



RESEARCH PAPER

Role of Age and Education on Attitude and Habits of People in Katchi Abadis to Adopt Water Conservation Practices: A Gender-Based Difference

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ABSTRACT

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The focal point of this study is to see the impact of age and education on the attitude and habits of men and women in katchi Abadis towards water conservation in Lahore. Two squatter settlements were selected to make a comparison of water conservation attitudes and habits. For this purpose, a sample of 200 men and women was selected conveniently from both katchi Abadis. The Water Conserving Behaviour Scale and Water Conserving Habit Scale (Dolnicar et al., 2012) and the Scale of Household Water Conservation (Sathaporyajana, 2008) were employed in this study to collect data. Data were analyzed by using the t-test and ANOVA. The findings of the study indicate a significant difference between water-conserving attitude and age, the result also shows a significant interaction effect of residential type and education on water saving attitude. Moreover, findings also emphasized the need to design policies/plans to sensitize the public about water conservation and unnecessary water use and how to make it sustainable for future generations by tailoring the water-saving attitude and habits of households.

Introduction

It is globally recognized that water is the core and basic necessity for humans. Life is dependent on water and it is important for the communities, for the society, and future generations, and for the performances of normal practices. It is an economic resource that is used to sustain the society and economic development of people on earth (Kilic, 2008; Kumar, 2013).

It is argued that the existence of people is impossible in the present scenario in numerous aspects because they are over-consuming the water resources which in turn applying too much load on our natural resources and enforced harmful impacts on the environment. Which in turn affects the economy and health of nations (Backhaus et al., 2012). Water is satisfying different routine activities such as drinking, laundry, and it is even used in construction, care of animals for drinking and hygiene, for agricultural activities such as irrigation and crop growth, etc. Everywhere in the world, water-conserving and managing remain insecure due to water scarcity (Rosegrant, Cai, & Cline, 2002).

If an ideal use of the water source cannot be promoted, it is assessed that two-thirds of the world population will suffer severe water catastrophe in the upcoming age. This disaster will lead to water shortfalls by the year 2025 (Scanlon, Cassar & Nemes, 2004). Both water users and managements need to protect water (Olmstead & Stavins, 2009). It is the need of the hour to protect water assets (IPCC, 2007). It is observed that humans unconsciously consume water in the community. They do not treat water consumption as an activity, but as a tool to fill in other activities in households and communities (Medd & Shove, 2005). Either it is related to personal hygiene, washing clothes, brushing teeth, cleaning, mopping the floor, and carrying a long bath for body relaxation and gardening. It seems that it is necessary to save water at home for the sustainability of natural water resources (Boylu & Gunay, 2017).

Researchers studied that Pakistan is moving towards the situation of water scarcity as its water supply is less than 1000 m³ per person (Gardner-Outlaw & Engelman, 1997). This level is contrary to World Bank's set standard of the lowest threshold for water safety as 1700 m³ per person, water stress under 500-1000 m³ per person, and absolute scarcity as less than 500m³ per person (Bhatti & Nasu, 2010). But currently, the state is facing an alarming position of inadequate management of water resources rather than the state of affairs of lesser water level (Shah, 2010). The community can control the success or tragedy of water management as people are native water users as they utilize the main percentage of the country's total domestic water requirement. As the water demand is huge, any decrease in its use can protect a lot of water for the state (Chan & Nitivattananon, 2006).

It is argued that any activity to decrease water use can maintain the sustainability of water. Various socio-psychological factors influence water users such as age, education, family size, income level, use of water-saving fixtures, and attitude and habits (Inman & Jeffery, 2006; Clark & Finley, 2007; Corral-Verdugo et al., 2003). The review of literature has been done to develop an argument that there are gaps in knowledge related to the impact of age and education on the attitudes and habits of people particularly in the context of the katchi Abadis household.

The water situation is alarming in Pakistan. This area has less availability of water, and the condition will be further aggravated in the coming period. It was

accounted for by the World Bank till 2035 the situation is expected to further decline to 1000m³ water level in Pakistan (Briscoe & Qamar, 2006). According to Kugelman (2013), there is a possibility that fifty percent of the whole population will begin living in major cities until 2025 due to the rapid process of urbanization. Due to this, the existing infrastructure and natural resources are facing many challenges and put greater burdens predominantly on water supply and management. The water supply in urban areas is the main challenge confronted by Pakistan today. This situation is further aggrieved due to the ill-planned formation of katchi Abadis near the urban centers.

