

## The gender difference in behaviour and intentions of households toward water saving practices in Katchi Abadis of Lahore, Pakistan

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### Abstract

Water resources sustainability and conservation are crucial to controlling water scarcity in the world. This research examines the gendered perception of households in 12 Katchi Abadis of Lahore to conserve water by focusing on their habits, attitude, intention, norms, and behaviour. This is a qualitative research design with in-depth interviews as a method. Respondents were selected by adopting the purposive sampling technique. The debate revolves around the question: which one among men and women in the slum, will be responsible to show proper water managing intentions and behaviour? Is there any difference among men and women in slums on water-saving attitude, norms, intention, and behaviour? 24 face-to-face semi-structured in-depth interviews were conducted with youths, adults, and elderly males and females. Thematic analysis was used for analysis. It was revealed that people in homes acknowledged the worth of water, but poverty, unemployment, and government unresponsive behaviour caused hindrance to efforts to save water. There is a long list of hurdles that retards the process to conserve water. This research recommended conducting studies on the practices of water in households with actual measurements, not only for self-reported data, but it should also assess, and observe actions of individuals towards the environment.

**Keywords:** Katchi Abadis, gendered perception, water conservation, water conservation behaviour, water habits, environment, social norms, water use and hurdles.

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## 1. Introduction

The basic necessity of life is water, and water is practiced for abundant crucial applications across the globe. However, access to water is becoming an emerging concern of the 21<sup>st</sup> Century (Pouramin *et al.*, 2020). Basic needs are linked to water consumption at the household level as water drinking, to flush toilets, shower, bath, laundry, and water tap in kitchen and washroom sink while discretionary needs involve outdoor activities. To address the water situation in Pakistan, it reveals that water largely gathers from rainfall, snow melting, river water from the melting of glaciers. A large water recharge in the aquifer is through precipitation and surface water in the shape of huge stowage of Indus water. Pakistan made use of all these sources of water.

There are four main consumers of water such as agriculture, industrial, environment, and the domestic sphere. The cultivation sector ingested more than 92% of water use; the environment consumed more than 3%, more than 2% at homes, and the business utilized about 3%. So, it is crucial to save and effectively use water in the agriculture sector as this used the maximum amount of water (Aslam *et al.*, 2021). Pakistan has been also facing a water scarcity problem. According to World Bank, the fifth densely populated country with an assessed population of 213,235,0301 in the world is Pakistan (World Bank, 2019) and it will touch the figure of 242,234,000 by 2025 (United Nations, 2019). The population is more prominent in big cities of Pakistan where extensive rural-urban migration led to unplan placement of people in and around town, turned into slums or Katchi Abadis (United Nations, 2016).

It was observed that due to extensive growth in the population and speedy development in a socio-economic scenario, there is a constant increase in water demand from water resources, whereas water supply in basins is inadequate, thus aggravating the paradox between water supply and consumption at community and household level. For this huge population, water demand also increased that exerted more pressure and stress on water resources. As a result, the issue of water scarcity originated, once Pakistan a water surplus country now declared a water-scarce country by the UN and will lose its dampness till 2025. There are several factors for this grievous situation of water, water demand increased due to urbanization, excessive population growth, inconsistency in rainfall, climate change, and careless behaviour of people (Jan *et al.*, 2020).

Policies have been adopted by the government like raise water prices and replacing old rusty and outdated water appliances with new sophisticated ones to manage the water consumption in high social classes households, but these were fruitless efforts to control water use in low-income households as these are non-affording to these setups (Roy *et al.*, 2018). Such detached manners failed to bring in water-saving habits in day-to-day affairs. Previously the actions like the spread of water-saving knowledge among masses were adopted, but it appeared useless to bring in water-saving behaviour.

The most potential factor to understand the significance of water is the domestic setups, and family structure is a prominent influence that may move the water-saving practices. The people at the domestic level's decision to conserve water depends on their understanding or awareness of water importance and what steps to be taken to lessen the water demand. To see water conservation behaviour is if an individual observed that people around her or him conserved water, then it positively influenced their attitude and behaviour to conserve. But the perception

that others around her wasted water then it may result in lesser effort on her or his part to involve in the pro-environmental act. We as humans always look for support from others or to find justification for doing any act. The behaviour may be influenced by subjective norms such as the pro-environment act. While our intention to perform any act to save our natural resources like water is important.

Aprile and Fiorillo (2017) believed that there are several socio-physiological factors like income, gender, age, jobs, previous attitude, subjective norms, intention, and knowledge to help in altering behaviour. The adopted practices at domestic setup stated the usage of water. It shows that each stride to sustain the God-gifted properties is determined by water end-user behaviour. By controlling water use, water users played a major role in water conservation that is the major issue of today's world. Water end usage behaviours stated the categorization of water utilization actions that occurred daily. This water end-user behaviour is more prominent in the domestic household sphere, where family members use water in different manners and for different activities. Everyone has his or her own water needs and use. Many factors affected water end-user behaviour in direct and indirect ways. The direct factor could be behaviour and surroundings (domestic indoor actions like shower, bathing, cooking) and other outdoor actions of watering plants, car washing.

