

# Navigating Water Scarcity: Economic Insights from Diverse Perspectives in Lahore, Pakistan

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## *Abstract*

*This study attempts to uncover the issues faced by Lahore residents due to water scarcity. This study used an exploratory qualitative research design employing purposive sampling, comprising 18 face-to-face interviews across diverse age groups and genders in six areas of Lahore. The thematic analysis reveals insights into participants' perceptions of water supply, the impact of shortages on daily life, attitudes towards water significance, limitations in conservation, personal norms, intentions, and adopted strategies. The nuanced exploration contributes to a comprehensive understanding of household water demand and scarcity, enriching existing literature and informing potential policy interventions.*

**Keywords:** *water scarcity, perceptions of water supply, household water demand*

## 1. Introduction

Water is the most important element for life to do a diversity of essential functions throughout the world but, in recent decades drought events have become more extensive (Pouramin et al., 2020). The scarcity of water is a challenging affair that directly affects agriculture which growing food for you and industrial development, even at the domestic level. Around the world, more than 2 billion people live in countries experiencing high water stress — a number that is expected to rise with continued climate change, population growth, and urbanization (UN-Water). The scarcity of water in many parts of the

world, especially South Asia has assumed alarming proportions jeopardizing not only socio-economic stability and development but also threatening sensitive ecological systems.

The rivers that provide the freshwater in Pakistan are surface runoff from precipitation, snowmelt, and glacial melt mainly through the Indus River system. It significantly contributes to recharging the country's aquifers apart from surface water and rainfall. However, in Pakistan, only about 10% of total available water is used for non-agricultural (domestic + industrial) purposes as well (Aslam et al., 2021). This intensive use of water for an agriculture type where a lot of it is required, along with wasteful irrigation practices is leading to massive water stress. Further adding to the problem, Jan et al. (2020) projected that Pakistan's population will increase up to 242 million by the year of 2015 which in turn cause more pressure on water demand.

Pakistan faces water scarcity due to rapid urbanization, erratic rainfall patterns, climate change effects, and many outdated water management practices. Urban centres, such as Lahore is facing its problem of a disturbed water system through aging infrastructure and increased demands on the available sources. Most government interventions, in the form of increased water tariffs and improved infrastructure investments, are aimed at people who can afford them. Yet these measures have been largely unsuccessful at influencing water conservation behaviors within low-income households, which are frequently those most impacted by other events in times when household supplies of water run dry (Roy et al., 2018).

Yet, despite the policy initiatives taken, there is still a gap in understanding how water scarcity manifests socio-economic dimensions and what local responses are generated as diverse populations of massive urban agglomerations like Lahore confront this challenge. Existing studies have mainly been quantitative or technical research around water management rather than individual or household viewpoints of the experiences that residents encountered, and how they adapted to situations with limited clues on coping strategies for managing changes in freshwater scarcity. Overall, more comprehensive studies that use qualitative approaches would be valuable in to obtain a better understanding of the socio-economic challenges and outcomes of water scarcity on the local scale.

This paper is a unique contribution to the scope of literature on water scarcity and it contributes qualitatively by describing everyday lived experiences, and economic issues linked with them related mainly in Lahore city, Pakistan. In contrast to the quantitative data or technical assessments in most of the prior research, this paper presents a rich picture from 18 semi-structured interviews with residents. The results that follow reveal detailed socio-economic ramifications of water scarcity, by clarifying the mitigation requirement and focusing on short-term as well as long-term consequences in terms of livelihoods, health, and community well-being. This study provides new perspectives about specific adaptive responses of different population groups and hence can lead to more holistic policy measures with high specificity for urban water scarcity mitigations.

This research paper is being divided into a number of sections. Section 2 provides a comprehensive literature analysis section. The Methods and Materials used in this study is outlined in Section 3, which gives information on the research design including a section of data analysis techniques. Section 4 offers the results and analysis of this study, and section 5 offers the discussion and findings observed in this study. The study concludes with the main findings and implications in Section 5.6. Finally, the last section presents suggestions for future research and policy development on considerations from this study.

