WATER USE PATTERNS OF DIFFERENT DOMESTIC ACTIVITIES IN THREE SELECTED AREAS OF DHAKA SOUTH CITY CORPORATION

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ABSTRACT

Water is vital for human well-being and economic development, but it is scarce and unevenly distributed in Bangladesh. Different sectors, such as agriculture, industry, and domestic activities, demand a lot of water. Domestic water demand is increasing with the urbanization and economic growth of the country. This research aims to find out the domestic water use per capita per day in Dhaka South City Corporation. Based on the literature review, it was revealed that, unfortunately, there was no such research on measuring domestic water use per capita per day in Dhaka South City Corporation. This is the first research, which attempts to fill this gap. Two hundred families were interviewed from three different areas of Dhaka South City Corporation, namely, Jigatala, Kalabagan and Siddeheswari, using a questionnaire survey consisting of seventeen questions. According to the Bangladesh National Building Code (BNBC-2020), for moderate apartments (< 2000 sft), the average domestic water use is 180 liters per capita per day (lpcd), but the survey results show that, for the middle-income group households in Dhaka South City Corporation, the average domestic water use per capita per day is 306 liters. The analysis of the result shows that among the different domestic activities such as drinking, cooking, bathing, laundry, dishwashing, washing hands, house cleaning, sanitation, gardening, religious cleansing (ablution purpose), and unanticipated events (e.g. COVID-19), bathing consumes the highest amount of water. The findings will be very helpful for city planners and engineers in calculating water demand as well as designing sustainable cities, creating policies for water conservation, improving water management, and assessing water requirements for an urban area. The findings will also help achieving targets 6.1, 6.2, and 6.4 of the United Nations Sustainable Development Goal (SDG) 6.

Keywords: *Domestic water activities, Dhaka South City Corporation, Water use per capita per day, BNBC-2020, Sustainable Development Goal (SDG) 6.*

1. INTRODUCTION

Water is the most essential natural resource and the source of life for both rural and urban communities. If used appropriately, it has the potential to be very productive and to foster prosperous communities. Due to the nation's growth and advancements in science and technology, Bangladesh is using its water resources more frequently. In Bangladesh, water is being used for many different purposes, including domestic, agricultural, and industrial uses. Among them, domestic water use is the quickly rising one. Domestic water use is affected by several factors, including age, occupation, cultural preferences, and household income (Crouch, Jacobs, & Speight, 2021). However, the water use pattern also varies depending on the socio-economic status of the household, as higher-income households tend to consume more water due to their larger household size and more extensive use of water-consuming appliances. There is significant variation within the city, with some localities using more water than others due to differences in infrastructure and water supply.

Domestic water use, which is a significant component of the total water use, varies according to the living standards of the consumers in urban and rural areas (Keshavarzi *et al.*, 2006). The use of water for domestic purposes may be subdivided into drinking, food preparation and cooking, washing clothes and utensils, house cleaning and polishing, vegetable gardening, stock watering, and other uses (Hofkes *et al.*, 1981). Due to the rising food demand, urban migration, population growth, and rising standards of living, there has been a continuous increase in the demand of domestic water. Sometimes due to unanticipated events, sudden change happens in domestic water use. For example, due to COVID-19 people all over the world started to wash their hands frequently and clean surfaces adequately to limit the spread of contagious diseases. Global domestic water use and total water use would increase by about 11.96% and 1.25% respectively, if everyone washes their hands six times a day solely to prevent the spread of coronavirus. Africa (23.88%), Asia (15.05%), Latin America, and the Caribbean (7.18%) are anticipated to have the most significant increases in domestic water use due to the increased handwashing (Rahaman *et al.*, 2023).

Information on water use patterns in different domestic activities can be used by a country in several ways to improve water resource management and promote conservation. By using the data on domestic water use, the locations that require water conservation can be pinpointed. This data will be useful to a nation to create policies for water conservation, establish goals for reducing water use, promote public involvement in water conservation initiatives, and to plan and design infrastructures including water treatment plants, distribution networks, and storage facilities. Additionally, this can help to ensure the allocation of water resources efficiently and effectively.

This research is the first attempt to investigate the water use patterns of different domestic activities in the selective localities of Dhaka South City Corporation, which will give a clear idea about the quantity of water that is being used for different domestic activities. Three different areas of Dhaka South City Corporation have been selected as study areas, namely Jigatala, Kalabagan, and Siddheswari. As the majority of inhabitants of these three areas, as well as Dhaka South City Corporation, are middle and upper-middle-class, these areas were selected as study areas. In addition, the three areas are located in three different locations of Dhaka South City Corporation and they clearly represent the scenario of domestic water use patterns of Dhaka South City Corporation. However, further research is needed to find out the domestic water use patterns of upper class, lower class people in DSCC. The first step in developing any intervention strategy aimed at significantly and sustainably reducing domestic water use is identifying the patterns of domestic water use. This can help to promote a more proactive approach to water resource management.

