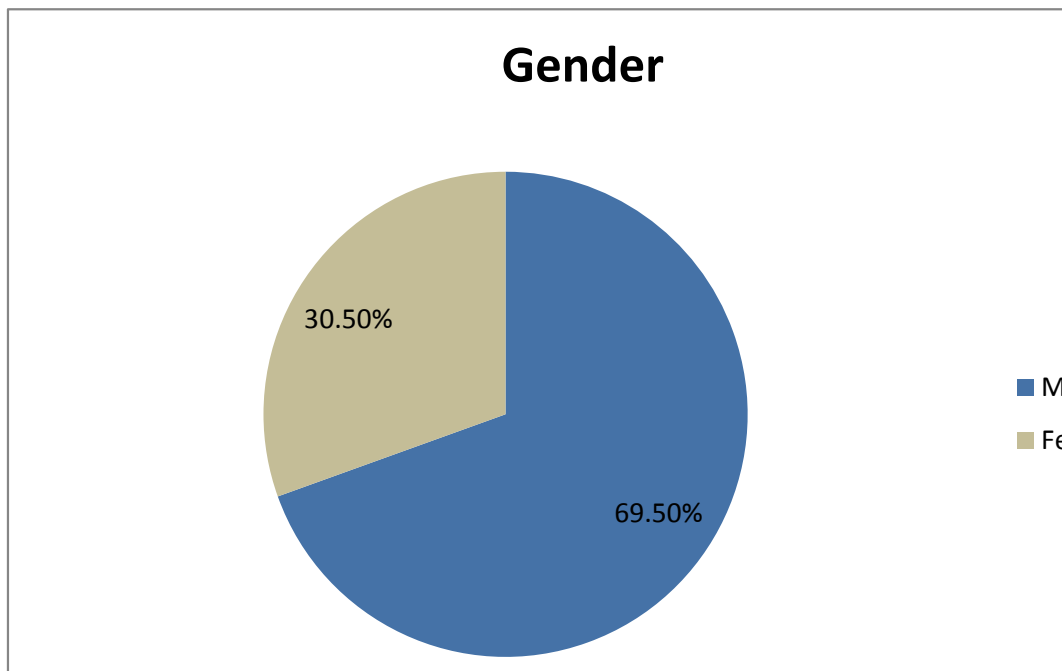
#### 4.3.1 Percentile distribution of Age of inhabitants:

Here, we see that 1.8% of total no. of participant is within 15 years, 60% are below 30 years. Above 29.1% People are in age limit 30- 45 & 1.8% people are above 60 years.



**Figure 4.3.1: Age level of Respondents**

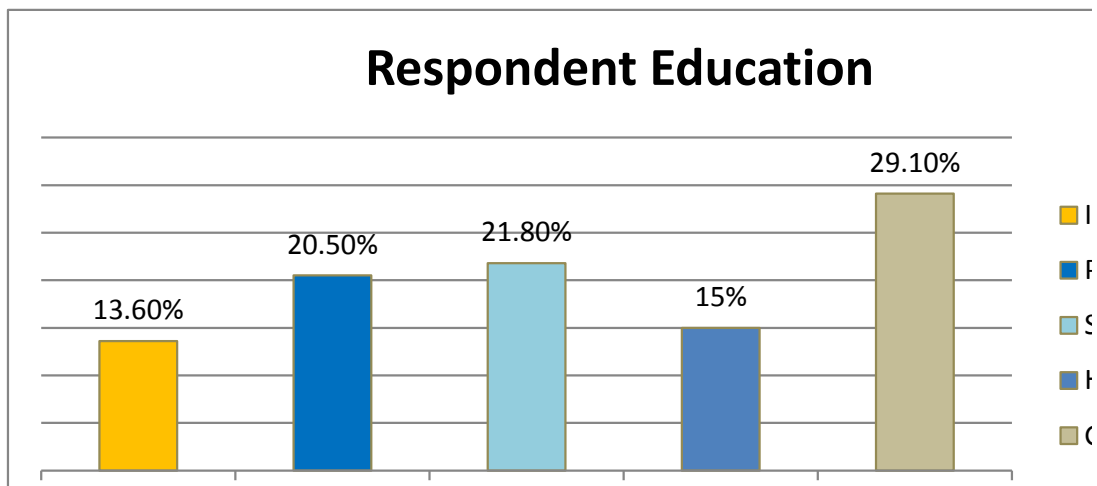
### 4.3.2 Percentile distribution of Gender variation



**Figure 4.3.2: Gender of Respondents**

We surveyed on 220 people where 153 are male and 67 are female.

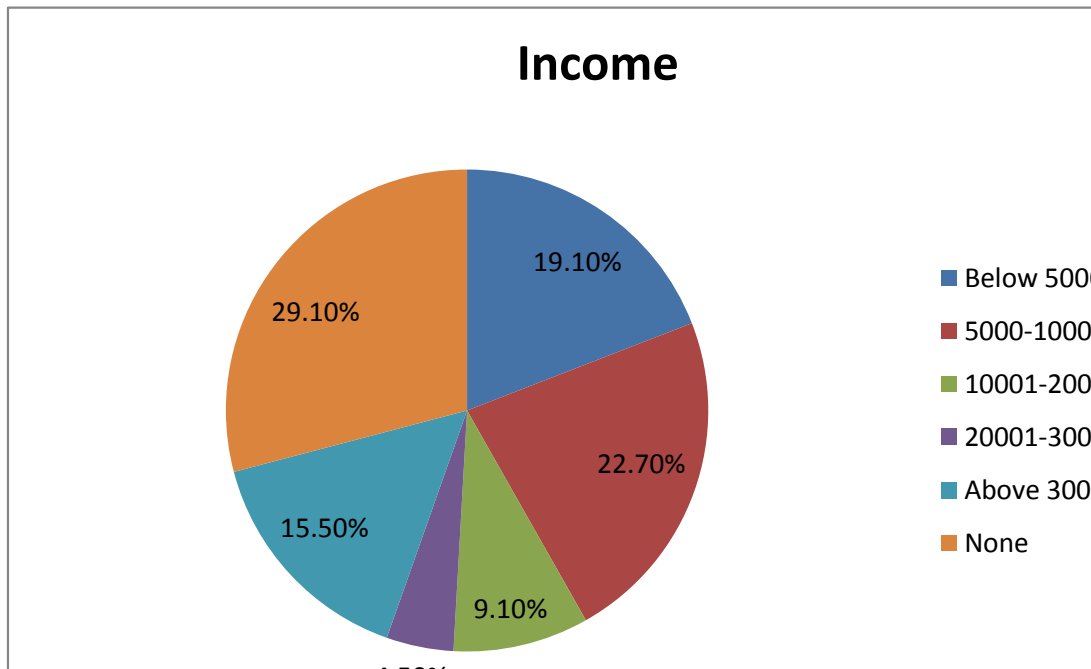
### 4.3.3 Percentile distribution of Education Level of inhabitants



**Figure 4.3.3: Education level of Respondents**

We observed that among 220 people, 13.6% people are illiterate, 20.5 % people are primary educated, and 29.1% people are graduate.