In the household, if the mother indulged in the practices of lesser water use and its conservation, and it might move the attitude of the daughter or son to follow suit. In such a case, the role of significant other information on attitude and norms couldn't be neglected while formulating new policies and strategies related to conservation (Koop *et al.*, 2019). There is a common belief that for bringing change in water conservation behaviour, it is necessary to impart knowledge to the masses. It is common that if knowledge about particular actions or behaviour to engage women and men in conservation at the suitable time, these behaviours moulded the pro-environmental behaviour of both.

People in their daily water practices are not using water sensibility, water is not being treated as an asset but as a cheap good. It is high time to focus on the water scarcity issue that would soon be the talk of the town shortly. Besides its limitation, it is also important to deliberate on the possible strategies to save it. Parallel to technical strategies, it is essential to change the extravaganza human behaviour about water. It is a common observation that people are extravaganza in their water use and wasted it on impractical practices like using clean water to wash cars, courtyards, watered plants, and clean roads (Malik *et al.*, 2021). Water resources sustainability and conservation are crucial to controlling the water scarcity in the world today. Water conservation has been in discussion by policymakers, researchers, and other stakeholders from different perspectives to understand the sustainability of the environment by saving natural resources.

In a patriarchal society like Pakistan, where men have a leading role in decision making on every aspect, then in the household domain, though women are managing and dealing with water decisions about a technical solution for conservation of water and economic aspects are still the domain of men. That sometimes create hurdles for women to save water because if she doesn't have the money to buy tubs/buckets or to install water-saving apparatus at her home to curtail water use, her role in water-saving is fruitless. This study attempts to explore whether there exists a gender difference in residents of slums households in observing, perceiving, and curtailing their water use in the situation of limited water supply.

The households while doing water conservation, depicted behaviours that help to lower down the water use. The conservation behaviours are usually endorsed through restriction or effectiveness actions (Addo *et al.*, 2019). When we talked about restrictions in the conservation of water, the water end behaviour of short shower in place of long, to turn off the tap while brushing teeth, soaping face, and shaving, and performing dirty linen in the machine only when the burden is full. However, in all activities they perform, numerous psychosomatic and common influences are in it. To address this scarce water situation, it is the need of the hour to think and execute properly. Firstly, to seek the technical solution of the problem like the construction of more dams and reservoirs, to adopt better water management policies, use of more water-saving appliances, and the fixtures to save water but besides this, the main thing is the water end-use behaviour of the people that needs to be tailored and modified to achieve desirable results. Lahore is being selected as having the majority of Katchi Abadis, another reason to select Lahore as it is a thickly populated area as compared to other areas in Punjab. According to the Pakistan Bureau of Statistics (2017), Lahore is a densely populated area with more than 110 million.

## 2. Literature review

The previous studies have provided contradictory and supportive pieces of evidence that household water demand is affected by numerous psychosocial and demographic factors such as perception, awareness about the environment, trust in water management authorities and government, habits, norms, intention, attitude, and behaviour. Aprile and Fiorillo (2017) concluded that demographics, characteristics of dwellers, household composition, past behaviour, attitude, and habits influenced the water consumption pattern. Knowledge about the environment increases the water-saving attitude and has led to a decrease in the water use (Addo *et al.*, 2019) however, an increase in household income and education does not increase attitude to save water. Low water users are households with large families rather than the small and income and house size showed no significance in this regard. Sally *et al.* (2020) argued that the water demand and the user's overall behaviour led to the environmental protection. There is a link between age, income, education, other social aspects, and the environmental behaviour (Bedard & Tolmie, 2018; Maas *et al.*, 2017). The attitude of people and their interaction with their surroundings determined their pro-environmental behaviour (Blankenberg & Alhusen, 2019).

According to Aslam *et al.* (2021), the environmental awareness inculcates a healthy attitude among the people to curtail their water uses in an efficient manner. According to Maas *et al.* (2017) the individuals having knowledge in houses about water up keeping, consume reasonably a lesser amount of water than other people. Yuriev *et al.* (2020) believed that people who show concern for the environment, even practice water conservation. They developed the habit to consume water in a lesser amount than others who are careless about their environment, and they did not practice water saving. Many previous deliberations focused on the psychosocial aspects of humans to understand this phenomenon. The consumer attitude (Jakubczak, 2020), intervention strategies (Ehret *et al.*, 2021), and perceptions are important factors to reduce water use. All these aspects are linked to domestic water demand. These uses are of two types such as satisfying everyday basic needs and another one to satisfying discretionary needs (Yuriev *et al.*, 2020).

Other literature to observe the trend of water utilization in the household, discovered that older

inmates utilized excessive water than houses with few children, and fewer income households (Marzouk, 2019). If there are more members of the family, water consumption is more, even larger homes utilized more water. Income and family members greatly influenced household water usage. According to Ramsey *et al.* (2017), water-conserving behaviour is greatly influenced by financial position, age, social norms, and perception about one's actions. These factors can help to predict the water using behaviour as well as behaviour towards the environment of the household. Attitude is also a determinant to impact the intention of the household to save water (Koop *et al.*, 2019)

### **2.1. Gender, water conservation and households**

A lot of research tries to examine the gendered difference with regards to habits, attitudes, knowledge, and behaviour towards water saving. A lot of previous studies tried to develop the link between gender and water. There is a common saying that women are the natural water managers in the domestic setup. Tong *et al.* (2017) investigated the outcome of awareness, perceptions, and behaviour mechanism of the individual towards water conservation practices (WCPs), as well as the effect of gender (i.e., Male and female) on residents' water conservation practices in China. Women used more water and assumed more WCPs as compared to men. Though both women and men are pleased to assume water-saving practices, this might be due to the fact of being more aware of reasons to preserve water. Women showed positive social norms to save water. Men at the job, on the other hand, conserved water if they are conflict-free (Li *et al.*, 2019).