It will also help to promote targets 6.1, 6.2, and 6.4 of the United Nations Sustainable Development Goal (SDG) 6. The 2030 Agenda for Sustainable Development was adopted by the United Nations (UN) member in 2015, which sets out 17 Sustainable Development Goals (SDGs) with 169 targets and 232 indicators for all SDGs. SDG target 6.1 aims to achieve universal and equitable access to safe

and affordable drinking water for all, target 6.2 aims to achieve access to adequate and equitable sanitation for all and end to open defecation, with special attention paid to the needs of women and girls and those in vulnerable situations and target 6.4 aims to achieve substantially increase of water use efficiency across all sectors and reduce number of people suffering from water scarcity (Ajishnu & Kousik, 2019; Rahaman, Galib, & Azmi, 2021).

The findings of this research can aid in planning water supply and sanitation, as well as estimating domestic water demand in urban areas of Bangladesh. However, several research papers were found on domestic water use in other countries such as India (Shit *et al*., 2019), South-Africa (Njoku *et al*., 2022), Indonesia (Utami *et al*., 2023), Iran (Keshavarzi *et al*., 2006), Nigeria (Istifanus, Aliyu, & Baba, 2019), Japan (Nakagawa, Kawamura, & Amaguchi, 2010). As there is no research base data on domestic water use in Dhaka, water supply authorities had to rely on the data from other South Asian countries. For example, in planning water supply and sanitation facilities for the Purbachal New Town City (PNTC) project, the water supply authorities have to rely on the Bangladesh National Building Code 2020 (BNBC 2020) and the code says that moderate apartments with full capacity will have use rate of 180 lpcd and with restricted capacity the use rate is 135 lpcd ((BNBC, 2020) Table 8.5.1(a)), which was made based on India's domestic water use data and does not reflect the actual scenario. As the purpose of this research is to determine the patterns and quantities of water used for different domestic activities, the findings of this research can be effective for water supply authorities in planning water supply and sanitation, and to estimate the domestic water demand of different cities in Bangladesh.

1.1. Objective of the study

The objectives of this research are:

- To find out domestic water use per capita per day in three selective localities of Dhaka South City Corporation.
- To find out water use patterns of different domestic activities.

2. METHODOLOGY

To find out domestic water use per capita per day in three selective localities of Dhaka South City Corporation, the research needed to accomplish a number of activities stepwise. The steps of this research is summarised in figure 1

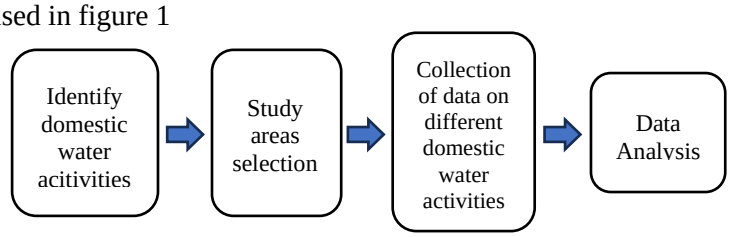


Figure 1: Methodological framework for Steps involved in this research
Source: Authors, 2023

Based on literature review (Al-Amin *et al.*, 2011; Crouch *et al.*, 2021; Inocencio, Padilla, & Javier, 1999; Istifanus *et al.*, 2019; Keshavarzi *et al.*, 2006; Nakagawa *et al.*, 2010; Njoku *et al.*, 2022; Shit *et al.*, 2019; Sultana *et al.*, 2022; Utami *et al.*, 2023) twelve different domestic water activities were identified, which are relevant for the research area as well as Dhaka South City Corporation. Those activities are shown in figure 2