#### 4.3.4 Percentile distribution of income level of inhabitants



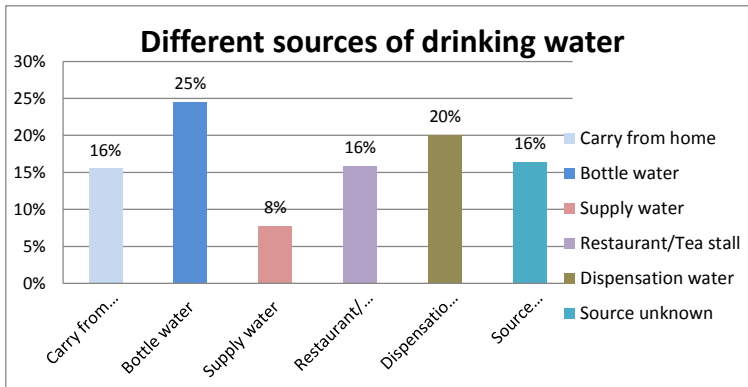
**Figure 4.3.4: Income Level of Respondents**

From survey of 220 people we observed that 19.10% people earn less than 5000 TK (per month),

22.70% earn 5000-10000 TK, 9.10% people earn 10000-20000 TK, 4.50% earn 20000-30000 TK, 15.50 % earn above 30000 TK and 29.1% people don't earn.

#### 4.3.5 Percentile distribution of Sources of water

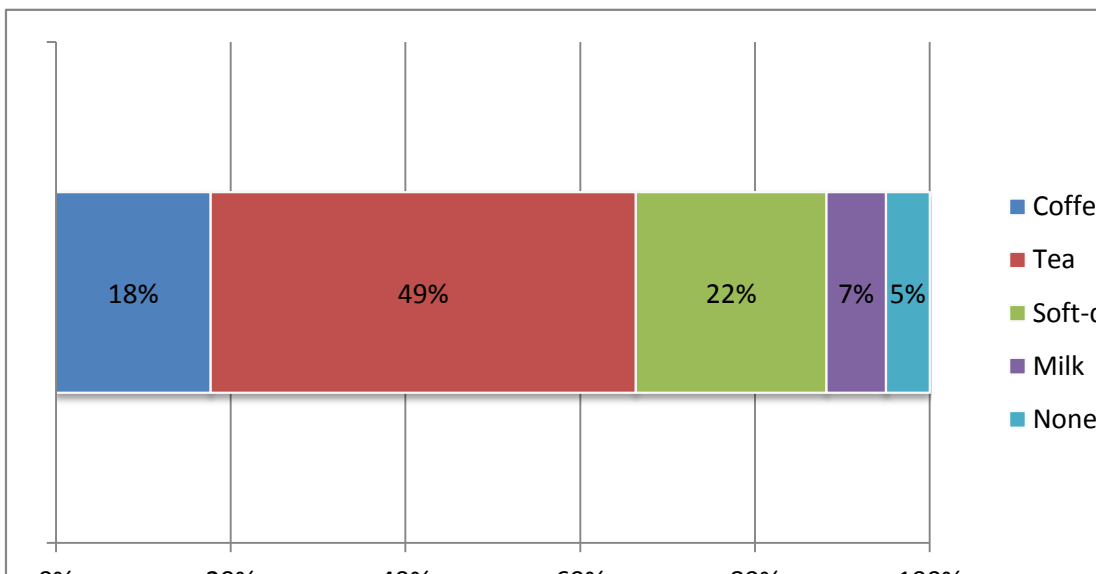
We found peoples show different patterns in case of choosing drinking water away from home. Survey data shows that 24.5% peoples like to drink **Bottle water** & then 20% peoples show interest in **Dispensation water**. Beside this we also found 16.4% peoples who take water from **Unknown source**.



**Figure 4.3.5: Different sources of drinking water**

#### 4.3.6 Percentile distribution of Consumption of other drink

When asked the type of drinks they consumed outside the home, all the survey respondents mention **Water**. Other drinks consumed include coffee, tea, soft-drinks & milk. Among the respondents 48.6% take **Tea**

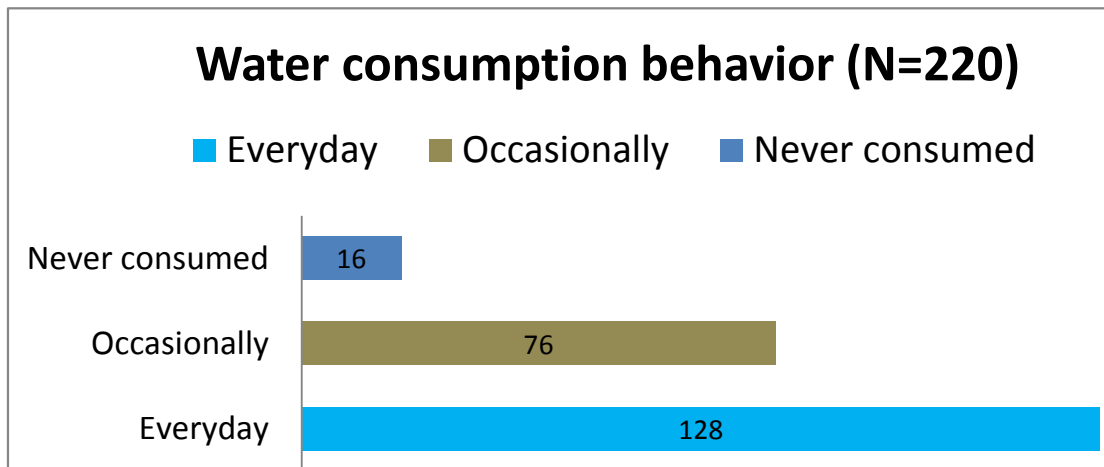


**Figure 4.3.6: Consumption of other drink outside the home**

#### 4.3.7 Percentile distribution of water consumption behavior on survey area

From our survey we found that in the dry season when people were thirsty they increase the consumption of water, the frequency & amount of water then during the rainy season. Survey results on the frequency of drinking water outside of the resident

