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Assessing Adolescents' Knowledge and Awareness of Water Wastage and Conservation: A Study of Urban School Students

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Abstract

Groundwater levels in key agricultural and urban areas of Pakistan continue to drop by several feet per year due to excessive pumping. Water conservation awareness is the only solution to overcome this hazard. This study analyzed the awareness and baseline knowledge of adolescents regarding water conservation. For Survey Study "Stratified Random" sampling technique was adopted and the selection of schools was from District Faisalabad, by having 4 strata of different category schools. This research explored the need to save water as well as the baseline knowledge, attitude and behavior of adolescents towards water conservation. Results of this study showed that majority of the respondents agreed upon the fact that water conservation mainly refers to the reducing unnecessary water use while meeting needs. Most of the respondents were aware of the water wastage problems but there was a reluctance in adopting water conservation practices.

Keywords: Water Conservation, Adolescents, baseline knowledge, Pliability

Introduction

Water scarcity is a daunting situation that is already going on in Pakistan. The nation is ranked 14th out of 17 "extraordinarily high-water threat" nations including Saudi Arabia and other warm and dry nations. Over eighty percent of the whole populace inside the USA faces 'intense water scarcity' for at least one month of the year. In addition to surface water Pakistan's groundwater sources which are the country's last resort for obtaining water, are severely depleted particularly in order to supply irrigation water (Schnyder, 2017). If the scenario stays unchanged the entire United States may additionally face "water shortage" by 2025. Pakistan is India's lower riparian and 78% of Pakistan's water comes from there making the situation even more strategically challenging. Moreover, most effective two-thirds of available water is being utilized at the same time as one-third of the water is either lost or discharged into the ocean.

Umubyeyi (2016) said that to develop effective water conservation policies as well as strategies to encourage and change the water saving habits and behavior among the young generation comprising on both adoption of water efficient appliances as well as implementation of water saving practice there is a need to understand the user's perceptions, attitude as well as values. When there is availability of water everywhere and every time then it seems difficult to think about the water saving habits. When anyone faces the shortage of water at the time of need, then it can be noticed by a person that water conservation is essential.

Education to the people on how they can save the water during the daily activities can be a helpful step towards the water conservation. There are some reasons that show how to save

water which are changing the lifestyle for maintaining the resources for long run as well as recent calls to maintain water supplies suggestion. There should be reduction at the domestic consumption that offers the longest potential avenue for conservation as well as to understand the reasons why people do or don't engage in the water conservation practices (Newman, 2007). Pro environmental behavior has the smallest impact on the environment as this behavior is the propensity for acting in such a manner. This propensity gets influence through knowledge, attitude as well as behavior; the attitude is influenced by intention. Factual knowledge influences attitudes concerning the environment, social as well as moral values. For better understanding pro-environment behavior is essential. Precondition of environmental attitude is also seen as factual knowledge.

Current situation of Pakistan regarding is water stressed nation that is rapidly moving towards the high alarming water crisis situation also include the rapid alarming situation of worsening drinking water's quality (Ishaque, 2022).

In addition to the air, we inhale water which covers 71% of the Earth's surface is the most essential natural resource for human survival. Because it has such a significant impact on global public health and standard of living, it is necessary for all living things. In the present modern world water has become a matter of concern and international organizations like UN officially designating a yearly World Water Day observed on 22 March to aware people about importance of water. It is abundantly clear that a water-secure world is necessary for sustainable development. The management of the natural resources of fresh water in a sustainable manner, the preservation of the hydrosphere and the satisfaction of the human demand for fresh water both now and in the future are all components of water conservation (Zaafir, 2019).

According to (khan, 2020) for the promotion of industrial progress as well as maintaining cities water plays a very important role and is a potential component. According to researchers, due to the influence of climatic and socioeconomic factors are the factors in managing the freshwater sources that the policy makers are facing. Some researchers is of the view that freshwater demand is also rising and that the global population may face a shortage between 2010 and 2050. The major problem that the developing nations are facing is the lack of adequate water supply (Asim, 2012). The discovery of hazardous materials in water bodies caused by a variety of climatic and socioeconomic factors has placed water pollution at the center of international attention.

Literature Review

Awareness as well as attitude related to water conservation is viewed in previous research. How the public uses water is significantly researched by the various governments as well as authorities regarding water all over the country. There are some studies that disclosed the factors which affect the utilization of water utilization depending on the location, climate, restrictions regarding water utilization, as well as ownership of household water usage appliances.

According to (Umubyeyi, 2016) there were not found significant statistics in the people's willingness to pay more for the purposes of water or to accept water restrictions as a means of mitigating. For the useful baseline for the water efficiency in buildings the literature review provides the direction that technological involvements comprising on better plumbing, water saving products, fixtures as well as fittings. The savings levels are influenced by the technological fixes alone frequently suffice, and consumer attitudes and actions frequently.

After water conservation campaign every student becomes aware of the importance of water and water conservation. The students also came to know that if they want to raise their living standards then they have to use the water according to their needs. Water is essential to life because it provided the basic needs for life. If Pakistan's water availability keeps declining then

there will be more impact on school and education system as well as on agriculture and food supply (Boykoff, 2017).