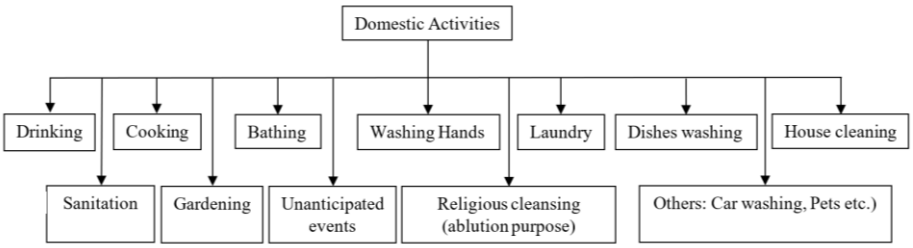
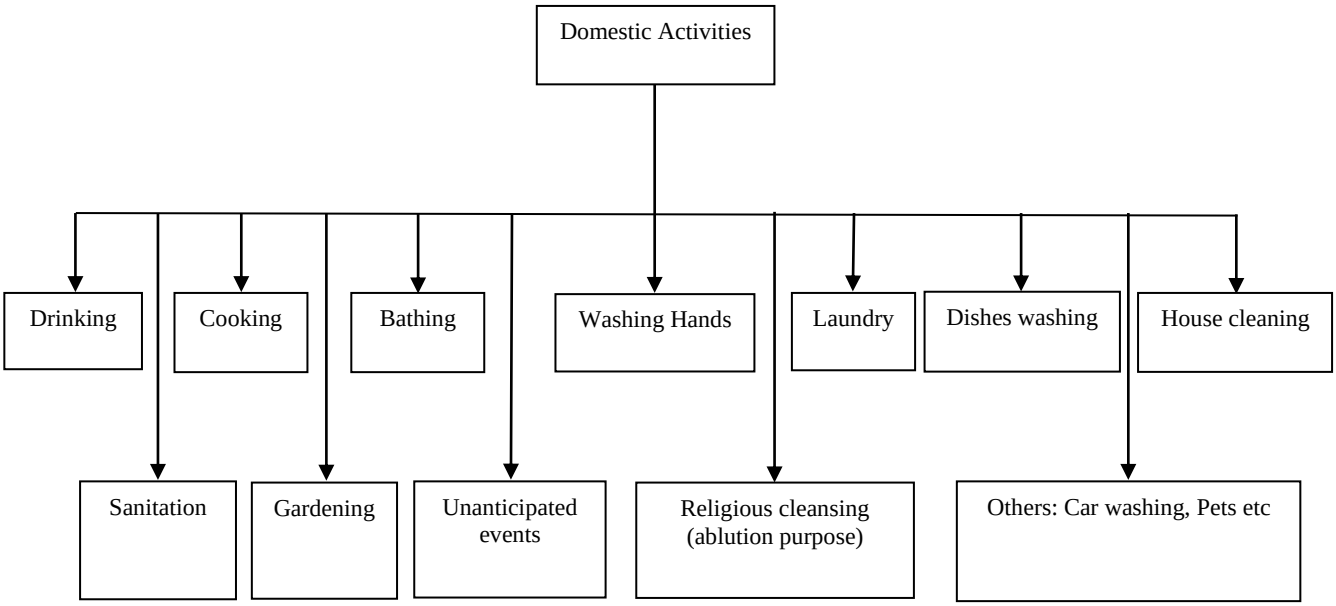


Figure 2: Different domestic water activities relevent to this research
Source: Drawn by authors



Following table 1 describes different domestic water activities elaborately: -

Table 1: Describes different domestic water activities

No.	**Definition**
1. Drinking	Drinking is defined as the act of consuming water, to satisfy thirst or maintain hydration.
2. Cooking	The water used to prepare foods, washing meat, fish, and vegetables is defined as cooking. However, the recipe, the technique of cooking and the number of dishes being made can affect how much water is needed during cooking.
3. Bathing	Bathing is the practice of using water, typically in a bathtub or shower, to clean one's body, soak, and maintain personal hygiene.
4. Laundry	Laundry is defined as the process of washing clothes and other textiles using water and detergent. The amount of water used in the laundry can vary depending on factors such as the size and number of items being washed, the washing machine's efficiency, and the washing method used.
5. Dishes washing	Dishes washing is the term used to describe the water use for cleaning cookware cutlery, and cookware.
6. Washing hands	Generally, described as the water use for handwashing, a vital component of personal hygiene to stop the transmission of disease.
7. House cleaning	House cleaning typically includes water use for various tasks, such as mopping floors & cleaning surfaces.
8. Sanitation	Sanitation refers to the provision of safe and hygienic conditions for human waste management, including the safe disposal of feces and urine flushing toilets.
9. Gardening	Defined as the amount of water needed to maintain the health and growth of plants.
10. Unanticipated event	Refers to an unexpected event or circumstance that results in a sudden or significant increase in water use. e.g., Pandemic
11. Religious cleansing (ablution purpose)	Refers to the water used for ablution, the process of washing oneself as part of a religious practice or ritual.
12. Others:	Car washing- refers to the process of cleaning a vehicle using water and cleaning agents such as soap and shampoo.
	Pets- refers to the amount of water consumed by domesticated animals such as dogs, cats, birds, and other household pets. for drinking and personal hygiene.

Sources: Al-Amin *et al.*, 2011; Crouch *et al.*, 2021; Inocencio *et al.*, 1999; Istifanus *et al.*, 2019; Keshavarzi *et al.*, 2006; Nakagawa *et al.*, 2010; Njoku *et al.*, 2022; Shit *et al.*, 2019; Sultana *et al.*, 2022; Utami *et al.*, 2023

A survey research approach was used in this research to gather data on domestic water use. The research aimed to examine domestic water use patterns and several socio-economic factors, such as household size, income, number of family members, garden area, number of animals, and the proportion of income spent on the total water use of each household, etc. have a direct influence on the domestic water use. A pre-designed questionnaire was utilized to address these factors.