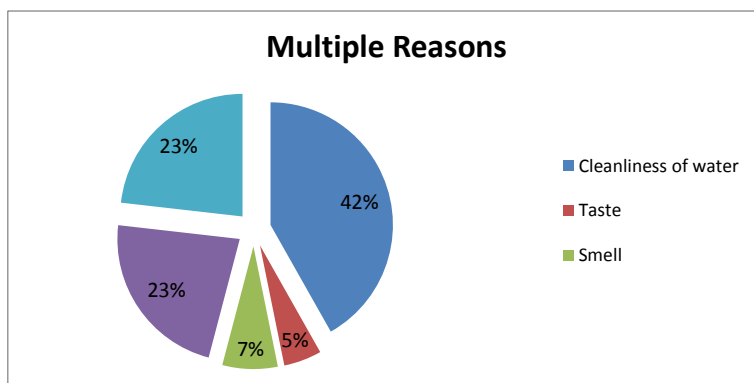
showed that 58.2% person take water **every day**, 34.5% **occasionally** & we also found only 7.3% people **never consumed** water outside home.



**Figure 4.3.7: Water consumption behavior on survey area**

#### 4.3.8 Percentile distribution of multiple reasons behind choice of drinking water outside the home

In our survey we try to find out the reasons behind their choice of drinking water away from resident & from different factors the findings show that **water cleanliness (41.8%)** & **water source (23.2%)** are the most important factors influencing their choice of drinking water outside the home in the study area. Other factors which affect their choice of drinking water are taste, smell & the water source.



**Figure 4.3.8: Multiple reasons behind choice of drinking water outside the home**



### 4.3.9 Percentile distribution of Peoples Conception

When asked them that the water they drink away from home is treated or not, from our respondents we found that 41.4% people **don't know** whether or not the water was treated, 47.3% were sure the water was **treated** & 11.4% people thought the water was **untreated**

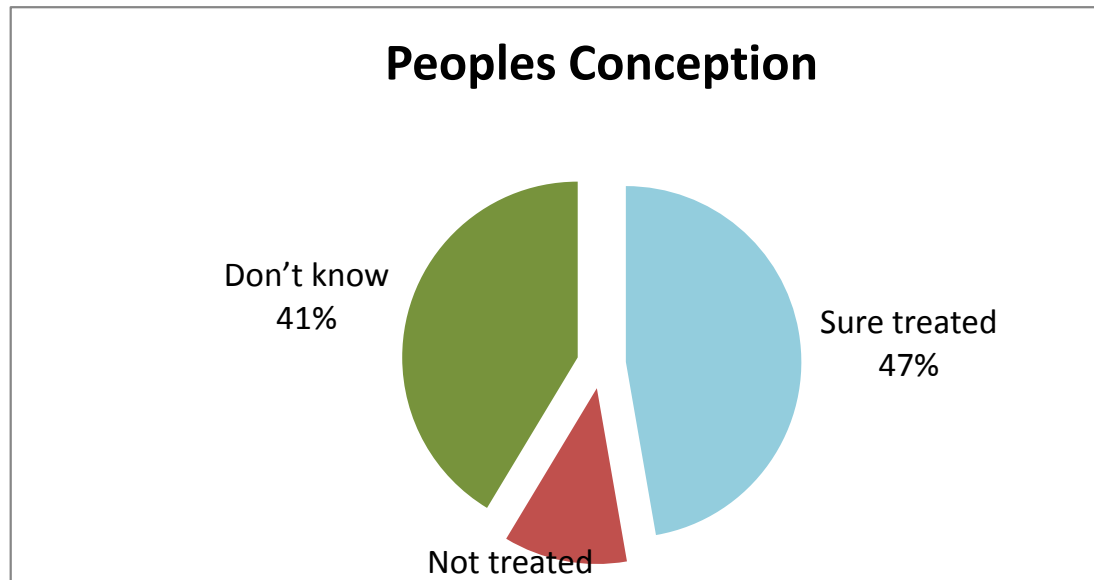


Figure 4.3.9: Peoples Conception

### 4.3.10 Percentile distribution of Consider their sources of water safe or unsafe for drinking

But when respondents were asked whether they consider their sources of water safe for drinking without any treatment, a significant proportion 31.8% people think that the water they consume away from home are **unsafe for consumption** & 68.2% think it's **safe for consumption**.

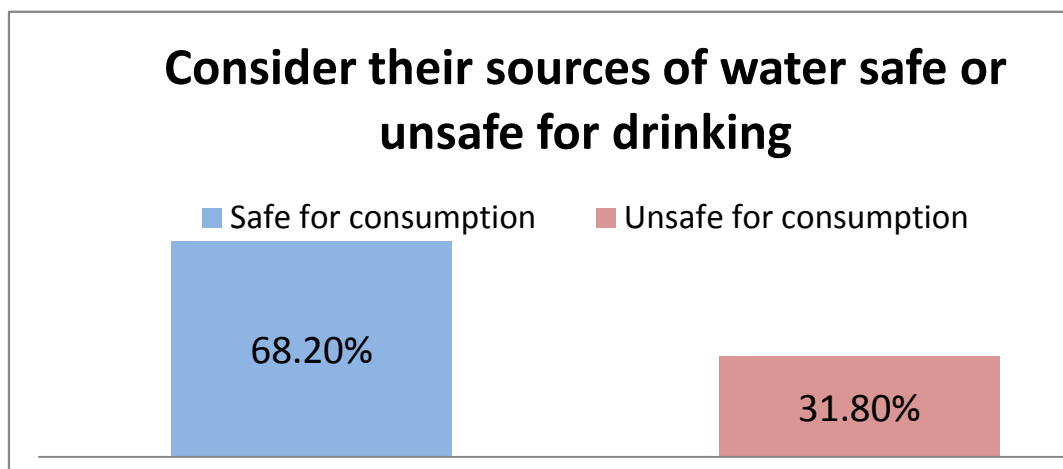


Figure 4.3.10: Consider their sources of water safe or unsafe for drinking

#### 4.3.11 Percentile distribution of Choosing of water for drinking purpose

People shows different reasons when respondent asked them about choosing that type of water for drinking purpose when they are away from home. 41.4% of those who consumed water outside the home they don't get **alternative source** & 36.4% people show **not interested in other sources**.