It became routine and discrete for people to consume water in their life for daily activities (Campbell et al., 2004). For these routine practices, people are not treated water in its true sense by treating it as assets but as a cheap commodity. It is the need of the hour to talk about limited water and to adopt remedial measures to save water. Besides the technological solution, human behavior needs to be changed and tailored. It is observed that people used to waste a large amount of clean water for useless practices like plant watering, car, courtyard, and road clearing. People should need to change this lavish water wastage by changing their habits and attitude. People with different socio-demographic characteristics like gender, age, educational background, family structure act differently towards water resources. So, it is high time to rethink the approaches of water provision and management and to create awareness among the community to conserve water.

This study investigated the impact of age (old, young) and education on water-saving attitudes and habits of men and women in katchi Abadis households in the slums of Lahore. Lahoris got water through two water sources the surface and groundwater (Malik et al., 2016). The katchi Abadis appeared in urban areas due to pressures exerted by massive population, limited fulfilment of basic facilities, fewer housing units, fewer jobs, high rural-urban migration, and a high crime rate. These Abadis have no exception to the problem of water scarcity (Adams, 2014).

Literature Review

This segment starts with the statement that human beings cannot survive without water on land and it is important to keep the proportion of water in nature to sustain earthly activities and natural resources. The researcher also reviews the literature to understand the factors associated with the water-saving attitude and habits of residents in their houses for the performance of day-to-day activities. These are the strong social and psychological factors that play a role in water-saving practices, even policymakers developed important policies and strategies to maintain water equilibrium in the environment by keeping them in mind. The variables like socio-demographic, psycho-social, behavioral, and set-up all affected the domestic water intake (Fielding et al., 2012). Households are the utmost judge of their water intake. If a strong culture of safe water use existed, people in that setup, in reality, utilized a smaller quantity of water as compared to those families where water-saving habits are non-existent (Gilg & Barr, 2006).

Many pieces of research focused on the attitude of people towards their environment and surroundings (Urban & Scasny, 2012; Welsch & Kühling, 2011; Whitmarsh & O'Neill, 2010). The societal, psychological, economic, and demographic aspects of people are the studied aspects in this regard (Christensen et al., 2004; Dunlap & Van Liere, 2008). Shove (2003) stated that there are several practices related to the natural environment, within which water-consuming practice for daily actions in the house is the most important one.

Likewise, previous researches also argued that households in urban areas used water in large amounts than people in other areas of the region. This water wastage can be avoided if strategies were organized to institute change in the attitude and perception of people (Hassell & Cary, 2007).

It is contended that every individual is different from other individuals in characteristics, so many researchers explored the impact of age on water saving and determined that aged people save more water than young (Gilg & Barr, 2006; Clark & Finley, 2007). There is a positive association between age and water-saving habits (Gregory & Di Leo, 2003; Mayer et al., 1999). The non-significant relationship between age and water conservation intentions was the outcome of another study (Lam, 2006). On the contrary, one of the studies established that old people show less intention to save water (Kantola et al., 1982). Retired persons used a great amount of water than anybody else as they expended more time at home (Lyman, 1992). One study by Davies et al. (2014) found that households with youngsters and mature individuals conserve more water, while teens usually consumed more water.

The other argument of the research is that education also has an impact on water-saving behavior, in this context, Clark and Finley (2007) in a study conducted in Bulgaria, tried to develop the impact of education, eco-friendly attitudes, knowledge, and distress towards water shortage in coming years of water-conserving intention. The other study by Lam (2006) while addressing the education and attitude aspect, established a positive linkage between education and water conservation attitude. The educated people showed a healthy attitude to keep water (Gilg & Barr, 2006). It was further investigated by De Oliver (1999) that families with more educated members responded better towards water-saving acts.

The argument that there is a connection between the habit of people and water use. A study by Gregory and Di Leo (2003) established that families with low water use show better attendance to water conservation matters are greatly intricate to decide on water use, and be likely to develop habits of less water consumption.

The researcher tries to argue that there is a difference in men and women concerning water-saving habits, attitudes and age, and educational context. Gender Water Alliance (2006) stressed seeing the gender-based nexus in water access; as women and men have different access to, and control over water (Bennett, Davila & Rico, 2005). Moser (1993) stated that men and women have different roles and statuses to hold within the households and have unlike power over water resources.