To estimate the quantity of water required for different domestic activities apart from toilet flushing, a standard-sized bucket of 25 liters (L) and a glass of 250 milliliters (ml) were used as measurement units. To calculate the amount of water used for toilet flushing, members were asked how many times they flushed the flush tank. The amount of water was calculated by multiplying the size (water holding capacity: 9 liters) of the flush tank by the number of times they flushed. The field survey was conducted from July to October.

2.1 Survey Questionnaire

The authors designed a questionnaire with 17 questions (See appendix 1) to investigate the domestic water use patterns of different stakeholders in the study area. The questionnaire was distributed to selected apartments in the area, targeting middle and upper middle-class families based on their income category. The standard sample size of statistical questionnaire survey has to be at least 100 to get any kind of meaningful result according to most statisticians. So, the authors selected 200 families for the research. Out of 200 families, 170 participated in the survey (See table 5).

2.2 Study Areas

In this research three different areas of Dhaka South City Corporation have been selected as study areas namely Jigatala, Kalabagan, and Siddheswari. These areas are selected based on income, middle and upper middle-class families were selected based on their income category. Study areas are shown in figure 3.

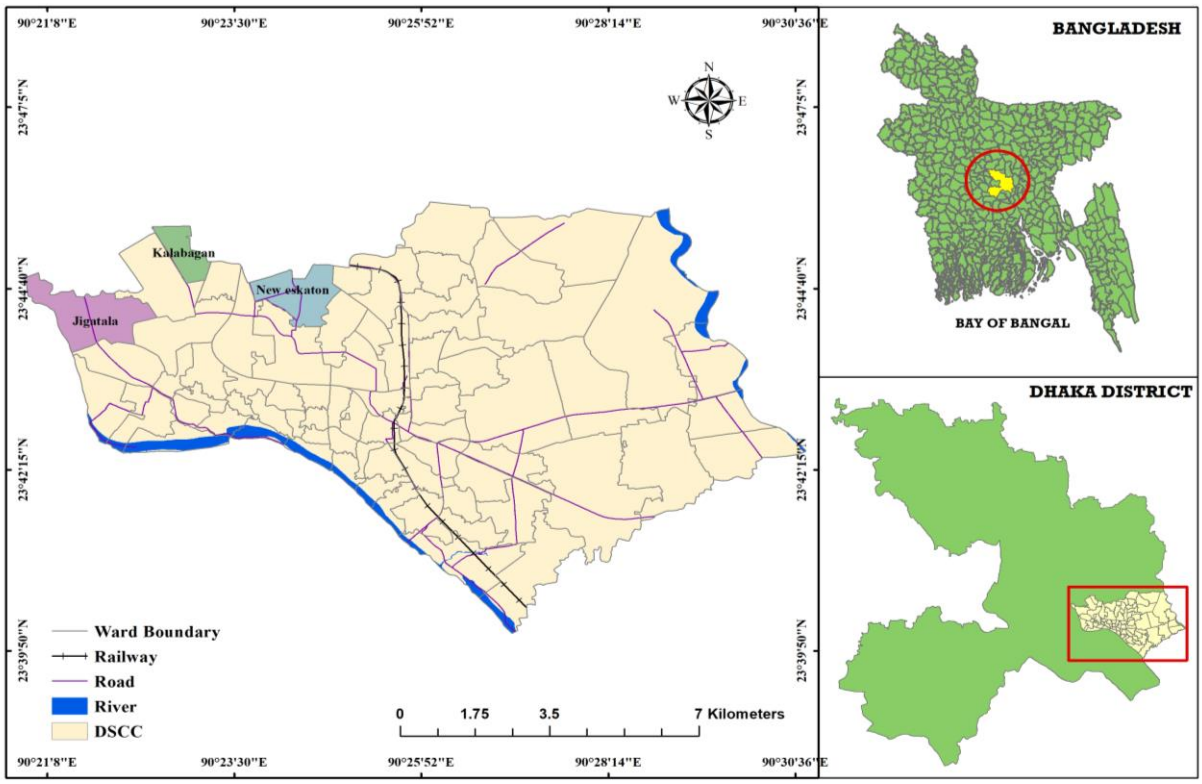


Figure 3: Dhaka South City Corporation Map
Source: Map drawn by authors (2023)

2.2.1 Jigatala

Jigatala is a locality in Dhaka South City Corporation situated in Dhanmondi area, known for its residential and commercial significance, located at 23°73'86.55"N 90°37'39.96"E. Table 2 shows the details of the area.