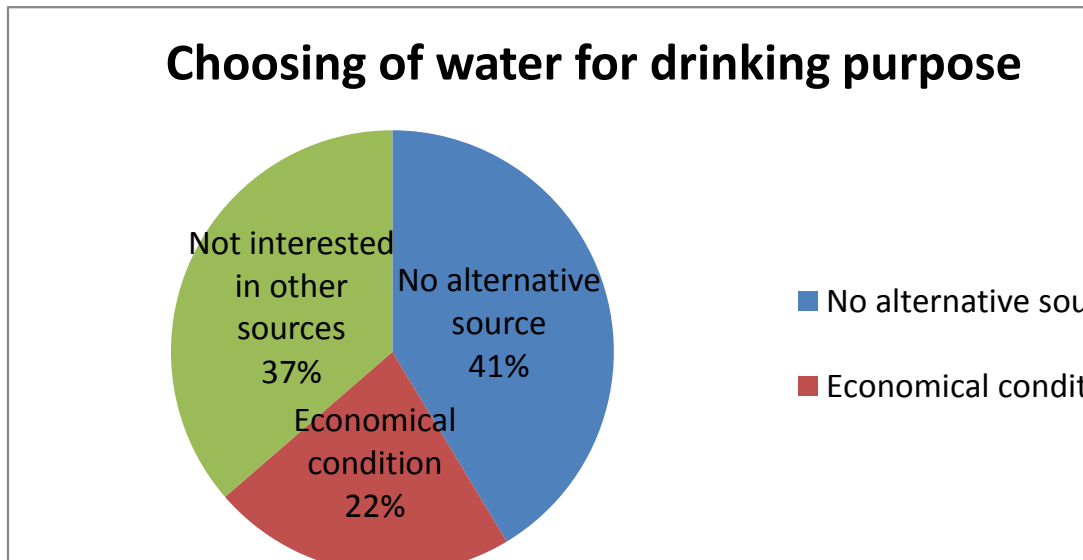


Figure 4.3.10 choosing of water for drinking purpose

#### 4.3.12 Regression Analysis for Consumption Behavior

The analysis is given below-

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.460 <sup>a</sup>	.212	.193	.566

a. Predictors: (Constant), Economic Condition, Respondent Age, Respondent Sex, Respondent Education, Job Description

Coefficient of correlation,  $r = 0.460$

Coefficient of determination,  $r^2 = 0.212$

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.828	.209		3.956	.000
	Respondent Sex	.193	.086	.141	2.257	.025
	Respondent Age	.066	.062	.077	1.064	.289
	Job Description	-.022	.009	-.206	-2.458	.015
	Respondent Education	.049	.032	.110	1.531	.127
	Economic Condition	.082	.024	.256	3.360	.001

a. Dependent Variable: Behavior of respondents outside of their home

The equation formed by the coefficients is given below-

***Consumption Behavior***

$$\begin{aligned}
 &= .828 + 0.193 * (\text{Respondent Sex}) - 0.066 * (\text{Respondent Age}) - 0.022 \\
 &* (\text{Job Description}) + 0.049 * (\text{Respondent Education}) + 0.082 \\
 &* (\text{Economic Condition}) \dots \dots \dots (1)
 \end{aligned}$$

The results from the equation (1) will represent respondent water consumption behavior. If the equation output is closer to numeric value 1, it means the respondent take water every day, if the result is closer to 2 the respondent take water occasionally and if the result is closer to 3 then the respondent never consumed water outside of the home. For a particular participant's where occupation is teaching (7), age above 40 years (3), gender is male (1), education is graduate (5), economic condition is above

30000TK (5); the result for consumption behavior becomes 1.324 that is closer to 1 which means the respondent take water every day outside of the home

#### 4.3.13 Regression Analysis for Drinking Water Source

The analysis is given below-

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.618 <sup>a</sup>	.382	.364	1.396

a. Predictors: (Constant), Behavior of respondents outside of their home, Respondent Age, Respondent Sex, Respondent Education, Economic Condition, Job Description

Coefficient of correlation,  $r = 0.618$

Coefficient of determination,  $r^2 = 0.382$

Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.807	.535		12.732	.000
	Respondent Sex	-.574	.214	-.151	-2.688	.008
	Respondent Age	.056	.153	.024	.369	.713
	Job Description	-.003	.022	-.011	-.145	.885
	Respondent Education	-.184	.079	-.149	-2.329	.021
	Economic Condition	-.413	.061	-.466	-6.718	.000

Behavior of respondents outside of their home	-.389	.169	-.140	-2.308	.022
-----------------------------------------------	-------	------	-------	--------	------

a. Dependent Variable: Respondent drinking water source

The equation formed by the coefficients is given below-

*Drinking water source*

$$= 6.807 - .574 * (\text{Respondent Sex}) + .056 * (\text{Respondent Age}) - 0.03 * (\text{Job Description}) - 0.184 * (\text{Respondent Education}) - 0.413 * (\text{Economic Condition}) - 0.389(\text{Consumption Behavior}) \dots \dots \dots (2)$$

The results from the equation (2) will represent respondent Drinking water source. If the equation output is closer to numeric value 1, it means the water respondent take carry from home, if the result is closer to 2 the respondent take bottle water ,if the result is closer to 3 then the respondent consumed supply water outside of the home ,if the result is closer to 4 then the respondent consumed restaurant water, if the result is closer to 5 then the respondent consumed dispensation water & if the result is closer to 6 then the respondent consumed water from unknown source. For a participant’s where occupation is Govt. service holder (5), age above 40 years (3), gender is male (1), education is graduate (5), economic condition is above 30000TK (5), water consumed everyday(1); the result for consumption behavior becomes 2.877 that is closer to 3 which means the respondent take supply water

**4.3.14 Regression Analysis for Restaurant Drinking Water Source**

The analysis is given below-

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.340 <sup>a</sup>	.115	.090	.896

a. Predictors: (Constant), Behavior of respondents outside of their home, Respondent Age, Respondent Sex, Respondent Education, Economic Condition, Job Description

Coefficient of correlation,  $r = 0.340$

Coefficient of determination,  $r^2 = 0.115$

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.750	.343		10.927	.000
	Respondent Sex	-.151	.137	-.074	-1.100	.272
	Respondent Age	.130	.098	.102	1.325	.187
	Job Description	-.014	.014	-.089	-.983	.327
	Respondent Education	-.195	.051	-.294	-3.840	.000
	Economic Condition	-.033	.039	-.069	-.834	.405
	Behavior of respondents outside of their home	-.161	.108	-.108	-1.487	.138

a. Dependent Variable: Type of water in restaurants or tea stall

The equation formed by the coefficients is given below-

*Restaurants or tea stall drinking water source*

$$= 3.750 - 0.151 * (\text{Respondent Sex}) + 0.130 * (\text{Respondent Age}) - 0.014 * (\text{Job Description}) - 0.195 * (\text{Respondent Education}) - 0.033 * (\text{Economic Condition}) - 0.161 (\text{Consumption Behavior}) \dots \dots \dots (3)$$