Boylu and Gunay (2017) also established a link between the water conservation and the socio-demographic factor of gender. Women normally showed an optimistic attitude towards the environment than men (Blankenberg & Alhusen, 2019). A lot of concern was expressed by the womenfolk towards their environment and the rising issues, but they were less likely to involve in safety matters towards their ecology (Ramstetter & Habersack, 2020). The females played a greater role to save and protect their surroundings more than males (Fauconnier *et al.*, 2018). Kuo *et al.* (2018) described that gender variance among males and females in homes and at working areas is due to the fact of individual preferences, male and female's household residents exhibited changed capabilities to do domestic chores and labour, and that such variances helped to adopt different tasks and that penchant to do domestic and outside working is the freewill of females. Wichman (2017), stressed perception of males and females about water and its optimal usage is important because it helps to mold the attitudes and behaviors of households to undertake water-saving practices.

By the background of this situation, the present study tries to comprehend and describe the practices the domestic setup in slums espoused to conserve water. Even it was seen in the existing study the effect of the demographic feature of the age, education, family size, residential area, residential size, and income of households on water-saving behaviour. Water is scarce in slums, so water conservation is significant to sustain water availability. It is imperative to make observations and analyses about the water-saving or wasting behaviour of water as their water end behaviour. The methodology and population of the research are under discussion in the next segment. The pragmatic approach to people's perception of water and benefit of saving, water influence, water significance, barriers to limit water-saving, needs and practices of household, practical steps to overcome scarcity. Discuss existing water facilities and approach for improvement is discussed in the last part.

### 3. Theoretical framework

Though different theories support the attitudinal and behavioural concept of the humans. The theoretical frameworks more suitable in the Pakistani context is the reason action by Ajzen and Fishbein (1980) and theory of planned behaviour. The trend was seen over the last decade that theory of Reason Action and Planned behaviour has been in practice for environmental research and for predicting people behaviour, but it is an important framework for better socio-environmental sustainability (Ding *et al.*, 2018; Li *et al.*, 2019). Reason action theory preached that behaviour is not regulated by attitude; but it is one of two precursors such as attitudes and subjective norms that demarcated intention that helped to controls the social behaviour (Ajzen & Madden, 1980). The behaviour of a person is regulated by intention. Attitude and norms made behaviour.

There are two self-regulating causes of the intention. Firstly, the personal factor of the attitude that mentions the step by which an individual has a positive or negative assessment of the particular behaviour in the query. If a person recognizes that by performing a positive behaviour, s/he will have a positive attitude to do that behaviour. If the behaviour is negative, s/he will have a negative behaviour to do that. Secondly, the social factor the subjective norms, if a person perceives the social pressure compelled her/him to do or not accomplish the behaviour being expected. If individual notices that the significant others (her/his family, peer group, and colleague) perceive the particular behaviour as positive, then positive norms might be likely or otherwise.

Koop *et al.* (2019) discovered that the attitude of a person, the subjective norms, and water-saving acts, applied a constructive approach to their intent to save water in a residential place. Besides that, the attitude of people and their water-saving doings were positively affected by their concern for the environment, but it exerted an inverse influence on their subjective norms. While another study focused on the effect of attitudes, subjective norms, perceived behavioural control, knowledge, and existed commitment towards water-saving activities under planned behaviour theory (Perren & Yang, 2015).

The precursor of the Theory of Planned Behaviour (TPB) is the theory of reasoned action when variables like control belief and behaviour control were incorporated into Theory of Reasoned Action (TRA) (Ajzen, 1985). According to TPB, the intention of an individual predominately relies on attitude, perceived behaviour control, and norms, these are all based on belief structure, normative, control, and behavioural beliefs.

Ajzen (1991) believed that if an individual showed sturdier intention to complete a precise behaviour it means that there is a great possibility that the behaviour will be accomplished. Intentions are prophesied by attitude toward the behaviour, supposed endorsement of the behaviour by people around (subjective norms), and the perceived control a person has over the routine of the perceived behavioural control. These variables of the TPB are significant to envisage behaviours for instance water conservation practices in households (Ding *et al.*, 2018; Li *et al.*, 2019).

At the household level, if a member observed that the act of saving water brings positive outcomes for his/her household and others then she will save, or in other words, if water wasting brings negative outcomes, her intention and norms will not perform that act, this

showed the attitude of the person. While for norms, if her family member as significant others see water saving as positive, then she will develop the intention and positive subjective norm if significant others perceive the water-saving as negative, her intention will not adopt those norms. So, both personal and social factors are perceived as positive and healthy then individuals might show the norms to indulge in it. The people may have no predetermined intentions to conserve water but maybe effortlessly willing to, or should an occasion or situation arise to save it.

#### **4. Method and material**

An exploratory qualitative research design was employed to study the households. The interview is the method to fold data. 24 face-to-face semi-structured in-depth interviews were held with both men and women of different age groups (young 18-25 years, adult 26-60, and elderly 60 and above) from households within 12 different slums of Lahore, 12 interviews each with men and women.