Table 2: Details of Jigatala

Study area	Building	No. of flat per building	Avg. flat size (Sq. ft)	Ward No.
Jigatala	5-storied	12	1200	14
	6-storied	10		
	7-storied	20		
	5-storied	12		

Source: Field Study, 2023

2.2.2 Dolphin Goli, Kalabagan

Dolphin Goli is a residential area of Dhaka South City Corporation in Kalabagan, located at 23°45'03.2"N 90°22'45.9"E. The area is mostly populated by middle-class and upper-middle-class people who live in multi-storied buildings. Details of the area is shown in table 3.

Table 3: Details of Dolphin Goli, Kalabagan

Study area	Building	No. of flat per building	Avg. flat size (Sq. ft)	Ward No.
Dolphin Goli, Kalabagan	8-storied	14	1150	17
	10-storied	18		
	12-storied	22		
	10-storied	18		

Source: Field Study, 2023

2.2.3 Siddheswari

Siddheswari is a neighborhood in Dhaka South City Corporation near Ramna Park that is a popular location for individuals looking for a serene and pleasant living in the heart of Dhaka and it is recognized for its greenery, peacefulness, and diversity in culture, located at 23°44'36.3"N 90°24'32.0"E. Table 4 shows the details of the area.

Table 4: Details of Siddheswari

Study area	Building	No. of flat per building	Avg. flat size (Sq. ft)	Ward No.
6, Siddheswari Road	11-storied	20	1300	19
	8-storied	21		
	12-storied	33		

Source: Field Study, 2023

3. ANALYSIS & RESULTS

The selected three study areas are namely Jigatala, Kalabagan and Siddheswari. Households selected for the questionnaire survey were 200 but 170 households participated in the survey with 690 residents. Table 5 presents the basic information about household residents of Jigatala, Kalabagan and Siddheswari.

Table 5: Basic information about household residents of Jigatala, Kalabagan and Siddheswari, Dhaka from July 2023 to October 2023

Characteristics of Study Households	**Number of Households n (%)**
Total households	200
Households participated for interviews	170
Average household members	4
Characteristics of Observed Household Members	**Number of Persons**
Total family members	690
Gender	(n = 690)
Male	388
Female	302
Adults (18+)	344
Aged 6-17	346

* 30 households did not participate in the survey

Source: Field Study (2023)

3.1 Jigatala

In Jigatala, 48 out of 54 households actively participated in the questionnaire survey. Figure 4 illustrates the average daily water use per capita for different domestic activities based on the survey data collected in Jigatala.

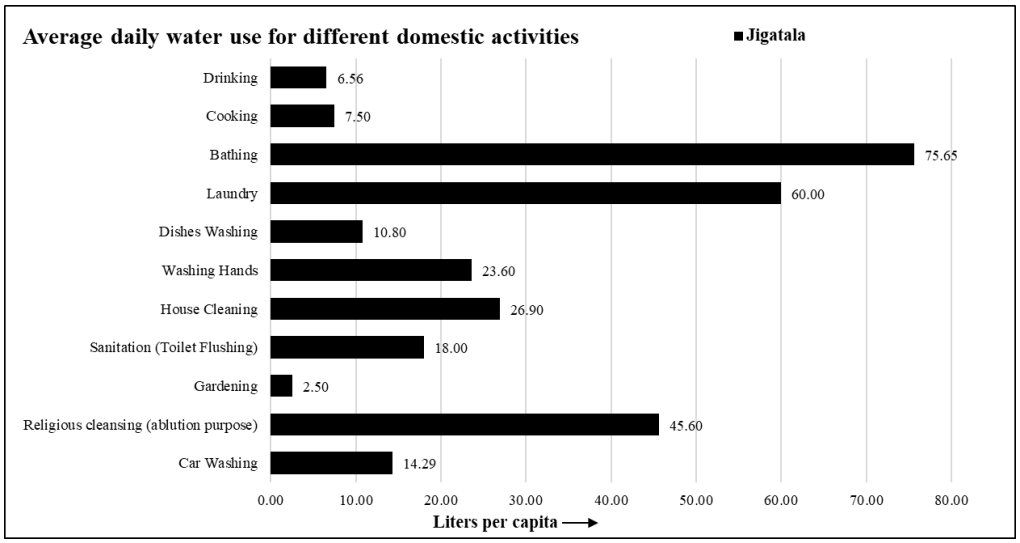


Figure 4: Average daily water use per capita for different activities in Jigatala
Source: Data obtained from Field Study, 2023

Figure 4 reveals that in Jigatala area water requirement for bathing is high among all the activities. Average per capita per day water use in Jigatala is 291 liters.

3.2 Dolphin Goli, Kalabagan

In Dolphin Goli, 62 out of 72 households actively participated in the questionnaire survey. Figure 5 illustrates the average daily water use per capita for different domestic activities based on the survey data collected in Dolphin Goli.