## **2. Literature Review**

A variety of psychosocial, demographic, and environmental awareness factors may affect household water use, according to studies that have already been conducted (Aprile & Fiorillo, 2017; Addo et al., 2019; Singha et al., 2023). Despite some discrepancies, there is general agreement that environmental knowledge, household characteristics, and socioeconomic factors significantly influence actions and attitudes toward water conservation (Sally et al., 2020; Bedard & Tolmie, 2018; Maas et al., 2017; Sanchez et al., 2023).

Environmental awareness fosters favorable attitudes toward water conservation, with informed people often using less water (Aslam et al., 2021; Maas et al., 2017; Warner et al., 2024). Many

studies have underlined the importance of psychosocial factors in understanding water consumption behaviors, and those who care about the environment often adopt water-saving habits (Yuriev et al., 2020). To analyze residential water demand and distinguish between necessary and optional water uses, it is needed to investigate consumer attitudes, intervention tactics, and perceptions (Jakubczak, 2020; Ehret et al., 2021; Conway, 2024).

According to another study, larger, lower-income households with older members typically use more water than other types of households (Marzouk, 2019). According to research by Ramsey et al. (2017) and Koop et al. (2019), a household's environmental behaviors and intent to conserve water can be determined by several factors, including financial stability, age, social norms, and perceptions. These factors have a substantial impact on water-conserving activities.

### **2.1. Water Conservation and Household**

Numerous studies have focused on analyzing habits, attitudes, knowledge, and behavior related to water conservation. Past research has endeavored to establish a connection between awareness and water conservation. It is widely believed that women naturally take on the role of managing water in domestic settings. Tong et al. (2017) explored the impact of awareness, perceptions, and behavioral mechanisms concerning water conservation practices (WCPs), and the influence of gender (male and female) on residents' water conservation practices in China. Women were found to utilize more water and engage in more WCPs compared to men. Both genders displayed a willingness to adopt water-saving practices, possibly due to heightened awareness of the need for water preservation (Li et al., 2019; Diaz et al., 2023).

Boylu and Gunay (2017) also identified a correlation between water conservation and the socio-demographic factor of gender. Older individuals generally exhibited a more positive attitude toward the environment compared to younger individuals (Blankenberg & Alhusen, 2019; Gullberg et al., 2023). While elders expressed significant concern about their environment and emerging issues, they were less inclined to actively participate in activities

aimed at safeguarding the ecology (Ramstetter & Habersack, 2020; Fauconnier et al., 2018). Kuo et al. (2018) discussed the differences in household and workplace roles between males and females, attributing these distinctions to individual preferences and varying capabilities in domestic chores and labor. Such differences lead to the adoption of different responsibilities, with females demonstrating a preference for both domestic and outside work. Wichman (2017) emphasized the importance of the educated and uneducated perception of water and its optimal usage in shaping household attitudes and behaviors toward water-saving practices. Moreover, Dang et al. (2024) analyzed the water-saving pattern in rural areas of China and highlighted the variation in attitude towards the use of water.

Considering this backdrop, the current study aims to comprehend and elucidate the water conservation practices adopted within domestic setups in Lahore. Additionally, the study examines the influence of demographic factors such as age, education, family size, residential area, residential size, and household income on water-saving behavior. Given the scarcity of water in Lahore, water conservation is imperative to sustain its availability. Therefore, it is essential to observe and analyze water-saving behaviors, with a focus on understanding the reasons behind these behaviors. The methodology and population of the research will be discussed in the subsequent section. The study will take a pragmatic approach to examining people's perception of water, the benefits of water conservation, the influence of water, barriers to water-saving practices, household needs and practices, practical steps to overcome scarcity, and existing water facilities and potential avenues for improvement, which will be elaborated upon in the final part.

### **3. Method and Material**

To examine the households, an exploratory qualitative research design was utilized, employing interviews as the primary data-gathering method. A total of 18 face-to-face interviews were conducted, involving participants from different age groups, including young adults (18-25

years), adults (26-60 years), and the elderly (60 years and above). These interviews were evenly distributed between both men and women, with 09 interviews conducted for each gender group, across six distinct areas of Lahore.