The results from the equation (3) will represent respondent restaurants or tea stall drinking water source. If the equation output is closer to numeric value 1, it means the water respondent take is tape water, if the result is closer to 2 the respondent take bottle water, if the result is closer to 3 then the respondent consumed filter water outside of the home & if the result is closer to 4 then the respondent consumed store water. For a participant's where occupation is Govt. service holder (5), age above 40 years (3), gender is male (1), education is graduate (5), economic condition is above 30000TK (5), water consumed everyday(1); the result for consumption behavior becomes 1.877 that is closer to 2 which means the respondent take bottle water

### 4.3.15 Regression Analysis for Reasons behind choice of water

The analysis is given below-

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.344 <sup>a</sup>	.118	.093	1.608

a. Predictors: (Constant), Behavior of respondents outside of their home, Respondent Age, Respondent Sex, Respondent Education, Economic Condition, Job Description

Coefficient of correlation,  $r = 0.344$

Coefficient of determination,  $r^2 = 0.118$

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.515	.616		.836	.404
	Respondent Sex	.195	.246	.053	.793	.429
	Respondent Age	.435	.177	.190	2.465	.014
	Job Description	-.015	.026	-.051	-.566	.572
	Respondent Education	.134	.091	.112	1.469	.143
	Economic Condition	.141	.071	.165	1.997	.047
	Behavior of respondents outside of their home	.100	.194	.037	.516	.607

a. Dependent Variable: Reasons behind choice of water

The equation formed by the coefficients is given below-

*Reasons behind choice of water*

$$= 0.515 + 0.195 * (\text{Respondent Sex}) + 0.435 * (\text{Respondent Age}) - 0.015 * (\text{Job Description}) + 0.134 * (\text{Respondent Education}) + 0.141 * (\text{Economic Condition}) + 0.100(\text{Consumption Behavior}) \dots \dots \dots (4)$$

The results from the equation (4) will represent reasons behind choice of water. If the equation output is closer to numeric value 1, it means the water cleanliness, if the result is closer to 2 the respondent taste of water, if the result is closer to 3 then the smell, if the result is closer to 4 then the water container cleanliness, if the result is closer to 5 then the water source. For a participant's where occupation is Chief (10), age 50 years (4), gender is male (1), education is graduate (5), economic condition is above 30000TK (5), water consumed occasionally(2); the result for reasons behind choice of water becomes 3.875 that is closer to 4 which means the water container cleanliness is the reason .

**4.3.16 Regression Analysis for Avg. amount of water consumed L/day**

The analysis is given below-

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.601 <sup>a</sup>	.362	.344	.521

a. Predictors: (Constant), Behavior of respondents outside of their home, Respondent Age, Respondent Sex, Respondent Education, Economic Condition, Job Description

Coefficient of correlation,  $r = 0.601$

Coefficient of determination,  $r^2 = 0.362$

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		



1	(Constant)	2.362	.200		11.825	.000
	Respondent Sex	-.341	.080	-.245	-4.279	.000
	Respondent Age	.179	.057	.204	3.118	.002
	Job Description	.007	.008	.060	.787	.432
	Respondent Education	-.075	.030	-.164	-2.530	.012
	Economic Condition	-.082	.023	-.252	-3.582	.000
	Behavior of respondents outside of their home	-.230	.063	-.225	-3.651	.000

a. Dependent Variable: Avg. amount of water consumed L/day

The equation formed by the coefficients is given below-

$$\begin{aligned}
 & \text{Avg. amount of water consumed } \frac{L}{\text{day}} \\
 & = 2.362 - 0.341 * (\text{Respondent Sex}) + 0.179 * (\text{Respondent Age}) \\
 & + 0.007 * (\text{Job Description}) - 0.075 * (\text{Respondent Education}) - 0.082 \\
 & * (\text{Economic Condition}) - 0.230(\text{Consumption Behavior}) \dots \dots \dots (5)
 \end{aligned}$$

The results from the equation (5) will represent respondent Avg. amount of water consumed L/day. If the equation output is closer to numeric value 1, it means the respondent take 0.5L/day, if the result is closer to 2 the respondent take 1L/day of water, if the result is closer to 3 then the respondent take 1.5L/day,if the result is closer to 4 then the respondent take 2L/day. For a participant's where occupation is Driver (13), age 26 years (2), gender is male (1), education is illiterate (1), economic condition is above 5000-10000TK (2), water consumed everyday(1); the result for Avg. amount of water consumed L/day becomes 2.001 that is closer to 2 which means the respondent take 1L/day of water.

#### 4.3.17 Regression Analysis for Consumption of other drinks except water

The analysis is given below-

#### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.462 <sup>a</sup>	.214	.192	.920

a. Predictors: (Constant), Behavior of respondents outside of their home, Respondent Age, Respondent Sex, Respondent Education, Economic Condition, Job Description

Coefficient of correlation,  $r = 0.462$

Coefficient of determination,  $r^2 = 0.214$

#### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.814	.353		10.821	.000
	Respondent Sex	-.082	.141	-.037	-.585	.559
	Respondent Age	-.285	.101	-.205	-2.816	.005
	Job Description	-.022	.015	-.129	-1.514	.132
	Respondent Education	-.267	.052	-.370	-5.127	.000
	Economic Condition	.062	.040	.120	1.536	.126
	Behavior of respondents outside of their home	.128	.111	.079	1.154	.250

a. Dependent Variable: Consumption of other drinks except water

The equation formed by the coefficients is given below-

*Consumption of other drinks except water*

$$= 3.814 - 0.082 * (\text{Respondent Sex}) - 0.285 * (\text{Respondent Age}) - 0.022 * (\text{Job Description}) - 0.267 * (\text{Respondent Education}) + 0.062 * (\text{Economic Condition}) + 0.128(\text{Consumption Behavior}) \dots \dots \dots (6)$$

The results from the equation (6) will represent consumption of other drinks except water. If the equation output is closer to numeric value 1, it means the respondent take coffee, if the result is closer to 2 the respondent take tea, if the result is closer to 3 then the respondent take soft-drinks, if the result is closer to 4 then the respondent take milk & if the result is closer to 5 then the respondent don't take anything. For a participant's where occupation is Higher Secondary student (3), age 20 years (2), gender is male (1), education is HSC (4), economic condition is none (6), water consumed occasionally(2); the result for consumption of other drinks except water becomes 2.656 that is closer to 3 which means the respondent take soft-drinks.