Females do household chores and the male main role is breadwinning. It was supported by Beal et al. (2013) that gender differences do exist in household water-saving activities as females and males have different habits, attitudes, and behavior to conserve and use water. A significant connection was observed between gender and education on water-saving habits, attitudes, and behavior of people (Gilg & Barr, 2006; Saphhous et al., 2012; Spike et al., 2011).

Hypotheses

Thus, the main hypotheses to guide this research are as follow:

1. There will be a significant difference in the water-saving attitude and habits of young and old.
2. It is expected that the mutual impact of age and residential setup significantly affects the attitude and habits to conserve water.
- 3). Educated residents will be significantly different from uneducated in their water-saving attitude and habits.
- 4). It is expected that the mutual impact of education and residential setup significantly affects the water-saving attitude and habits.

Material and Methods

This study used a survey design and was conducted in two katchi Abadis households in Lahore from November-December, 2017 to analyze the water-saving habits and attitudes. The sample size of 200 respondents was comprised of both men and women, young and old, educated and uneducated in katchi Abadis. The convenient sampling technique was used to draw data from 100 men and 100 women. The age group of respondents of this study lies between 18 to 65 years. For the gathering of data, developed scales of Water Conserving Attitudes and habits by Dolnicar et al. (2012) with 22 and 26 items respectively, were used. Past Habit sub-scale by Sathaporyajana (2008) with 12 items was used. The responses from these scales were measured based on 5 points Likert scale ranging from 1 (strongly agreed) to 5 (strongly disagreed). The Cronbach's alpha test was conducted to check the reliability of scales, the Past Habit scale has a Cronbach's alpha as .610, and Cronbach's alpha for Attitude scale as .620, and habits scale has a Cronbach's alpha as .610. The ethical considerations of confidentiality and taking informed consent from respondents were ensured during data collection. The data were personally collected by the researcher from households. Though demographic features of respondents (age, gender, education, income, family size, and occupation) were also asked, here only age and education were reported in figure 1 as the required criteria for this research. The SPSS was applied for the analysis. Statistical tests of the T-test, one way, and two-way ANOVA were applied to compare the mean difference between the two locales

Results and Discussion

Both vicinities were matched on socio-demographic characteristics, 50 males and 50 females each were selected from both localities. Demographic characteristics (detailed in figure 1) were comparable between locations. In the mainstream of women and men, 32-55 percent fall within 31-40 years. It is noted that 68% of the male and 88% of females were youngsters and fall in the age bracket of 19-40 yrs. As for education, the bulk of males 46% were under matric and female 31.1% of women did graduation.