### **3.1. Participants**

The selection of respondents was carried out using a purposive sampling technique, which enabled the researchers to enlist participants with diverse characteristics, including individuals from various towns, age groups, occupations, and educational backgrounds, thereby ensuring a comprehensive understanding of water-related issues (Padgett, 2017). The study participants were approached through influential individuals, politicians, and social workers, who introduced the researchers to the community, fostering a sense of closeness with the respondents. The researchers communicated the purpose of the study to the participants, and the interviews were scheduled at a time and day convenient for the respondents.

## **4. Results and Analysis**

In the Results and Analysis section, we uncover the complex realities of water scarcity as experienced by Lahore's residents. We begin by exploring perceptions of water supply and the compelling reasons behind conservation efforts, revealing a community deeply aware of its water challenges. We then delve into how water shortages disrupt daily life, highlighting the crucial role water plays in their routines. This section also sheds light on the attitudes toward water's value, the obstacles to conservation, and the personal strategies people adopt to navigate scarcity. Finally, we examine the proactive behaviors and mindset shifts towards sustainable water use, offering a vivid snapshot of how economic and social factors shape water practices in Lahore.

### **4.1. Perception of Water Supply and Benefit of Water Conservation**

It's important to mention that both genders have different views on water usage and its importance in saving it. Most men and women in the study are aware of the value of water, the need to protect it, and the drawbacks of its wasteful use. They all agree that the quality and quantity of water in their areas are not good. Getting enough clean water for their daily needs

is a struggle because the water supply is limited and often contaminated with mud, dirt, and bad smells. When there's a water shortage, women rely on men to get it from neighbors and others, which can be frustrating.

One educated male respondent, a teacher in his forties, said,

*“Although water is mainly used for domestic, sometimes the water supply is so bad that we cannot buy bottled water to meet our domestic needs.”*

Participants are not happy with the water supply situation in their area, especially during the summer when the limited water supply is in high demand due to the heat. A female respondent with 12 years of education mentioned,

*“We have limited water in hot weather, but our water needs increase because of the scorching heat. People use more water for showers and drinking. As a result, there's not enough water for other activities. We struggle to store water, and I even place a tub under the tap to save water, but it takes a lot of time to fill it.”*

As for people's views on water conservation, both men and women know the term and its practices. Most of them express a willingness to save water and develop habits of using it wisely. They understand that the water situation will worsen in the future and that water conservation is the only solution to address the scarcity issue. They highly value water.

A young retailer with a college degree said,

*“Water conservation means saving water. We try to save it because we'll suffer in the long run if we waste water. There will be a severe water shortage in our area in the future. If we start now, we can save water for the next generation. We need to change our habits and stop wasting water.”*

An elderly widow with a basic education stated,

*“Water conservation means saving water. We use water very carefully. I've heard on TV that the water situation in Lahore is very bad, with water scarcity and a limited amount of groundwater. In the coming years, we'll have no water.”*

#### **4.2. The impact of water shortage on everyday life**

Nearly all participants mentioned that they faced serious water problems due to the irregular water supply, which made it difficult for them to carry out their daily tasks with the limited water available. Additionally, the issue of power outages aggravated the situation, and they listed several problems they encountered.

A male participant in his late thirties said,

*“The poor quality of water leads to many diseases. We also have a water shortage for homes, industries, and farming. Our fields are dry because there's not enough water, and the problem is worsened by power outages, which cause tube wells to stop working.”*

A female graduate in her early forties replied,

*“The water is unclean and not safe for drinking. It's a major cause of various diseases. There's also a shortage of water for household use and agriculture. The lack of water affects plant growth and turns our fields into deserts. This situation is not safe for our country's future.”*

Both male and female participants expressed frustration with people who weren't conserving water at home and often let it go to waste. They observed water flowing out of homes onto the streets. Women were particularly unhappy about this situation because they were most affected. The entire community complained about the irregular water supply caused by power outages and damaged water channels. The breakdown of tube wells and delays in their repair only made matters worse.