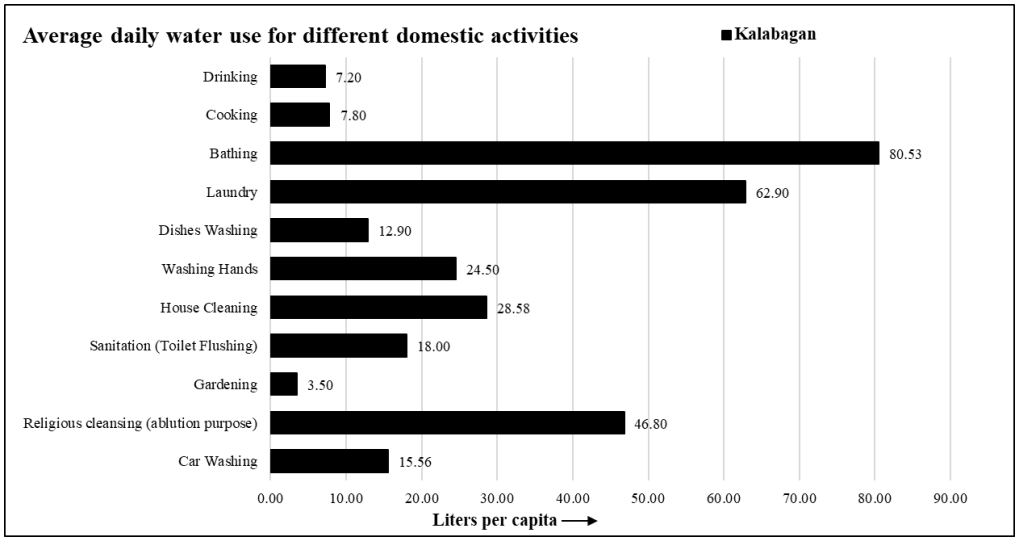


Figure 5: Average daily water use per capita for different activities in Kalabagan
Source: Data obtained from Field Study, 2023

Figure 5 reveals that in Kalabagan area water requirement for bathing is high among all the activities. Average per capita per day water use in Kalabagan is 308 liters.

3.3 Siddheswari

In Siddheswari, 60 out of 74 households actively participated in the questionnaire survey. Figure 6 illustrates the average daily water use per capita for different domestic activities based on the survey data collected in Siddheswari.

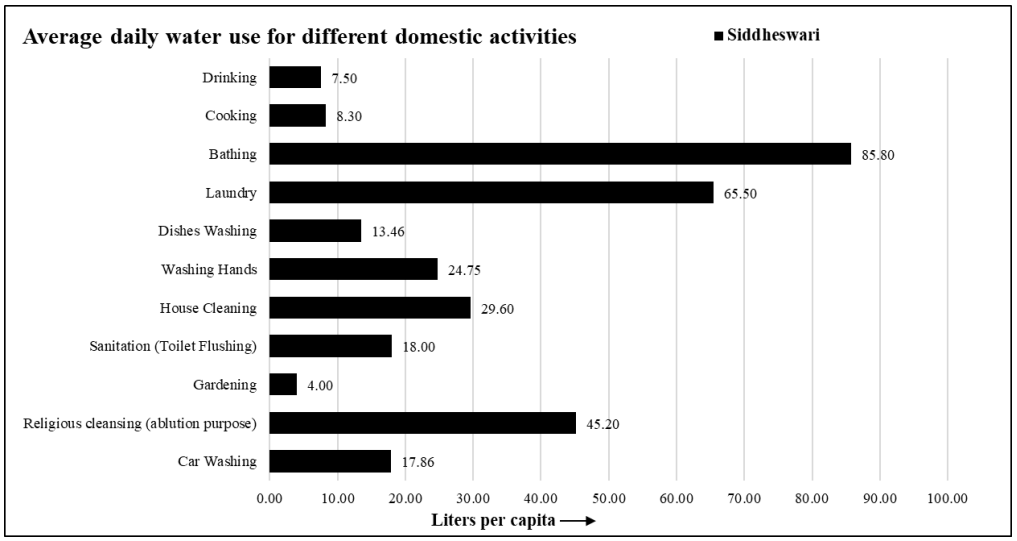


Figure 6: Average daily water use per capita for different activities in Siddheswari
Source: Data obtained from Field Study, 2023

Figure 6 reveals that in Siddheswari area water requirement for bathing is high among all the activities. Average per capita per day water use in Siddheswari is 320 liters.

Table 6 summarises the results of the study.