#### 4.3.18 Regression Analysis for whether the water they take is treated or not

The analysis is given below-

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.287 <sup>a</sup>	.082	.056	.644

a. Predictors: (Constant), Behavior of respondents outside of their home, Respondent Age, Respondent Sex, Respondent Education, Economic Condition, Job Description

Coefficient of correlation,  $r = 0.287$

Coefficient of determination,  $r^2 = 0.082$

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.132	.247		4.591	.000
	Respondent Sex	.154	.099	.107	1.562	.120
	Respondent Age	-.074	.071	-.082	-1.048	.296

Job Description	.006	.010	.056	.604	.546
Respondent Education	.029	.036	.063	.805	.422
Economic Condition	.070	.028	.210	2.488	.014
Behavior of respondents outside of their home	.095	.078	.090	1.220	.224

a. Dependent Variable: Whether the water they take is treated or not

The equation formed by the coefficients is given below-

*Whether the water they take is treated or not*

$$= 1.132 + 0.154 * (\text{Respondent Sex}) - 0.074 * (\text{Respondent Age}) + 0.006 * (\text{Job Description}) + 0.029 * (\text{Respondent Education}) + 0.070 * (\text{Economic Condition}) + 0.095 * (\text{Consumption Behavior}) \dots \dots \dots (7)$$

The results from the equation (7) will represent whether the water they take is treated or not. If the equation output is closer to numeric value 1, it means the respondent doesn't know, if the result is closer to 2 the respondent response surely treated, if the result is closer to 3 then the respondent response not treated. For a participant's where occupation is Garments worker (17), age 20 years (2), gender is female (2), education is Illiterate (1), economic condition is below 5000 TK (1), water consumed everyday(1); the result for whether the water they take is treated or not becomes 1.68 that is closer to 2 which means the respondent response surely treated.

#### 4.3.19 Regression Analysis for considering visible clear water as clean for drinking

The analysis is given below-

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.581 <sup>a</sup>	.338	.319	.408

a. Predictors: (Constant), Behavior of respondents outside of their home, Respondent Age, Respondent Sex, Respondent Education, Economic Condition, Job Description

Coefficient of correlation,  $r = 0.581$

Coefficient of determination,  $r^2 = 0.338$

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.104	.156		7.066	.000
	Respondent Sex	-.144	.062	-.134	-2.301	.022
	Respondent Age	.057	.045	.086	1.283	.201
	Job Description	-.019	.007	-.225	-2.877	.004
	Respondent Education	.106	.023	.303	4.579	.000
	Economic Condition	.027	.018	.108	1.509	.133
	Behavior of respondents outside of their home	.063	.049	.080	1.277	.203

a. Dependent Variable: Considering visible clear water as clean for drinking

The equation formed by the coefficients is given below-

*Considering visible clear water as clean for drinking*

$$= 1.104 - 0.144 * (\text{Respondent Sex}) + 0.057 * (\text{Respondent Age}) - 0.019 * (\text{Job Description}) + 0.106 * (\text{Respondent Education}) + 0.027 * (\text{Economic Condition}) + 0.063 (\text{Consumption Behavior}) \dots \dots \dots (8)$$

The results from the equation (8) will represent considering visible clear water as clean for drinking. If the equation output is closer to numeric value 1, it means the respondent response as yes & if the result is closer to 2 the respondent response no. For a participant's where occupation is Secondary student (2), age 15-30 years (2), gender is female (2), education is SSC(3), economic condition is none (6), water consumed occasionally(2); the result for considering visible clear water as clean for drinking becomes 1.44 that is closer to 1 which means the respondent response as yes.

### 4.3.20 Regression Analysis for Accessibility has an impact on drinking water choice

The analysis is given below-

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.191 <sup>a</sup>	.037	.009	.497

a. Predictors: (Constant), Behavior of respondents outside of their home, Respondent Age, Respondent Sex, Respondent Education, Economic Condition, Job Description

Coefficient of correlation,  $r = 0.191$

Coefficient of determination,  $r^2 = 0.037$

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.523	.191		7.994	.000
	Respondent Sex	-.012	.076	-.011	-.153	.878
	Respondent Age	.041	.055	.061	.755	.451
	Job Description	.006	.008	.070	.744	.458
	Respondent Education	-.039	.028	-.112	-1.399	.163
	Economic Condition	.010	.022	.040	.467	.641
	Behavior of respondents outside of their home	-.074	.060	-.094	-1.235	.218

a. Dependent Variable: Accessibility has an impact on drinking water choice

The equation formed by the coefficients is given below-

*Accessibility has an impact on drinking water choice*

$$= 1.523 - 0.012 * (\text{Respondent Sex}) + 0.041 * (\text{Respondent Age}) + 0.006 * (\text{Job Description}) - 0.039 * (\text{Respondent Education}) + 0.010 * (\text{Economic Condition}) - 0.074(\text{Consumption Behavior}) \dots \dots \dots (9)$$

The results from the equation (9) will represent accessibility has an impact on drinking water choice. If the equation output is closer to numeric value 1, it means the respondent response as yes & if the result is closer to 2 the respondent response no. For a participant's where occupation is Factory worker (11), age 15-30 years (2), gender is male (1), education is primary(2), economic condition is below 5000 TK (1), water consumed everyday(1); the result for accessibility has an impact on drinking water choice becomes 1.537 that is closer to 2 which means the respondent response as no.

#### 4.3.21 Regression Analysis for without any purification safety consideration of water

The analysis is given below-

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.285 <sup>a</sup>	.081	.055	.454

a. Predictors: (Constant), Behavior of respondents outside of their home, Respondent Age, Respondent Sex, Respondent Education, Economic Condition, Job Description

Coefficient of correlation,  $r = 0.285$

Coefficient of determination,  $r^2 = 0.081$

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		

1	(Constant)	1.285	.174		7.395	.000
	Respondent Sex	-.028	.069	-.028	-.410	.682
	Respondent Age	.027	.050	.042	.534	.594
	Job Description	.012	.007	.153	1.661	.098
	Respondent Education	-.008	.026	-.024	-.313	.754
	Economic Condition	-.041	.020	-.175	-2.064	.040
	Behavior of respondents outside of their home	.045	.055	.060	.813	.417

a. Dependent Variable: Without any purification safety consideration of water

The equation formed by the coefficients is given below-

*Without any purification safety consideration of water*

$$= 1.285 - 0.028 * (\text{Respondent Sex}) + 0.027 * (\text{Respondent Age}) + 0.012 * (\text{Job Description}) - 0.008 * (\text{Respondent Education}) - 0.041 * (\text{Economic Condition}) + 0.045 (\text{Consumption Behavior}) \dots \dots \dots (10)$$

The results from the equation (10) will represent without any purification safety consideration of water. If the equation output is closer to numeric value 1, it means the respondent response as safe for consumption & if the result is closer to 2 the respondent response as unsafe for consumption. For a participant's where occupation is Factory worker (11), age 15-30 years (2), gender is male (1), education is primary(2), economic condition is below 5000 TK (1), water consumed everyday(1); the result for without any purification safety consideration of water becomes 1.431 that is closer to 1 which means the respondent response as safe for consumption .