##### **4.1. Participants**

The respondents were selected through purposive sampling technique (the sampling of people with specific characteristics), it helped the researchers to recruit respondents with diverse characteristics, such as from different Abadis, from different age groups, different occupations, educational levels to take part in the interviews, to get a complete perspective on the water phenomena (Padgett, 2017). The study participants were approached through prominent persons and teachers to whom researchers as being academicians developed contacts. These contact persons introduced the researchers to the community to develop proximity with them. The purpose of the research was shared with people. Interviews were held with participants at their convenient time and day.

##### **4.2. Instrument**

A semi-structured in-depth interview guide was prepared for data gathering. It was developed based on related literature reviews and opinions of the respondents during a pilot study. Study participants were asked about their knowledge and awareness of water supply and consumption, then were asked about conservation, the ways, and strategies to save water in their households. To check the household's knowledge on how to save water, they were inquired regarding acts they performed to protect water. At that moment another vital query linked to deciding assuming acts or water-conserving actions was made.

The interviews were done in the native language i.e., Urdu and Punjabi. Every interview lasted for 60-80 min. Notes were taken during every interview and even audio-recorded with due permission from participants. All interviews were transcribed, verbatim, and translated into English. Every interview was read carefully and several times.

##### **4.3. Ethical considerations**

Informed consent was taken from all respondents of the study, it was ensured by the researchers to maintain the confidentiality and anonymity of all respondents. The purpose of the research was briefed to the participants by researchers. The researchers thanked the study respondents

for their valuable time and energy. The research procedure was reviewed and permitted by the review board of Lahore College for Women University, Lahore.

## 5. Results and analysis

Table-1: Socio-demographic features of the respondents of study (n=24)

Characteristics	n	%
<b>Gender of the Participants</b>		
Male	12	50
Female	12	50
<b>Age of the Participants (in years)</b>		
22-31	4	16.6
32-41	4	16.6
42-51	6	25
52-61	5	20.8
61-65	3	12.5
>65	2	8.3
<b>Education of the Participants</b>		
Below Matric	8	33.3
Intermediate	9	37.5
Graduation	7	29.1
<b>Monthly family income</b>		
50,000-60,000	13	54.1
40,000-50,000	5	20.8
30,000-40,000	6	25.0
<b>Family Members of the Participants</b>		
8-10	10	41.6
6-8	6	25.0
3-6	8	33.3

Out of 24 participants, 12 (50%) were males, 12 (50%) were females, 2 (8.3%) males were under matric, 6 (25%) male participants had done intermediate, 4 (16.6 %) did graduation. While 6 (25%) females were under matric, while 3 (12.5%) did inter, and 3 females had BA degree. Women were within the age group (35-65), males were within the age group (22-60), 13 (54.1%) participants had monthly family income between 50,000/- to 60,000/-, 5 (20.8%) within 40,000-50,000, while 6 (25%) had below 40,000 family income. 10 (41.6%) respondents had 8-10 family members; 6 (25%) respondents had 6-8 members in the family while 8 (33.3%) participants were managing 3-6 family members (Table-1). A total of 6 themes have been identified from the data analysis, which is illustrated in detail below and exemplified verbatim from the interviewees.

### 5.1. Perception about water supply and benefit of water conservation

It is interesting to note that both men and women in the slum households have different perceptions regarding the water use and its saving benefits. It was gathered from the facts that the majority of men and women participants are clear and sensitive towards the water use, the advantage of its protection, and the disadvantages. The finding shows that all respondents expressed that water quality and quantity were not good in their areas. It was difficult for people to meet their domestic water needs as the water supply was limited and full of

impurities like mud, dirt, foul odour. In case of water shortage, women were helpless and were dependent upon their male members to fetch it from other places in town. Sometimes male members did it willingly and sometimes they even got annoyed and even a few cautioned the women over it.

A small group of study participants, who were educated, young exhibited their anxiety about the supply of impure water in their domestic setup and were forced to fix filters as they are unable to drink such water and not even used it to cook food. But others did not afford it and were forced to use unhygienic water for drinking and cooking.

One educated respondent T, a male, the teacher in his forties at school replied:

“Though we consumed water for drinking and cooking use. But many times, due to foul door and unclean water supply, we are helpless especially the women folks to fetch water from other areas, and even we are compelled to buy the bottled water from the shops to satisfy their domestic and personal needs.”

Over the situation of water supply in the area, participants were not very happy over it as according to the situation became worse in the summertime as the water supply was limited, people due to heat used more water for showers and drinking purpose.

One of the female respondents Q with 12 years of education replied:

“Water is in a limited amount in hot weather. Water intake increases. Masses due to scorching heat and high temperature used more water for taking a shower and in the bathtub. As a result, water is not available for other activities. We are unable to store water. I put the tub under the water tap to store water. It has involved a great deal of time to fill up the bathtub.”

To see people's perception about water conservation, both male and female respondents were well aware of the term conservation and its practices. The majority of respondents showed their willingness to conserve water and maintain the habit to use it economically. Both were securely aware that in the upcoming days, the water situation will further degenerate. The water situation happened to be extremely poor and inadequate in urban slums. To stress on such a situation, all respondents agreed that there was water scarcity in their area that was tactfully be addressed by water conservation strategy because it is the only potential solution to overcome water scarcity. The majority of the respondents valued water.