Both men and women had different concerns and perspectives. Men were mainly focused on their personal needs, like being unable to bathe, wash, or perform religious ablutions. On the other hand, women's concerns revolved around household tasks such as cooking, cleaning, and doing laundry. Women were eager to find solutions to the water issue and were storing water in tubs for immediate use.

#### **4.3. Attitude toward the significance of water**

The theme of people's attitudes towards the importance of water emerged in the study. Participants expressed their views on the value of water as a crucial element for life. They also intended to spread the message of water conservation within their extended families and the community to encourage responsible water use in everyday activities such as cleaning, showering, and flushing toilets. People understood that obtaining sufficient water during water scarcity would become challenging, and they believed that the community should adopt better practices to address this issue.

One older respondent confidently stated,

*“Human survival is impossible without water. Without oxygen, we can't survive for more than a few days without it, making it the second most essential substance in our body. We need to protect water for ourselves and others. We shouldn't misuse it.”*

Participants understood that water is vital for survival and considered it a lifeline. However, there was an ironic aspect to this in Pakistan, where people often had a casual attitude towards water because it was inexpensive. Many residents didn't bother to turn off taps during activities like cleaning courtyards, washing, sweeping, and washing cars, leading to unnecessary water wastage. People showed indifference towards those with limited or no access to water for their basic needs. The standing water on the streets reflected people's apathy towards water shortages and their importance in life.

A female respondent in her forties remarked ironically,

*“Even though everyone knows that water is essential for life and that we can't survive without it, water is cheap, and the government doesn't charge much for it, so people don't try to conserve it. They don't feel the need to save it for future generations or others.”*

However, the positive aspect was that all participants emphasized the need to control water usage and even suggested that the government install water meters in homes to monitor and regulate water consumption.

A male participant expressed his frustration, saying,

*“We can't save as much water as we need, especially for bathroom and cleaning purposes. In the community, I've seen people washing their cars and courtyards frequently, resulting in water standing on the streets, making walking difficult. Due to excessive use by my neighbors, I have less water in my home. We try to store water in the underground water tank.”*

The gathered information showed that both men and women recognized the importance of water and its responsible use. They viewed it as crucial for survival, almost like oxygen for the human body. Many educated, middle-aged, and employed participants expressed frustration about the community's wasteful water practices, mainly using clean water for outdoor purposes instead of using greywater after laundry.

#### **4.4. Limitation to conserve water**

Another critical topic is the struggle to save water. People used to have problems with their water supply, and getting enough water was a tough job. The problems were quite complicated. Most women who participated in the study were unhappy and listed the difficulties they faced when there wasn't enough water.

Many women, and even some men, said that they often had to ask their neighbours who had wells or electric pumps in their homes for buckets of water. Sometimes, their neighbours would say no, which was tough for everyone. Women had to wake up early in the morning to get water from public taps when it was crowded, which made them grumpy all day because they didn't get enough sleep. It was also strange to see women carrying heavy loads of water from far away, and people would stare at them. Plus, families didn't have proper ways to store water. On the other hand, men oversaw decisions and money. This meant that men-controlled finances while women managed all the water-related tasks at home.

One woman in her thirties, who was a teacher, said,

*“Getting water in our area is not easy. We must ask our neighbours who have wells or pumps for water, and sometimes they say no. It's tough. We can't cook, clean, do laundry, or stay clean.”*

Another male participant, who was a student, explained,

*“We don't have enough containers to store water, so we must bring it outside for household chores. When I'm at school, my mom asks our neighbor's son to get water from the public tap. My mother goes through a lot of trouble, and sometimes she can't even cook for the family.”*

Women participants were unhappy because they faced many problems. They couldn't store or control water how they needed to, especially for the bathroom and laundry, because they depended on men for money. They felt helpless and frustrated and had to wait long for the water to return.