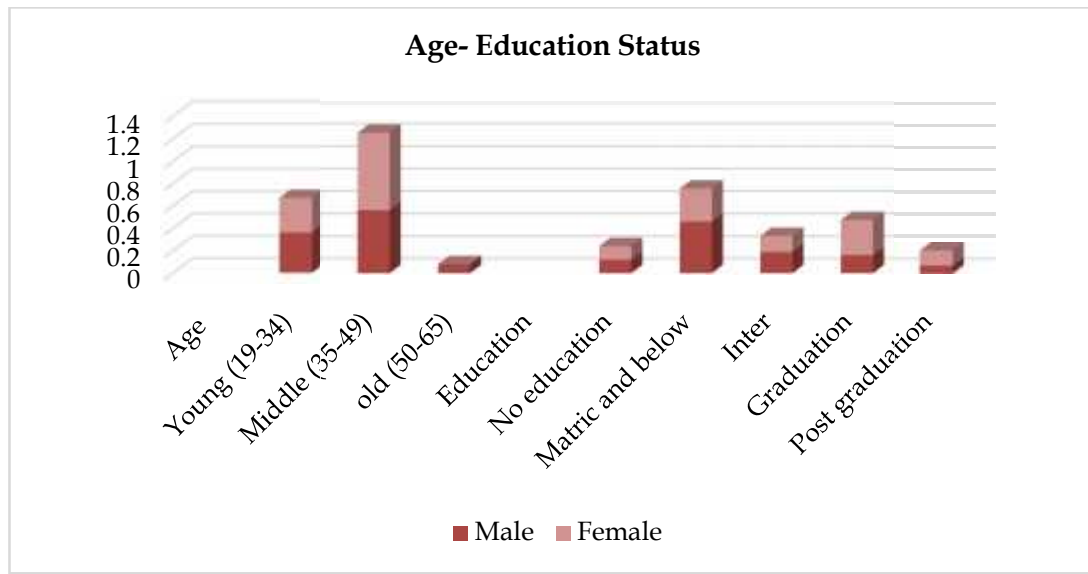


Figure 1: Socio-demographic Features of Participants

Water Conservation Attitudes

Figure 2 measured the water conservation attitudes of the participants from both Abadis. Various questions of attitude to conserve were inquired. The outcomes show that the mainstream 38 to 45 percent man and women considered water protection as their duty, females of Shah Jamal Colony (SJC) assumed water-conserving practices at their homes. 28 percent of the males were least-concern to save water as compared to 37 percent female who was at ease to conserve water. Females in Najaf Colony (NC) were more concerned about water shortage. The mainstream of 31 to 36 percent of men and women feel guilty to allow water to overflow the pot. The majority of men (32%) and women (37%) agreed to maintain positive attitudes towards water saving, it shows that female respondents of SJC showed a helpful attitude about water-saving than the male of both Abadis. The mainstream of respondents, 40% to 46% both men and women wanted to give extra care to saving, while, the bulk of males in SJC agreed that it was essential due to water shortage than females of the same area. A large group of men and women 41% in SJC respectively agreed to save water in their homes. The mainstream of man 36

percent and 29% female agreed that it was challenging to persuade people to protect water, even though 35% male and 42% female supported the idea to deliver the water-saving messages to their dear and near ones, in this context female of SJC were more active than male and female of NC.

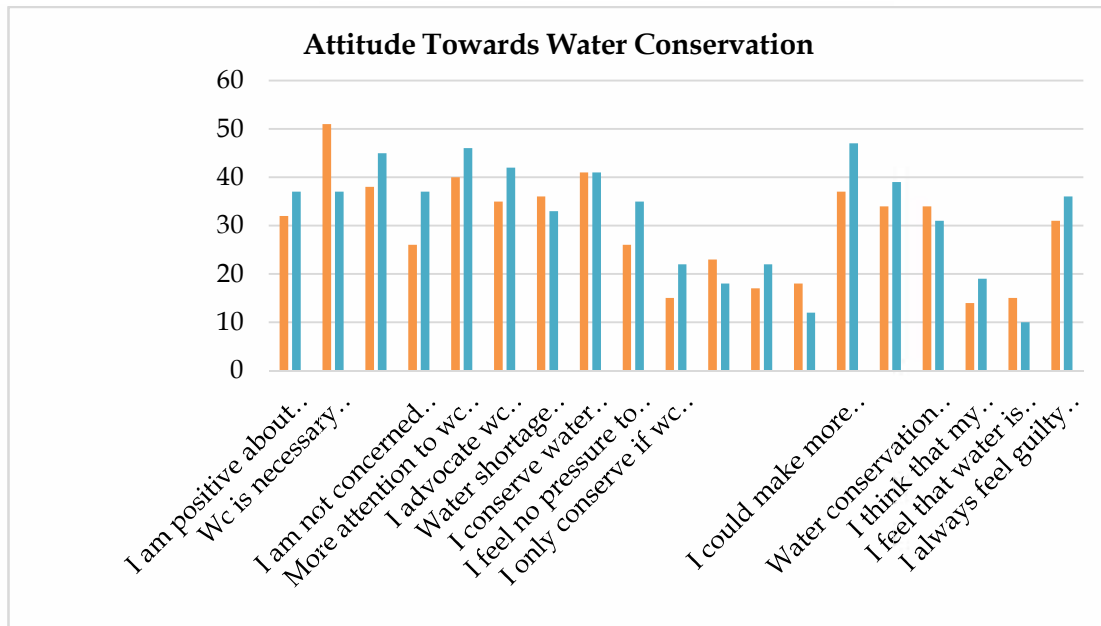


Figure 2: Gender wise attitude towards Water Conservation

The attitude to save water of individuals between both localities was considered utilizing univariate analysis.