Table 6: Water use liters per capita per day (lpcd) in study areas

Area	Average water use (lpcd)		
	Jigatala	Kalabagan	Siddheswari
Drinking	6.56	7.20	7.50
Cooking	7.50	7.80	8.30
Bathing	75.65	80.53	85.80
Laundry	60	62.90	65.50
Dishes washing	10.80	12.90	13.46
Washing Hands	23.60	24.50	24.75
House cleaning	26.90	28.58	29.60
Sanitation	18	18	18
Gardening	2.50	3.50	4
Religious cleansing	45.60	46.80	45.20
Car washing	14.29	15.56	17.86
Total (lpcd)	**291**	**308**	**320**

Source: Field Study, 2023

After analysing data, it is found that The field survey indicates that the daily water use per capita in the three areas in Dhaka South City Corporation locations namely Jigatala, Kalabagan, and Siddheswari is 291 lpcd, 308 lpcd, and 320 lpcd, respectively. On average, these three areas in Dhaka South City Corporation areas use 306 litres per capita per day (lpcd) of water. However, according to the Bangladesh National Building Code (BNBC-2020), for moderate apartments (< 2000 sft), the average domestic water use per capita per day is 180 litres per capita per day (lpcd). Thus, the findings of this research indicate that there is a significant variation between the results of the field study and the BNBC 2020 standard. The field study data is significantly greater than the Bangladesh National Building Code (BNBC-2020). Therefore, it is clear that the BNBC 2020 does not represent the real situation. This may cause a number of issues, including inadequate water resource management system, inadequate planning for sanitation and the supply of water, difficulties in conserving water, declining water quality that will result in wasting more water etc. Additionally, it will make achieving targets 6.1, 6.2, and 6.4 of Sustainable Development Goal (SDG) 6 more challenging.

Table 7: Water use liters per capita per day (lpcd) in different countries

Country	Daily water use in liters per capita per day (lpcd)
Miami	507
New-York	476
Vancouver	320
Dhaka South City Corporation	**306**
Toronto	253
São Paulo	180
London	161
Istanbul	161
Mumbai	155
Singapore	152
Paris	150
Algiers	136
Madrid	131
Accra	121
Berlin	115
Nairobi	112
Lagos	90

Sources: Meriem & Ewa, 2014; Field study, 2023

Table 7 shows the water use litres per capita per day (lpcd) in different cities around the world and in the average of the three selected areas in Dhaka South City Corporation.

4. DISCUSSION

Table 6 summerises the daily water use per capita of the three study areas based on the data obtained from the field study. The results indicate that the daily water use per capita in the three areas in Dhaka South City Corporation namely Jigatala, Kalabagan, and Siddheswari is 291 lpcd, 308 lpcd, and 320 lpcd, respectively. On average, these three areas in Dhaka South City Corporation use 306 litres per capita per day (lpcd) of water. However, according to the Bangladesh National Building Code (BNBC-2020), for moderate apartments (< 2000 sft), the average domestic water use per capita per day is 180 litres per capita per day (lpcd). Thus, the authors concluded that there is a significant variation between the results and the BNBC-2020 standard after analysing the data from the field survey. The field study data is significantly greater than the Bangladesh National Building Code (BNBC-2020).

Therefore, it is clear that the BNBC-2020 does not fairly represent the real situation. This may cause a number of issues, including inadequate water management, inadequate sanitation and planning for the supply of water, a shortage of water, difficulties conserving water, declining water quality that will result in wasting more water etc. Additionally, it will make achieving Sustainable Development Goal (SDG) 6 goals 6.1, 6.2, and 6.4 more challenging. As a result, the findings of this research can be helpful in planning water supply and sanitation in different urban area and calculating domestic water demand of different urban areas of Bangladesh.

The analysis of the data also reveals that bathing uses the most water in the three locations among the various domestic activities, including drinking, cooking, bathing, laundry, dishwashing, washing hands, house cleaning, sanitation, gardening, and unanticipated events such as COVID-19. After bathing, the second most used water activity is laundry. Thirdly, since almost 80% of Bangladeshis are muslims, religious cleansing (ablution) is the most popular use of water. Hand washing and house cleaning were the two top activities following religious cleansing. Unexpected event like COVID-19 have remarkably led to an increase in hand washing during domestic water activities compared to previous years. (Rahaman *et al.*, 2023) also found that, domestic water use in Bangladesh is increased by approximately 30.06% to maintain hand hygiene during coronavirus pandemic (COVID-19). A significant amount of water is also used in domestic activities like drinking, cooking, dishes washing, and sanitation. It was also noticed that recently, Dhaka South City Corporation's water requirement for car washing has increased significantly so it needs special attention along with other activities. Not to mention, gardening uses less water than other domestic water activities, but rooftop gardening has been more popular recently, so it is an important domestic water activity to be considered. During the survey interview, it was found that a considerable quantity of water is frequently wasted for a variety of reasons, including poor water quality and inappropriate use of water by family members and housekeepers.