One housewife said,

*“I must wake up early in the morning to get water because that's when there's the most water.*

*It's bothersome and has caused health problems. I'm in a bad mood all day.”*

Another woman complained about the men in their area, saying,

*“We don't have enough containers to collect and save water. It's hard for housewives to get water from far away. In our society, people stare at women who leave their homes. When I'm*

*in a situation like this, I wait for my son to come home from school to get water from the public tap down the street.”*

#### **4.5. Personal Norms, Intentions, and Adopted Strategies**

The people in the study were aware of their water habits and had good intentions to use water wisely. Some used less water, while others used more when washing, bathing, and laundry. Only a few people took long showers, while many took shorter ones and turned off the tap when not needed. Most used a modest amount of water. Educated individuals and teachers not only wanted to save water themselves but also to spread the message of water conservation to their families, students, and peers because they knew there would be a water shortage in the future.

One woman in her fifties, who had experienced water scarcity as a child, said,

*“I use less water because my mother and our religion, Islam, taught us to save water and not waste it. My mother was very strict about this. We had a water tank on our roof, and my parents would pump water into it early in the morning.”*

Regarding how often and for how long they took showers, most people bathed five times a week during hot weather and less frequently in the winter. Men generally took shorter showers than women. One man in his thirties, who was an educator, said,

*“I take shorter showers to set an example for my kids and students. It's also in the Quran to save water for future generations. What will we do if we run out of this blessing?”*

On the other hand, women took longer showers, about 30-40 minutes, bathing four times a week in summer and once a week in winter. A widow in her fifties explained,

*“I usually use a bucket to bathe. I use at least two buckets because I have long hair to shampoo, and water is abundant and cheap. Our religion encourages us to keep ourselves clean.”*

To understand how households saved water, their habits, and routines, participants were asked about their clothes-washing methods, whether by hand or using a machine. It was found that households had various ways of doing laundry. One man in his forties said,

*“We use washing machines because two families live in one household, and it's easier for housewives to wash a large pile of clothes at once and avoid electricity shortages.”*

Another participant, a frustrated woman, said,

*“I wash clothes by hand because my washing machine is not working well. I collect water in tubs and then rinse the clothes with running water.”*

Regarding water-saving practices during laundry, most men and women did it twice a week, while only a few did it daily. A young participant, whose mother did laundry once a week, explained,

*“My mother does laundry once a week because she thinks doing it daily for a few clothes wastes time, money, water, and detergent.”*

It was clear from the data that households doing laundry once a week saved both water and electricity. They tried to conserve water by waiting until they had a full load to wash. Few men also reused greywater from laundry and showers for outdoor activities like watering plants and cleaning vehicles. They admitted to waiting for the right time to wash when they had a full load to save water and effort.

While men and women didn't differ much in water use, women used more water because they handled household water chores. The main difference was shower duration, with men taking 5-minute showers and women taking 20-30 minutes. Education also played a role, as educated women preferred shorter showers. Women were not habitually reusing wastewater like men, and men tended to do laundry once a week.

#### **4.6. Behavior to Resolve Scarcity and Attitude Molding**

##### **4.6.1. Actions to Solve Water Shortage and Attitude Change**

All the people in the study believed that conserving water is the best way to address water scarcity and ensure there's enough water for the current and future generations.

A male schoolteacher in the study said,

*“We should use water-saving methods. Conserving water can help us deal with water scarcity in the future. If we save water now, it will be available in our area of scarce water.”*

Participants revealed that they stored water in their homes in case of power outages, well breakdowns, pipe leaks, or water supply shortages to avoid difficulties. This was seen as a responsible water-saving practice. Families stored water in various containers like drums, buckets, jugs, tubs, cans, and other containers. However, affordability played a role, with some households able to store 60 to 70 liters while others saved more than 200 liters.