Water Conservation Attitude and Habits- Men and Women

Table 1
Water Conservation attitude and habits - The women versus men residents

Variables	Male (n=100)		Female (n=100)		t (200)	p	95% CI		Cohen's d
	M	SD	M	SD			LL	UL	
At	71.21	9.89	72.12	8.58	-.689	.492	-3.49	1.68	.09
Ha	58.82	10.16	53.02	7.93	4.46	.001	3.24	8.37	.63

Ha: Habit At: Attitude

The t-test results exhibit in table 1, shows that the mean difference between both men and women is statistically significant ($M=58.82, SD=10.16$) women ($M=53.02, SD=7.93$), ($t=4.46, P=0.01$). Men are better at the adoption of water conservation habits and routines than females. While non-significant difference exists in men with M as 58.82, SD as 10.16 as compared to women with M, SD as 53.02, 7.93.

Individuals Water Conservation attitude of young and old residents

Table 2
Individuals Water Conservation attitude - The young versus old residents

Variables	Young (n=174)		Old (n=26)		t (200)	p	95% CI		Cohen's d
	M	SD	M	SD			LL	UU	
At	72.18	9.35	67.78	7.35	2.16	.031	-.395	8.40	.52

$P < 0.05$ At= Attitude

T-test was done to exam the assumption "young residents will be significantly different in attitude towards water conservation from old residents". The outcomes in table 2, display a significant difference in the score of age on the attitude that shows young people (19-40y) with $M=72.18$ and $SD= 9.35$), from old age (41-65years) with $M=67.78$ and $SD= 7.35$) and the value of $t=2.16$, $P= .031$. This outcome proposes that youngster displays a better attitude to practice and protect water as paralleled to older fellows. The effect size of .52 by the application Cohens d presented that the young were positive to protect water.

To test the hypothesis that it is expected that the mutual impact of age and residential setup will significantly affect the attitude to conserve water. The result showed an important impact of residential areas on attitude to safeguard water as [$F(1, 192) = 13.51, P=.001$]. The result also revealed a non-significant impact of age on attitude towards water conservation as [$F = (2,192) = .173, P=.841$]. Furthermore, result showed non-significant interactive effect of residential area and age on attitude to save water [$F = (2,192) = 2.19, P=.114$].

Water Conservation Habits

Figure 3, shows the water conservation habits of the participants from both Abadis. The mainstream of male 33 percent took short showers as likened to 29% of females who agreed to practice that act. About 32 to 34 percent of men and women respectively utilized a lesser amount of water for laundry. The mainstream of male's 27 percent frequently saves water as likened to 26 percent of females who do not maintain water. 32 percent of men always communicated the issues related to the environment to others than 30% females who certainly don't speak about an environmental subject. 29 percent of males always consumed the same amount of water to wash clothes irrespective of the bulky size of laundry than 24% of females were unsure of the quantity of water for cleaning garments. Whereas 29-32 percent of women and men constantly recycled the leftover from bath /basin/wash for new water practices. The mainstream of females about 48 percent and 29 percent of gents never reprocess greywater for outside usage. The majority of female respondents (44%) and (23%) male never recycle greywater from the shower for outdoor use. Respondents were asked to give evidence for water-saving acts assumed in the home. The mainstream of people in both squatters specified that they protect water in multifaceted ways, such as 24 to 35 percent of men and women always ensure that

taps do not trickle, males in SJC were better than females; 33 percent men and 26 percent women always practice the washing machine when it is packed with clothes, and 21 to 31 percent men and females customize less water to clean. 38% men and 33 percent women curtail toilet flushing, male in SJC were more concerned to reduce flushing of a toilet. 34 percent of men and 36 percent of women strongly agreed to close the faucet every time they open the tap. Males in NC favor the use of a dual flush toilet.