One of the study participants, a young retailer with graduation opined:

“Water conservation means saving water. We try to save it, because if we waste water, it is we who will suffer in the long run, in coming days there will be an acute water shortage in the area, if we take action now, we will save it for our future generation, we need to change our habits of wasting water to water-storing.”

Another woman participant, an old lady, and a widow with matric stated:

“Water conservation is saving water. We use water very carefully. I have heard on TV that the water situation in Lahore is very bad, there is water scarcity and people are saying that we have a limited amount of groundwater. In the coming years, we will have no water.”

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

Almost all of the respondents settled that they faced severe water issues in slums because of the uneven supply of water that they were unable to finish their day-to-day works in inadequate water. Moreover, the problem of load shedding also intensified the issue. They enlisted a list of issues being faced by them.

One of the male respondents in his late thirties stated:

“Country is facing unsanitary of water. Unhygienic water causes many infectious diseases. It also has a scarce water supply for households, industries, and irrigation. Our fields are parched. It has also faced electricity load shedding. Due to load shedding tube wells do not work.”

One of the female graduate respondents in their early forties replied:

“Water is unhygienic. It is not suitable for drinking. It is the main cause of many infectious diseases. It is too scarce for domestic purposes and farming. There are fewer plantations and vegetation due to the limited water supply. Our fields are turning into deserts. This state of affairs is unsafe for our nation in the coming time.”

Both the male and female participants opined that many people were not saving water in the households and often wasted it while passing through their homes water was streaming down from the gates into the streets. Women were very not very happy while voicing their feelings as they were the foremost sufferers. Uneven supply of water was mentioned by the whole community as the big problem which was there because of disrupted electricity supply and ruptured water channels. The breakage of tube wells and due to delay in its fixing made the situation worse.

Different behaviour and opinion were shown by both genders as though male respondents, know their problem, but their problems orbited their self as they failed to take baths, to wash and do ablution. While women's problems revolved around their home, we were unsuccessful to do home chores like cook, cleaning, and wash. Females expressed their enthusiasm to resolve the water issue as the earliest by storing water in tubs for immediate uses.

## **5.3. Attitude towards significance of water**

The attitude towards the significance of water, another theme, presented the views of people on the benefits of water as a vital component for life. Even the participants anticipated to carry the messages on conservation of water to their extended families and the community to regulate the water consumption during daily practices of cleaning, shower taking, flush use, etc. the individuals were well aware that in the coming time, it will not be easy to get sufficient water

in the water scarcity spell and they desired that the community should show better behaviour to address this issue.

One of the study old respondents replied with confidence:

“Human survival is not possible without water. We cannot live for more than a few days without water, which makes it the second most important substance in our body, next to oxygen. We need to protect it for ourselves and others. We do not necessarily misuse it.”

People understood that survival without water is not possible, and water is a lifeline. Nevertheless, it is an irony that in Pakistan attitude of the people is very casual towards the water as it is inexpensive and why we save it. Many of the residents never closed their taps during outdoor water acts such as courtyard cleaning, washing, sweeping, and car washing to protect water use and try not to waste it needlessly. People showed indifferent attitudes towards those who have limited water supply or no water for their basic requirements. Due to the unconcerned attitude of people in Katchi Abadis, water used to stand on streets that portrayed the boredom of people on water shortage and its significance for life.

One study respondent in her forties replied ironically:

“Though everybody knows that water is life and without water, we cannot live. But water is cheap, and the government did not charge more for it so people do not trouble themselves to conserve its use. They do not feel the need to sustain it for their future generation and even for their people.”

However, the healthy thing was that it was conveyed by all participants that people find it necessary to control the water use and even asked the government to fix water meters at homes to check and control the water consumption.

One of the study respondents, a male in a heavy tone said:

“We cannot save as much water as we need, especially for washroom and cleaning purposes. In the community I have seen people washed their cars, courtyard often and there is water standing in the streets and sometimes it is difficult to walk. And due to excessive use by my neighbours, I find less water in my home. We try to store water in the underground water tank.”

From the gathered facts, it was revealed that both men and women acknowledged the significance of water and its proper use. It was recognized as important for existence. And it is well-thought as life. It was mentioned as oxygen for the human body. Many educated, middle-aged and employed participants articulated their annoyance about why the community wastewater. The public used to waste clean water for outdoor water use instead of greywater after laundry.

#### **5.4. Limitation to conserve water**

Another major theme, the limitations to conserve water expressed that the households in slums

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used to encounter deteriorated water state and problems throughout the water gathering exercise. Difficulties were multi-layered. The mainstream of women study participants was bitter over the circumstances and conveyed a list of hurdles they encountered during limited water supply.

The majority of women and a few of men participants expressed that on many occasions they have to plead with their neighbours with bores or electric pumps fixed in their households for buckets of water. Occasionally they simply dishonour the request that devastated them all. Womenfolk have to rise early at dawn to gather water from public taps in water peak hours that triggered irritability during the whole day due to distressed sleep. It was further added that it appeared strange to observe women bringing heavy water loads from far-flung places and the public used to gaze. Furthermore, families have no proper storage apparatuses to stock water. Contrariwise, men were in authority to take decisions and finance controller. This was ascribed and learned that menfolk have all access to finances while females did all water management at homes.

One of the respondents, a female in his late thirties, an educator replied:

“Water is not easily available in the area. We have to beg our neighbour who has a boring or electric pump installed in their houses for the provision of water. Sometimes they flatly refuse, and we find no water. It has made our life hell. No food, no clean-up, no laundry, no hygiene.”