A female participant mentioned,

*“We don't let the tap run unnecessarily. If there's a leak, we fix it right away. We watch over our kids while they bathe to prevent water wastage.”*

Another enthusiastic respondent in her fifties said,

*“We store water. We have two water tanks in our house where we store water and keep it in bottles and tubs. Even though the dengue prevention team advises not to store water in tubs*

*for too long to prevent mosquito larvae, we have no other choice. We cover the containers and store water for no more than 48 hours.”*

When asked if they tried to change the attitude of family members to use less water, a male participant replied,

*“I try to make my family members understand that we should use water wisely, and they also use water carefully. I know we won't have excess water in the future, but unfortunately, I don't have time to spread this message to others.”*

A housewife suggested,

*“We know water is essential for life. Water meters are necessary because people will use less water when paying for it. Laundry should be done in a bucket instead of under a running tap.*

*We can change our water usage, but it depends on our willingness. We have only WASA water, and we don't have any other source. I teach my grandsons to save water and use it less for bathing and showering. I even ask my daughters-in-law to store water, but one does it while the other uses water excessively.”*

Some female participants suggested washing in a tub instead of a hose or tap. Men also agreed that we should reduce water waste and use greywater for watering plants, cleaning patios, and washing vehicles.

One male respondent said,

*“Having a water bill and meters like we do for gas and electricity would make people use less water.”*

Another participant added,

*“Water meters are necessary because people will use less water when they have to pay for the amount they use. Rinsing should be done in a bucket instead of with a hose or tap.”*

A shopkeeper in the study said,

*“The government should implement programs for water conservation and tackle corruption.*

*In cities, they should increase the number of tube wells. The government should educate people about water scarcity and take steps to provide clean water. There should be no corruption in WASA (water supply agency).”*

Participants also pointed out that the government needs to be more honest and proactive in addressing the water problem. They suggested digging more wells, replacing old and rusty pipelines, and constructing new dams for water storage.

## **5. Discussion and Findings**

In Pakistan, the water supply to the populace relies on two sources: ground-based surface water and surface water from rivers or canals. Unfortunately, the water quality has deteriorated due to contaminants from industrial and agricultural waste (Deeba et al., 2019). Consequently, people are turning to bottled water for their drinking needs. Access to safe drinking water is a fundamental global necessity, yet it remains elusive for millions in underdeveloped nations.

Research indicates that approximately 80% of respondents, particularly young and educated individuals, recognize the importance of water conservation despite perceiving water as a limited resource. Educated middle-aged men and women are actively adopting water-saving norms, such as taking shorter showers, turning off taps while brushing, shaving, and repairing leaks. Females, being more aware of water scarcity, exhibit prudent water usage habits. They teach their children to be mindful of water consumption and avoid wastage. Notably, women and older individuals tend to consume more water than men and children due to their greater involvement in water-related activities.

Sally et al. (2020) highlight that men and children spend more time in offices and schools compared to women and older individuals who remain at home and use more water for cooking,



toilet flushing, washing, and bathing. This is consistent with the findings of Yuriev et al. (2020), which emphasize that low water consumption is more common in households with larger families, while income and house size do not significantly influence water use patterns.

The Theory of Reasoned Action and Planned Behavior posits that intentions are shaped by attitudes and subjective norms, ultimately influencing behavior. Hence, the decision of both men and women, whether young or old, to conserve water is driven by their attitudes and norms, affecting their efforts to impart water-saving practices to their children (Ding et al., 2018; Li et al., 2019).

However, working men often do not assist women in managing limited water resources at home, especially after a long day at work. This observation aligns with Wichman's study in 2017, underscoring the importance of people's perceptions of water and optimal usage in shaping household attitudes and behaviors toward water conservation. Similar links between age, income, education, social factors, and environmental behavior in water use have been established by Bedard and Tolmie (2018) and Maas et al. (2017). The Theory of Planned Behavior contends that household behavior is influenced by intentions and behavioral control in altering attitudes toward water conservation (Yuzhanin & Fisher, 2016).

Both genders exhibit different behaviors and viewpoints. While male respondents acknowledge their water-related problems, their concerns tend to revolve around personal hygiene, such as bathing and ablution. In contrast, women's concerns are centered on household chores, like cooking, cleaning, and laundry. Despite their enthusiasm to address the water issue promptly, women tend to store water in tubs for immediate use, reflecting Tong et al.'s findings in 2017 that men tend to underestimate water consumption in the kitchen due to social norms.