#### 4.3.22 Regression Analysis for Causes behind choosing this type of water

The analysis is given below-

##### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
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1	.228 <sup>a</sup>	.052	.025	.871
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a. Predictors: (Constant), Behavior of respondents outside of their home, Respondent Age, Respondent Sex, Respondent Education, Economic Condition, Job Description

Coefficient of correlation,  $r = 0.228$

Coefficient of determination,  $r^2 = 0.052$

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.014	.334		6.035	.000
	Respondent Sex	.108	.133	.057	.812	.418
	Respondent Age	-.161	.096	-.135	-1.688	.093
	Job Description	.009	.014	.061	.656	.513
	Respondent Education	-.020	.049	-.033	-.414	.680
	Economic Condition	.102	.038	.228	2.655	.009
	Behavior of respondents outside of their home	-.130	.105	-.093	-1.232	.219

a. Dependent Variable: Causes behind choosing this type of water

The equation formed by the coefficients is given below-

#### *Causes behind choosing this type of water*

$$= 2.014 + 0.108 * (\text{Respondent Sex}) - 0.161 * (\text{Respondent Age}) + 0.009 * (\text{Job Description}) - 0.020 * (\text{Respondent Education}) + 0.102 * (\text{Economic Condition}) - 0.130 * (\text{Consumption Behavior}) \dots \dots \dots (11)$$

The results from the equation (11) will represent causes behind choosing this type of water. If the equation output is closer to numeric value 1, it means the respondent has

no alternative choice, if the result is closer to 2 the respondent have economic problem, if the result is closer to 3 then the respondent has no interested in other sources. For a participant's where occupation is Garments worker (17), age 15-30 years (2), gender is female (2), education is Illiterate (1), economic condition is below 5000 TK (1), water consumed everyday(1); the result for represent causes behind choosing this type of water becomes 2.013 that is closer to 2 which means the respondent response as economic condition.

#### 4.3.23 Regression Analysis for Overall Awareness in Source Selection

The analysis is given below-

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.772 <sup>a</sup>	.597	.585	.496

a. Predictors: (Constant), Behavior of respondents outside of their home, Respondent Age, Respondent Sex, Respondent Education, Economic Condition, Job Description

Coefficient of correlation,  $r = 0.772$

Coefficient of determination,  $r^2 = 0.597$

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.456	.190		7.667	.000
	Respondent Sex	-.050	.076	-.030	-.659	.511
	Respondent Age	-.043	.054	-.042	-.798	.426
	Job Description	-.026	.008	-.198	-3.238	.001
	Respondent Education	.245	.028	.451	8.733	.000

Economic Condition	.124	.022	.320	5.705	.000
Behavior of respondents outside of their home	.004	.060	.003	.062	.951

a. Dependent Variable: Overall comments on water supply

The equation formed by the coefficients is given below-

*Overall comments on water supply*

$$= 1.456 - 0.050 * (\text{Respondent Sex}) - 0.043 * (\text{Respondent Age}) - 0.026 * (\text{Job Description}) + 0.245 * (\text{Respondent Education}) + 0.124 * (\text{Economic Condition}) + 0.004(\text{Consumption Behavior}) \dots \dots \dots (12)$$

The results from the equation (12) will represent overall awareness in source selection. If the equation output is closer to numeric value 1, it means not aware, if the result is closer to 2 the partially aware, if the result is closer to 3 then it means aware. For a participant's where occupation is Street hawker (14), age 15-30 years (2), gender is male (1), education is Illiterate (1), economic condition is below 5000 TK (1), water consumed everyday(1); the result for overall awareness in source selection becomes 1.329 that is closer to 1 which means the respondent is not aware. Another participant's where occupation is teacher (7), age 31-45 years (3), gender is female (2), education is graduate(5), economic condition is above 30000 TK (5), water consumed everyday(1); the result for overall awareness in source selection becomes 2.894 that is closer to 3 which means the respondent is aware.

# CHAPTER FIVE

## DISCUSSIONS AND CONCLUSION

### 5.1 Output of This Study

- Away from home drinking water consumption is a common practice in resource poor settings & the amount of water consumed is a significant proportion of daily water consumption.
- When people are away from home for drinking purpose, 24.5% peoples like to drink Bottle water & then 20% peoples show interest in Dispensation water. Beside this 16.4% peoples take water from Unknown source.(fig. 4.3.5)
- Other type of drink, 48.6% people take tea, 22% people take soft-drinks and only 5% people don't take anything outside of their home. (fig. 4.3.6)
- The frequency of drinking water outside of the resident, 58.2% people take water every day, 34.5% occasionally & 7.3% people never consumed water outside of home.(fig. 4.3.7)
- Reasons behind the choice of drinking water away from resident, 41.8% people look water cleanliness & 23.2% people look water source. (fig. 4.3.8)
- The water people drink away from home is treated or not, 41.4% people don't know whether or not the water was treated, 47.3% were sure the water was treated & 11.4% people thought the water was untreated. (fig. 4.3.9)
- The water people drink away from home, 68.2% think safe for consumption & 31.8% people think unsafe for consumption. (fig. 4.3.10)
- About 41.4% of the water consumer outside the home doesn't get alternative source & 36.4% people show not interested in other sources. (fig. 4.3.11)
- Respondents represent the quantity of water they consumed & it is clear that the quantities of water reported to be consumed outside the home are not negligible.
- Maximum people 64.5% do not face severe water borne diseases, but some people 18.2% mentioned about diarrhea

## 5.2 Discussions

- The analysis for determining the positive & negative co-efficient have been done by SPSS 16.0 software through the linear regression analysis method.
- It was found that, survey participant's education level, age and economic condition significantly influences the selection of water sources than the other factors.
- Survey participant's occupation, behavior of consumption water and their gender influences only a few particular selections.
- Respondent's overall awareness has been defined by their selection of water source when they are away from home.
- For more optimistic co-efficient, number of households is to be surveyed.