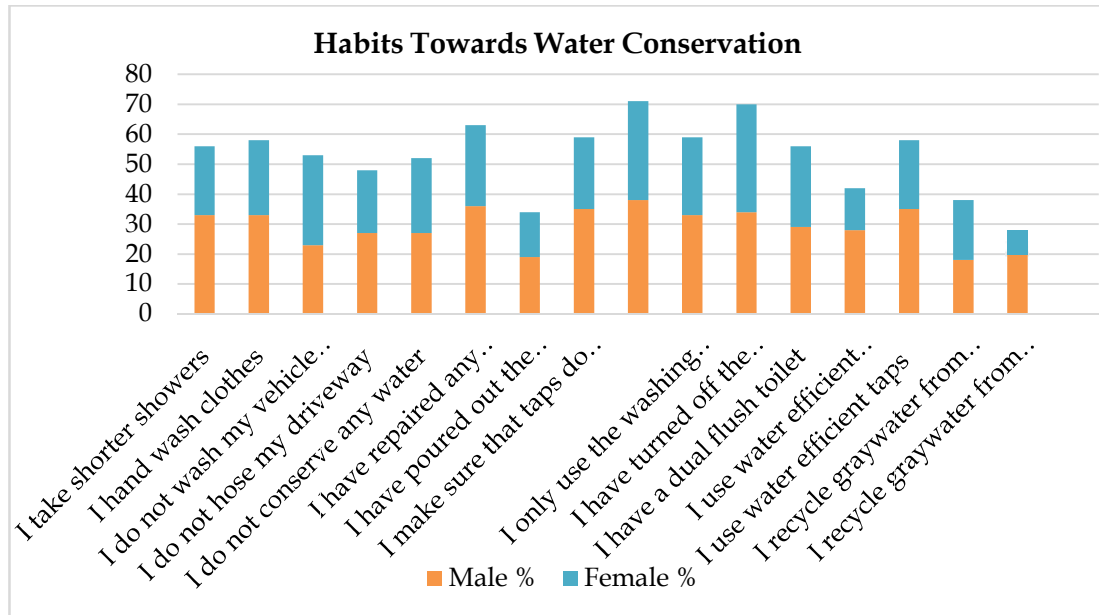


Figure 3: Gender wise habits towards Water Conservation

Water conservation habits between individuals of both localities were calculated by using univariate analysis.

Individuals Water Conservation habits of young and older residents

Table 3
Individuals Water Conservation habits - The young versus older residents

Variables	Younger <i>n=174</i>		Older <i>n=26</i>		<i>t</i> (200)	<i>p</i>	95% <i>CI</i>		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			<i>LL</i>	<i>UU</i>	<i>Cohen's d</i>
Ha	55.61	9.38	58.39	10.17	-1.31	.191	-6.95	1.39	.28

P < 0.05

To check the assumption of young residents to be significantly different in the habits to conserve water than older persons, the t-test was done and outcomes shown in table 3, displays that the mean change for a total of age groups demonstrate a statistically non-significant difference in the scores of a youngster with *M*=55.61 and *SD*= 9.38, older with *M*=58.39 and *SD*= 10.71, *t*=-1.31, *P*= .191. This

finding suggests that no difference between the youngster and older inhabitants to water-saving habits.

To test the hypothesis that it is expected that the mutual impact of age and residential setup will significantly affect the habit of water conservation. The result was not significant to find the impact of residential areas on habits to save water [F (1, 191) = 2.75, P=.259]. The result also revealed a non-significant impact of age on attitude to protect water [F = (2,191) = 1.46, P=.234]. Furthermore, result showed non-significant interactive effect of residential area and age on habits to save water [F = (2,191) = .933, P=.395].

For testing the hypotheses "Educated residents will be significantly different from uneducated in attitude towards water conservation" and "Educated residents will be significantly different from uneducated in habits towards water conservation". Test of one-way Anova was prepared to understand the discrepancy.

To test the difference between education, attitude, and habits to conserve water, education is statistically non-significant with habits to conserve water [F (4, 191) = .482, P=.748]. Furthermore, there is a statistically non-significant effect of education on water conservation attitude [F (4, 192) = .372, P=.828].

Individuals Water Conservation attitude - The education versus residential area

Table 4

Individuals Water Conservation attitude - The education versus residential area					
<i>Variables</i>	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>P</i>
Res_Area	470.173	1	470.173	5.951	.016
Edu_Level	287.011	4	71.753	.908	.460
Res_Area * Edu_Level	780.697	4	195.174	2.470	.046
Error	14774.754	187	79.009		

To test hypotheses, it is expected that the mutual impact of educational status and residential setup will significantly affect the attitude towards water conservation. It is expected that the mutual impact of educational status and residential setup will significantly affect the habits of water conservation. Two-way ANOVA was used.

The result in table 4, showed that there was a significant impact of residential areas on attitude to safeguarding water [F (1, 187) = 5.95, P=.016]. The result also revealed a non-important influence of education on attitude to conserve water [F = (4,187) = .908, P=.460]. Furthermore, the result showed a significant interactive effect of residential area and education on attitude to save water [F = (4,187) = 2.47, P=.046]. The post Hoc test was not conducted for education and residential areas as one of the groups has fewer than two cases.