It has been observed that many residents waste considerable amounts of water, leaving taps open while cleaning courtyards, sweeping, and washing cars. This indifferent attitude towards

those with limited water supply reflects people's apathy in Katchi Abadis. Water accumulates on the streets, portraying the community's disregard for water scarcity and its importance for life. This finding corresponds to Addo et al.'s (2019) assertion that environmental knowledge fosters a water-saving attitude, resulting in reduced water consumption. In line with the Theory of Planned Behavior, intentions predict attitudes, meaning that households with intentions to save water exhibit positive attitudes. Conversely, those lacking such intentions are less likely to engage in positive behaviors to save water and prevent wastage in their neighborhood.

Households believe that using regular containers for laundry makes it easy to control water usage. Minimal laundry practices underscore their commitment to conservation and established habits, echoing the findings of Aprile and Fiorillo (2017). This viewpoint is supported by Yuriev et al. (2020), who assert a connection between attitudes and behavior regarding water conservation. Many households own washing machines, although some prefer handwashing for delicate fabrics, aligning with Ajzen and Fishbein's idea in 1980 that positive environmental attitudes are linked to intentions and pro-environmental behavior.

Despite different containers being employed to save water for filling washing machines, greywater is typically not reused for cleaning yards, vehicles, or toilet flushing, as it contains dirt and soap according to women's perceptions. However, a few educated males do use greywater from showers and machine washes for watering plants. This finding is consistent with Taher et al.'s (2019) argument that people often reuse greywater from machine washes for gardening purposes.

## **6. Conclusion and Recommendations**

This study has determined that various factors, perceptions, habits, attitudes, intentions, and behavioral control significantly influence social behavior and the effectiveness of water-saving or conservation initiatives. The residents of Katchi Abadis recognized the need for improvement in their water consumption practices. They understood that all households should

embrace water-saving habits, such as using washcloths in buckets instead of hoses or taps and reducing water wastage or reusing greywater for purposes like watering plants, and cleaning courtyards, and vehicles. These measures could help meet their future water requirements.

The research concludes that household attitudes, intentions, subjective norms, and perceived behavioral control are key factors influencing their willingness to conserve water. People's water-saving actions and attitudes are positively linked to their concern for the environment but negatively affected by subjective norms. For instance, some women expressed a desire to conserve water but were hindered by financial constraints and their limited decision-making roles, preventing them from purchasing water storage tanks.

Most households struggle to control water wastage, and it is suggested that implementing water meters, like gas and electricity meters, with corresponding billing, could encourage responsible water use. The installation of water meters is deemed necessary for monitoring and regulating water consumption. Currently, the government does not provide community-level storage facilities, and the existing decades-old water storage tanks have deteriorated. Additionally, pipelines are in poor condition, and old storage tanks are inadequately maintained. Government-installed filtration plants often provide unclean water or face operational issues. While a few NGOs and international organizations have installed water filtration plants, they are insufficient for the sizable population. Fortunately, people generally do not unnecessarily consume water.

To address these issues, comprehensive and inclusive water policies are essential. These policies should aim to enhance public awareness regarding the importance of water, its consumption, conservation, and sustainability for future generations. All stakeholders, including individuals, government bodies, civil society, religious leaders, water management authorities, media outlets, and communities, should actively participate in efforts to prevent

and control water misuse, correct misconceptions, and provide accurate information about the significance and value of water resources.

## **6.1. Recommendations**

This research recommends that future studies regarding household water practices should employ objective measurements rather than relying solely on self-reported data. Such studies should involve the assessment and observation of individuals' actual behaviors and their environmental values.

Furthermore, researchers should delve deeper into understanding how challenges and messages related to water conservation impact people's attitudes, habits, and behaviors. Future research should take a longitudinal approach to examine the psychosocial variables explored in the current study and whether they remain consistent for similar activities over time. Additionally, future studies should consider incorporating other factors, such as demographics, social influences, and economic aspects, to comprehensively analyze water conservation behavior.

It is crucial to explore how individuals' well-being can incentivize behavioral change, as current plans often focus on knowledge, awareness, and educational efforts when addressing this issue. Moreover, there is a potential for future research to employ mixed-method or triangulation approaches to gain a more comprehensive understanding of the subject.

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