## 5.3 Recommendations

This research must continue further as it has been done in small and selective areas due to time and other related constraints. It is a fact that people would not suffer any diseases if they get safe drinking water when they are away from home. There should be an in depth research, as the shortage of safe drinking water when people are away from home. The following activities may be taken in consideration in order to solving the safe drinking water scarcity problems in the study areas...

- There is need to focus attention on away from home drinking water consumption in terms of water treatment technologies and behavior change in order to minimize the risk of infection from contaminated water.
- The peripheral areas where people usually work should be facilitated with safe drinking water.
- People of the survey area, 41.4% of the water consumer outside the home doesn't get alternative source. We want that the amount should be reduced to a tolerable limit for those poor people.
- Although our study relied on questionnaire recall and personal diaries to estimate the quantity of water consumed it is clear that the quantities of water reported to be consumed outside the home are not negligible. So we need more attention.
- Around 35% people suffer various water borne diseases. So the microbiological properties should be check or minimum purification should be applied.

## **5.4 Conclusion**

Many people go outside of their home & work for a long time. Safe drinking water supply is very essential in these areas because most of the people go outside for various purposes & they need to drink. The level of hygiene knowledge and practice has been found to be significantly low among the participants. However, Government and in some cases, NGOs should be encouraged and offered the best facilities for taking more programs to facilitated with safe drinking water when people are outside of their home.

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# APPENDIX

Question survey on:

## DRINKING WATER CONSUMPTION PRACTICE OF PEOPLE AWAY FROM HOME

A) General Information:

1. Personal information:

a) Interviewer's Name:

b) Sex:             Male             Female

c) Age:             Below 15             16-30             31-45  
                           46-60             Above 60

d) Job description:

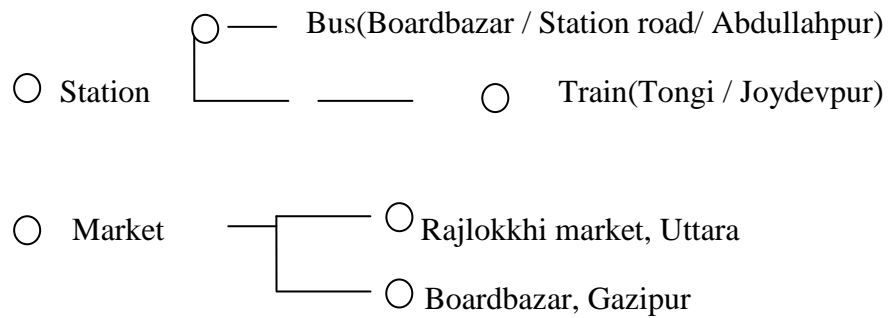
Student	Service holder	Labor	Other
<ul style="list-style-type: none"> <li>• Primary</li> <li>• Secondary</li> <li>• Higher Secondary</li> <li>• Under Graduate</li> <li>• Others</li> </ul>	<ul style="list-style-type: none"> <li>• Government</li> <li>• Non-govt.</li> <li>• Teacher</li> <li>• Doctor</li> <li>• Engineer</li> <li>• Chief</li> <li>• Others</li> </ul>	<ul style="list-style-type: none"> <li>• Factory worker</li> <li>• Rickshaw puller</li> <li>• Driver</li> <li>• Street hawker</li> <li>• Construction worker</li> <li>• Others</li> </ul>	<ul style="list-style-type: none"> <li>• Trader</li> <li>• Farmer</li> <li>• Housewife</li> <li>• Others</li> <li>.....</li> </ul>

e) Education     Illiterate     Primary     SSC     HSC     Graduate

f) Income:             Below 5000 TK     5000-10000 TK     11000-20000 TK  
                           21000-30000 TK     Above 30000 TK



h) Survey area:



B)Water consumption related question

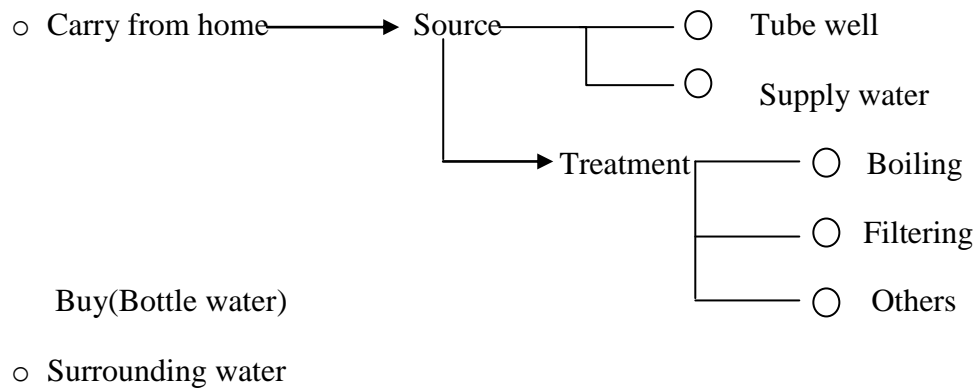
a)How much time you spend when you are away from home?

..... hour/day

b)Do you drink water when you are away from home?

- Yes
- No

c)What type of water you take?



d)Source-

- Supply water
- Tube well
- Pond
- Restaurant/Tea stall
- Dispensation water
- Source unknown

e) If restaurant or tea stall then what type of water you take?

- Tap
- Bottle
- Filter
- Stored water ( Barrel / Tank )

C) Influencing factors

a) What are the reasons behind choice of water for drinking purpose?

- Cleanliness of water
- Smell
- Safety
- Taste
- Water container cleanliness
- Source
- Others

b) Amount of water you consume everyday when you are away from home?

.....L/day

c) Any other drinks except water?

- Coffee
- Tea
- Soft-drink
- Milk
- None

d) Do you know whether the water you drink away from home, is treated ?

- Don't know
- Sure treated
- Not treated

e) Do you consider visible clear water as clean water for drinking purpose?

- Yes
- No

f) Do you think ,accessibility has an impact on choosing drinking water away from home ?

- Yes
- No

D)Common questions:

a) Will you considered the water safe for drinking without any purification or any kind of treatment?

- Safe for consumption
- Unsafe for consumption

b) Choosing this type of water for drinking purpose when you are away from home?

- No alternative source
- Economical condition
- Not interested in other source

c) Did you ever suffer from any of these diseases given below?

- Diarrhea
- Typhoid
- Cholera
- Dysentery

d) Overall comment on water supply management:

.....  
.....  
.....  
.....

Name of interviewer: ..... Date: .....