One more male respondent a student expressed:

“We don’t have enough utensils to collect water. Water has to be brought in from outside for household chores. When I am at college, my mother requested the neighbouring son to bring it from the public tap. My mother has to suffer a lot; sometimes she is unable to cook food and to make the meal for family.”

Women participants were unpleasant as they faced a bulk of problems as they were powerless to store and control water as per their requirement, particularly for the restroom and for laundry due to financial dependency on men. They were helpless, desperate, and have to wait for hours for water restoration earlier.

One housewife argued:

“I have to get up early in the morning to store water as the water supply is in excess at that time. This task is very disturbing and caused many health issues. I even express bad mood throughout the daytime.”

One more female participant grumbled over the male in their area and expressed:

“We do not have enough utensils to collect and save water, it is difficult for housewives to bring water from the remote. As in our society, people use to stare at females who go out of their homes. When this water situation happens to me, I wait for my son to get home from school to bring it from the public tap on the nook of the street.”

### 5.5. Personal norms, intentions and adopted strategies

The respondents were aware of their water practice and accordingly showed norms and intention to properly do them. Some participants used less water while others used excess water for wash, bathing, and laundry. Scarce participants were in habit of taking an extensive bath, some have a habit to take short showers, they also put off the tap during daily practices. Mainstream utilized a small amount of water. The cultured and educators not only desired to conserve water but they wanted to carry the messages to save water to their families, scholars, and even their age group as they well-conceived the fact that there will be a water scarcity in the coming days to come.

One of the study participants, a woman in her fifties, who experienced water shortage problem when she was a baby, replied:

“I am a low water user as I memorized it from my mother and even our religion, Islam taught us to keep water and did not waste it unnecessarily. My mother was very strict about water use, she always asked us to use water conversely because when I was a little girl water in my parents’ house, water has been rarely available and we had a water tank built on the rooftop of our house for water storage and my parents used to gather water in it through an electric water pump early in the morning.”

Over the question of frequency and length of time used for shower, majority of the study participants used to take bath five times within week during hot spell whereas this practice changed to fewer showers in the wintertime. It was gathered from the facts that men took shower for 5 minutes than women who preferred a longer bath.

One of the study participants, a man, and an educator in his late thirties said:

“I took shower for a shorter time as I desire to be a role model for my kids and students to follow cause and don’t waste water unnecessarily. It is even in Quran to save water for future generations. Moreover, what will we do if we don’t have this blessing.”

On the other side, the women participants showered for 30-40 minutes, and they took it four times a week in summer and one time a week in winter. One of the participants, a widow in her fifties opined:

“I normally use to take bath with a bucket. I consume two buckets at least to clean myself as I have to shampoo my long hair, moreover, water is in plenty and cheap. Our religion asks us to keep ourselves clean.”

To learn about the strategies employed by households to conserve water, about their habits and routines. It was inquired from study participants, how they did their clothes washing, either it was hand washed or laundry through the machine. It was extracted from data that households did washing practice in diverse ways.

One of the men in his forty described:

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“We do laundry by machine. As we have two families living in one household, so we wash clothes in two washing machines as it becomes easy for the housewives to wash a big pile of clothes at one time and to avoid electricity load shedding issue.”

One of the study participants and irritable female said:

“I manage the washing by hand as my laundry machine has worn downward. I pile up water in tubs for washing clothes and then drop the foul water and rinse clothes in running water.”

To see if any water-saving act was conducted during the laundry, nothing unusual was found out the majority of men and women did it twice a week, while only a few study participants did it daily.

One of the study youths, whose mother practiced clothes washing once a week replied:

“My mother does laundry once a week as she opines that it is unnecessary to do laundry every day for the few clothes as it wastes time, money, water, and detergent.”

It was obvious from the data that those households which practiced the laundry once a week, were saving both water and electricity. Therefore, it was assumed that they did a little effort to conserve water by waiting for the right time when their washing load was full. It was seen that few men respondents were in habit of using greywater after laundry and showers for other outdoor activities like watering plants and cleaning rickshaws or vans. They even confessed that they waited for the feasible time for washing when their load was full to save water and other efforts.

Though men and women were not different in their water use however the women were doing household water chores, so they consumed more water. The only difference was visible in shower duration, men consumed 5 minutes for bathing while women took 20-30 min to do the same practice. Education played a role too because educated females preferred a shorter shower. Women were not in habit of reusing wastewater like men. Men were even good to do laundry once a week.

### **5.6. Behaviour to resolve scarcity and attitude moulding**

Another theme that emerged during data analysis was “Behaviour to resolve scarcity and attitude moulding”. All respondents considered water conservation as the best possible action to overcome the shortage of water and to withstand water supply for the present population and the upcoming generations.

One of the study participants, a male schoolteacher replied:

“We should follow water reservation methods. Water conservation can help resolve the water scarcity issue in the future. So that the water we conserve can

be available in this area where do not have water. If we save water, it will be available for use in the future too.”

It was disclosed by study participants that people saved water in their homes to meet water needs in case of load shedding, tube well breakage, pipe leakage, or shortage in the water supply to circumvent hardships. Such behavior appeared to be an upright water-saving routine. Families stock water in different water vessels such as drums, cisterns, buckets, jugs, tubs, cans, and other cartons. There is a question of affordability on part of the household. Some residents were able to store up to 60 to 70-liter water and while others can save more than stored 200 liters of water.