According to table 7, North American cities like Miami and New York have relatively high daily water use per capita per day. Cities in Asia, such as Dhaka, Mumbai, and Singapore, show moderate water use per capita per day. European cities like London, Istanbul, Paris, Berlin, and Madrid generally have lower water use compared to North American counterparts. African cities like Accra and Lagos have lower water use per capita per day with Lagos being the lowest among the listed cities. This can be caused by a number of factors, including population density, household size, income, and number of family members; socio-economic factors, lack of access to safe water; lack of sanitation facilities; traditional practices; lack of modern facilities that encourage water conservation, lack of awareness and water policies etc. Cities with higher living standards and greater economic activity might use more water. For example, New York has higher living standards than Dhaka South City Corporation due to water-intensive lifestyles that require more water for activities such as car washing and recreational amenities (swimming pool, gardening, and pets). It has a higher

concentration of residential buildings than that of DSCC, which increases water use for a variety of uses, including household and overall higher water demand for various facilities. The field survey was conducted from July 2023 to October 2023.

5. CONCLUSION

This study analysed the domestic water use patterns in three selected areas located in Dhaka South City Corporation, namely, Jigatala, Kalabagan, and Siddheswari. Out of 200 families, 170 participated in the survey and the key findings of this research are presented in table 6.

According to the findings of this research, among all the domestic water activities, laundry and bathing use highest amount of water in the study areas. The average water use in the study areas is 306 liters per capita per day (lpcd), which is significantly more than what is recommended by BNBC 2020 (180 lpcd) resulting in less accurate and trustworthy data for developing sanitation and water supply infrastructure for any residential projects. However, when the field study's data is compared with other cities, such as Miami and New-York (shown in table 7), it becomes apparent that the daily use of water per capita in other cities is nearly identical to that of Dhaka South City Corporation.

An additional finding of this research brings light to the fact that the negligent use of water leads to considerable wastage of water, which is one of the most prominent reasons for the increase in domestic water use per capita per day. Insufficient supply of high-quality water is another reason for the wastage of water. To reduce water scarcity and to support water conservation as well as achieving SDG targets 6.1, 6.2 and 6.4, many different countries are attempting to reduce water use per capita per day by implementing various measures, raising awareness of domestic water activities by camping to save water, using modern facilities which conserve water. For example, in Australia, Victoria, the city of Melbourne has gone even further, putting permanent rules in place that have almost reduced daily water use to a target of 155 liters per person, which is well below the national average of 340 liters (Heggie, 2021).

Water conservation in Dhaka is at its minimum due to some factors. Firstly, the low water pricing does not reflect the actual cost of water, leading to little or no monetary incentive for consumers to conserve water. Secondly, there are no regulatory obligations for water conservation, except for the recent rule for rainwater harvesting. Lastly, consumer awareness of water conservation and available water-efficient fixtures is low. Strategies addressing these factors can make water conservation in Dhaka South City Corporation more feasible (cf. Hoque, Gunawansa, & Rahman, 2014).

Hence, it is evident that the findings of this research will be useful to Bangladesh's water supply authorities and relevant government and non-government organizations not only in developing standards for water supply and sanitation, but also for planning and designing infrastructures, water supply and sanitation in different cities; estimating domestic water demand, and encouraging stakeholders participation in water conservation initiatives in addition to achieving SDG targets 6.1, 6.2, and 6.4 (Ajishnu & Kousik, 2019; Rahaman *et al*., 2021).

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Appendix 1

Survey questionnaire:

Survey Questionnaire

Water Use Patterns of Different Domestic Activities in Three Selected Areas of Dhaka South City Corporation

University of Asia Pacific

Department of Civil Engineering

Name: **Age:** **Time:**

Email: **Date:** **Gender:**

GPS Location (Longitude & Latitude): **Ward:**

Survey Area: □ **Jigatala** □ **Dolphin Goli, Kalabagan** □ **6, Siddheswari Road**

1. Total number of household members from each of the following age/gender groups?	1. Men, adult (18 years, or above)	___| **person(s)**
	2. Women, adult (18 years, or above)	___| **person(s)**
	3. Children, male (below 18 years)	___| **person(s)**
	4. Children, female (below 18 years)	___| **person(s)**
2. How much is the family's monthly income? (TAKA)		
□ Below 60,000 □ 60,000-70,000 □ 70,000-80,000 □ 80,000-90,000 □ Above 1,00,000		
3. Housing Ownership		
○ Owns an flat	○ Rent an flat	
4. How much do you pay for water supply per month?		
5. How many litres of water do you drink in a day?		
6. How many litres of water do you use each day for cooking purpose?		

7. How many litres of water do you use each day to wash your dishes?
8. How many litres of water do you use to take a bath in a day?
9. How many litres of water do you use per day for sanitation purpose?
10. How many litres of water do you use each day for laundry?
11. How many litres of water a day do you use to wash your hands?
12. How many litres of water do you use each day for cleaning house?
13. How many litres of water do you use for ablution/religious purpose in a day?
14. Do you have a garden on your balcony or roof? If no, then go to question no.16
□ Yes □ No
15. How many litres of water do you use for gardening in a day?
16. Do you own any Car? If yes, then answer the question number 17
□ Yes □ No
17. How many litres of water do you use for Car washing in a day?