For the hypothesis “It is expected that the mutual impact of educational status and residential setup will significantly affect the habits towards water conservation”. The result showed that there was a non-significant impact of residential areas on habits towards water conservation [$F(1, 186) = .088, P = .768$]. The result also revealed a non-significant impact of education on habits towards water conservation [$F(4, 186) = .716, P = .582$]. Furthermore, the result showed the non-significant interactive effect of residential area and age on habits to save water [$F(4, 186) = 1.193, P = .315$].

Conclusion

The research examined the impact of age and education on the attitude and habits to conserve water in slum residents in Lahore. The survey was done with families in Najaf and Shah Jamal colonies.

The finding of the research that men are better in water-saving habits than females and the men and women are same in water-saving attitude, these results are contrary to the previous findings that females show more water-conserving behaviors than their counterparts (Gregory & Di Leo, 2003; Spinks et al., 2011).

Another emphasis of the study is to evaluate the difference between young and old, male and female occupants of slums towards practices to protect the water so it was assessed that the mainstream of the woman 88 percent and men 68 percent were young (19-40 yrs.). The social demography of the people revealed that the bulk of the person falls within the 31-40 age bracket. The residents were not very educated, only 10.1% did post-graduation. A maximum number of the women were not educated as likened 46 percent men, who did matric and 31.1 percent ladies did graduation.

Concerning age, the young within 20-30 y shows a better attitude to conserve water, escorted by an added age group of 41-50 y, remarkably, the eldest folks showed less behavior to conserve water. It was supported by findings of a study by Makki et al. (2012) that older persons, who are retired, on pension and stayed at home most of the time utilized more water. A statistically important association is observed between age and water-saving (1% level of significance). These outcomes are supported by early researches (Gregory & Di Leo, 2003; Gilg & Barr, 2006; Clark & Finley, 2007). The data indicate that the teens curtailed their water use. As far as the non-significant mutual interactive effect of different age groups in both residential areas and on attitudes and habits to save water is concerned, it was contrary to the findings of Davies et al. (2014) and Clark and Finley (2007) that domestic zone with teens and elder folks are more likely to save water, while youths usually ingest extra water. Therefore, people over 70 years showed a greater prospect to safeguard water in the family.

To link the findings of education with some former studies, it shows that less education displays a positive and important association with water conservation (at

the 1% level). Thus, it discovers that persons who are more dedicated to protecting water are not very educated. This finding is contrary to the outcomes of the study by Lam (2006) who established a positive linkage between education and water conservation attitude. The educated people showed a healthy attitude to keep water (Gilg & Barr, 2006). It was further investigated by De Oliver (1999) that families with more educated members responded better towards water-saving acts. The woman, elderly, uneducated, property owner, jobless, pensioners save more water. This finding was supported by Walters (2014) that education is not a consistent forecaster to water-saving behaviors. This finding was in contrast to a study that showed that people with more education are more expected to involve in environment-saving habits (Berk et al., 1993).

Another important finding was that the katchi Abadis residents understand the importance of freshwater and reuse of the wastewater for watering plants and washing cars.

This small-scale study is an effort to help the policymakers to furnish policies and strategies for people regarding water usage and its curtailment by keeping in view the attitude and habits of young, middle age, and older water users in mind. Besides that, attitudes and habits of educated, highly educated, and uneducated persons are also different in water saving. The outcomes have a major contribution to the development of norms to create awareness, motivation, and persuasion among people for a minimal water utility to timely tackle the water deficiency issue in the coming years.

In areas, where there is a scarce water supply, especially the katchi Abadis, people wanted to save water and are saving water in drums, tubs, and utensils. They wanted to positively deliver the message to their kith and kin that water saving is the best remedy to resolve the water scarcity issue. This is very fruitful if water-saving slogans and messages are dispersed among people to show a positive attitude and habits to save water for future generations.

Recommendations

This study faced some limitations like only the attitude and habits of slum households were registered. It could possibly be done with middle and elite classes also. The duration of the survey was short to observe the behavior of people, it could be initiated for a long period to bring out more enriched data. Finally, the study only took into consideration a few weeks of water end usages of people rather than for months. A large-scale study in the future could easily overcome this deficiency.

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