One female study participant said:

“We do not keep the tap running. If any tap leaks, we promptly replace it. We keep kids under watch while they are bathing so that they may not wastewater.”

Another respondent in her fifties replied enthusiastically:

“We store water. I hold two water tanks in our house within which we store water and keep it stored in bottles and tubs. Though the dengue team asks us to store, no water in tubs for a longer time to prevent dengue larva, we have no other option, we cover the storing utensils and store water for not more than 48 hours.”

Over the query of bringing any change in the attitude of family members to lower water use, One of the participants, a male replied:

“Though I try to inculcate this thing in my family member's mind that we should use water economically. My family members are also using water carefully. I know we will not have water in excess in coming days but unfortunately, I have no time to spread this message to others.”

One of the housewives suggested:

“We know that water is indispensable for a lifetime. The water meter is necessary because people will utilize less water when start paying? Laundry should be performed in a pail instead of a tap. We can change water usage, but it is a matter of will. We use water with caution. We have only WASA water. We bear no other source of water. I teach my grandsons to save water and utilize less water for bathing and showering. And even I ask my daughters-in-law to store them, but one of my daughters in law tries to store the water but another one uses water in excess.”

It was suggested by few female participants that it was wise to do washing in a tub rather than through a hose/tap. Men were also opined that we should lessen our water wastage and also consume the greywater to watering plants, clean patios, and automobiles.

One of the men respondents replied:

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“If there is a large water bill for its purpose and even meter has been installed in houses like gas and electricity, then people will use it less and do not even try to squander it.”

Another study participant replied:

“Water meter is necessary because people will utilize less water when start paying for the amount of water they use. Rinsing should be performed in a pail or else of a hose/tap.”

Another study participant, a shopkeeper said:

“Government should prepare programs for the preservation of water. There should be no compromise with corruption. In cities, the number of tube wells should be increased. The government should educate people about the scarcity of water. The government should take steps to provide clean water. There should be no Corruption in WASA.”

It was painfully pointed out by participants that the government is not honest in undertaking any efforts for the water problem. It must excavate more wells. It should alter the rusted, worn-out, clogged pipelines so people get a clean water supply. The government is not constructing new dams for water storage.

## **6. Discussion and findings**

In Pakistan, water is supplied to people through two sources of water i.e., the surface drinking water supply is coming from the ground and surface water from rivers or canals. But the water quality is getting worse due to impurities coming from the industrial and agricultural waste (Deeba *et al.*, 2019). Due to such a situation, people are preferring bottled water for drinking purposes. It is the basic human need globally to have access to an adequate supply of safe drinking water. But adequate and safe water supply is out of reach for millions of people in underdeveloped countries.

Finding suggest that though men and women believed that water supply is limited 80% of the respondent, who were young and educated, perceived the importance of water and water conservation. Educated and middle-aged men and women wanted to save water so adopted norms like to take short showers to save water and but due to limited water supply, even turned off the water tap while brush, shave and soap their face. They even repaired the leakage in taps. Females were more prudent in their water use due to knowing water shortage. Used many practices to protect water, they teach their children to consume less water and did not waste it. It was gathered that excessive water was consumed by women and older population than men and children due to the fact former performed more water activities than the latter.

It was supported by Sally *et al.* (2020) that men and children spent more of their time in offices and educational institutions than women and older people, who stayed in homes and used more water for cooking, toilet flushing, washing, and bathing, etc. It was in line with. Low water users are households with large families rather than small and income and house size showed no significance in this regard (Yuriev *et al.*, 2020). Theory of reason action & planned behaviour theorized that intentions are caused by attitude and subjective norms, and behaviour

is affected by intention. So, the intention of women and men to conserve water is controlled by their attitude and norms which in turn affect their behaviour to impart the saving messages to their children. It means that the behaviour of old or young, men and women is measured by their decision to save water rather than the resources, skills, or changes required to do that specific attitude (Ding *et al.*, 2018; Li *et al.*, 2019).

However, the working men did not help their women to overcome the limited water issue in homes when they did not get water from outdoors especially after a hectic job. This finding was in line with Wichman (2017), who stressed in their study that the perception of people about water and its optimal usage is important because it helps to mould the attitudes and behaviors of the households to undertake water-saving practices. This is following the findings of Bedard and Tolmie (2018) and Maas *et al.* (2017) who established a link between age, income, education, other social aspects, and environmental behaviour to the water use. Here, theory planned behaviour believed that behaviour of households is happened to be linked with intention and behavioural control to bring change in attitude to save and control water use (Yuzhanin & Fisher, 2016).

Different behaviour and opinion were shown by both genders as though male respondents, know their problem, but their problems orbited their self when they failed to take baths, to wash and do ablution. While women's problems revolved around their home, we were unsuccessful to do home chores like cook, cleaning, and wash. Females expressed their enthusiasm to resolve the water issue as the earliest by storing water in tubs for immediate uses. This is in line with Tong *et al.* (2017), who believed that men are inclined to undervalue the water consumption in the kitchen, but they didn't contribute more to kitchen doings in slums due to social patterns and practices. Though women are the actual water managers in homes they were not involved in water managers for outdoor water use.

It was reported that many residents wasted a lot of water and even not closed their taps during outdoor water while cleaning the courtyard, sweeping, and car washing. People showed indifferent attitudes towards those who have a limited water supply. Due to the unconcerned attitude of people in Katchi Abadis, water used to stand on streets that portrayed the boredom of people on water shortage and its significance for life. This finding is in line with Addo *et al.* (2019) that knowledge about the environment helped to develop the water-saving attitude that led to a decrease in water use. Here TPB believed that intentions are the predictor of attitude, if households showed intention to save water, then their attitude will be positive. Otherwise, if they did not show any intention so their behaviour will not be positive to care for others in the neighbourhood to save or prevent water wastage.

It was found out that men were the bread earners and taking all decision making and women-only managed household chores. Women suffered more hurdles to save water. Though women wanted to save water but were unable to do so due to socio-economic hurdles. This finding is contrary to be finding of Tong *et al.* (2017) as though both women and men are pleased to assume water-saving practices, this might be due to the fact of being more aware of reasons to preserve water. Similarly, TPB or TRA believed that though positive past behaviour and habit are important to predict anyone intention to perform a positive task but sometimes in presence of compulsions an individual is unable to do so as in this case women wanted to protect water, but economic deprivation did not allow them too.

It was perceived by households that laundry with regular containers can be easily assessed. So, their minimal laundry practices showed their conserved behaviour and habits. This outcome was in line with Aprile and Fiorillo (2017). It was even supported by Yuriev *et al.* (2020), who believed that there is a link between attitude and behaviour to protect water. The washing machine was afforded by many, few preferred to do handwash just to clean delicate fabric. This is well supported by Ajzen and Fishbein (1980) that environmental attitudes are significant for intentions and pro-environmental behaviour. So, the individuals with an optimistic attitude towards the environment are more expected to have intentions to perform pro-environmentally, and these intentions could interpret into acceptance of environmentally responsible practices like fewer laundry practices with a load full.

Though it was found out that different containers were being used to save water in slums to fill washing machines by women. But after laundry, greywater was not reused to clean yards or vehicles or to flush the toilet because women believed that it was not fit as it contained dirt and soap. While few educated males used greywater from showers and machine wash for watering plants. This finding is in line with Taher *et al.* (2019), who believed that people are reusing the grey water from machine wash for watering plants and gardens.

## **7. Conclusion**

This research found that besides other factors, the water-saving perception, habits, attitude, intention, and behavioural control play a significant role in shaping the social behaviour and determining the effectiveness of water-saving or water conservation plans and strategies. The Katchi Abadis' residents did understand that there must be an improvement in their water usage quantity. They knew that all the households should adopt water-saving habits like washcloths in buckets instead of hose/tap and lessen water wastage or re-use the grey water for watering plants, clean courtyards, and vehicles that could help them to satisfy their water needs in the future also.

It was concluded that household's attitudes, intention, subjective norms, perceived behavioural control to save water, bring out their intentions to protect water use. The water-saving act and attitude of people are positively related to their concern for the environment but negatively related to their subjective norms. Like in one of the findings, women wanted to conserve water but with money and deprivation of decision-making role, they were unable to buy any water storing tanks to do so.

The majority of people were in households unable to control their water wastage, so there is an option, if there is a big water bill for water use and even a meter was installed in houses like gas and electricity, then people will use it less and do not even try to waste it. A water meter is necessary to control water usage. Community-level storing facilities are not provided by the government and the community doesn't take any initiative to build any new water-storing facilities, the decade-old water storage big tanks have completed their age. The pipelines are rusty and even broken. The old storing tanks are not properly cleaned. The filtration plants installed by the government are either providing unclean water or no water at all. Few NGOs (Non-Governmental Organizations) and international IGOs have installed water filtration plants in the community but these are not enough for a huge population. People don't unnecessarily consume water.

Comprehensive and inclusive water policies are required to improve public understanding of water significance itself, its consumption, its conservation, and most of all its sustainability for future generations. All stakeholders-including people, government, civil society, religious leaders, water managers, media, and communities need to play their concrete role to prevent and control water misuse, creating awareness, correcting misconceptions, and misinformation regarding water resources importance and worth.

### **7.1. Limitations**

The research findings may not be the whole representative of Pakistan because this investigation was conducted in Lahore only. However, we selected a large sample size for a qualitative study. The purposive sampling might affect the generalization of the results. But readers keep that in mind that it is a qualitative inquiry. Various perspectives for analysis were made possible due to a heterogeneous sample.

The literature review and public opinion helped to develop the interview guide which allowed many relevant aspects, but the water situation is uncertain and rapidly changing with the passing time, so further studies are needed to be conducted to cover other areas and regions.

### **7.2. Recommendations**

This research recommended conducting future studies on the household practices of water in households with actual measurements, rather than self-reported data, it should assess and observe the actions and individual environmental values.

Even the researchers should deeply explore how the hurdles and water-saving messages affect the attitude, habits, and behaviour of people to conserve water. Future research should be conducted longitudinally to investigate the psychosocial variables used in the present research and would continue to be the same for alike activities. Additional studies in future should ponder on other factors such as demographic, social, and economic to analyse the water conservation behaviour.

It is essential to sightsee how the well-being can benefit an individual to alter their behaviour, as the plans mostly focus on knowledge, awareness, and suitable education when discussing this issue. Moreover, there is more room for the mixed-method or the triangulation studies in the future.

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