Water has a significant importance (Bhutto, 2020) for health and standard of living. Approximately most of the people live that area where the water is scared. The United Nations estimates that improvements in water supply, living standards, and water appliances will lead to an increase in domestic water consumption of over 50% in developing nations. Some students were of the view that there will be impact on mobile and internet service.

Additionally, to offer people with statistics approximately water conservation practices, many government and private organizations are enforcing water conservation programs. For instance, the U.S. Environmental Protection Agency's companion software, Water Sense, offers resources for state corporations and citizens to conserve and recycle water (Sanders, 2019) determined water conservation techniques are related to attitudes and behaviors of environmental troubles, such as water troubles.

Behavior alternate and water safety are two subjects that are best just starting to be used in the identical communicate as scientists and educators discover methods to deal with water issues. Often literature in this intersection (Molle, 2003) tends to be dense and heavily reliant on social technological know-how principles. I endeavor for this literature evaluation to be a reachable summation of the applicability of behavior trade to water protection whilst still imparting depth and breadth of expertise without getting too caught up in technicality.

Research Question

RQ 1: What is the baseline level of knowledge of students regarding water conservation?

RQ 2: What is the attitudes, and behaviors of students towards water conservation?

Material and Methods

A cross-sectional survey was conducted to assess the water conservation behavior of the students by using a structured questionnaire. The targeted audience was the students (grades 6–10) and School staff (as facilitators and observers).

For Survey Study "Stratified Random" sampling technique was adopted and the selection of schools was from District Faisalabad, by having 4 strata of different category schools. Sample size (384) was calculated by using online calculator (Calculator.net)

The researcher produced a close-ended questionnaire, and it was distributed among school students to get their reaction.

Results and Findings

Given below, is the set of demographic and awareness level information collected from the students.

Table 1: Demographic Data

Statistics					
	Gender	Age Group	Grade of School Kids	School Type	Occupation of Family Head
<i>Valid Number</i>	384	384	384	384	384
<i>Median</i>	Male	14-15	8	Government	Workers
<i>Std. Deviation</i>	.500	.798	1.423	.695	1.128

The above table shows the complete data on gender, age group, grades of school kids as well as school type. The results show that there are 384 respondents, all the respondents responded to the water conservation campaign. There were 204 male respondents and 180 females in which all the male and female respondents responded. The age group comprised 11-12, 12-14, 13-14, 14-15 and 15-16 in which 120, 140 and 124 respondents included respectively. Grade of school

kids are comprised of grade 6th, 7th, 8th, 9th, and 10th. In grade 6th there were 80 students. In grade 7th there were 76 students, in grade 8th there were 76 students, in grade 9th there were 76 students as well as in grade 10th there were also 76 students. In above table there were three types of school Government, private as well as semi government school. In Government school there were 160 students, in private school there were 170 as well as 54 students. In above table there were occupations of family heads also included. There were four categories businessman, worker, and professional as well as others were included. There were 100 businessman, 150 workers, 34 professionals as well as others were 100. All 384 respondents provided complete data on gender, age group, grade, school type and family occupation (no missing values) confirming a clean dataset for further analysis. All 384 respondents provided complete data on gender, age group, grade, school type, and family occupation (not missing values), confirming a clean dataset for further analysis.

Table2: Response of respondents regarding their understanding about Water conservation

Response Option	Frequency	Percent
<i>Reducing unnecessary water use while meeting needs</i>	170	44.3%
<i>Storing water for future emergencies only</i>	100	26.0%
<i>Increasing water supply through dams</i>	50	13.0%
<i>Avoiding the use of groundwater</i>	64	16.7%
Total	384	100.0%

The above table shows the results of Response of respondents according to the statement "Water conservation mainly refers to, 44.3% respondents were agreeing that Water conservation mainly refers to reducing unnecessary water use while meeting needs. 26.0% respondents showed that Water conservation mainly refers to storing water for future emergencies only. 13.0% respondents showed that Water conservation mainly refers to increasing water supply through dams while 16.7% respondents showed that Water conservation mainly refers to avoiding the use of ground water. So, it can be concluded that 44.3% Water conservation mainly refers to reducing unnecessary water use while meeting needs.

Table 3: Response of respondents regarding water wastage habits and practices

Response Option	Frequency	Percent
<i>Washing vegetables in a bowl and reusing water</i>	100	26.0%
<i>Leaving the tap open while brushing teeth</i>	200	52.1%
<i>Collecting rainwater for plants</i>	50	13.0%
<i>Using buckets instead of hose</i>	34	8.9%
Total	384	100.0%

The above table showed the results of the Response of respondents according to the statement "Which situation shows water wastage most clearly?". 26.0% respondents showed that washing vegetables in a bowl and reusing water situation shows the water wastage situation most clearly. 52.1% of respondents showed that leaving the tap open while brushing teeth situation shows the water wastage situation most clearly. 13.0% respondents showed that collecting rainwater for plants shows the water wastage situation most clearly. 8.9% respondents showed that using buckets instead of hose shows the water wastage situation most clearly. So it can be concluded that 52.1% of respondents agreed that leaving the tap open while brushing teeth situation shows the water wastage situation most clearly.

Table 4: Responses about reason of Groundwater reduction

Response Option	Frequency	Percent
<i>Water extraction exceeds natural recharge</i>	30	7.8%
<i>Rainfall has completely stopped</i>	220	57.3%
<i>Rivers absorb groundwater</i>	70	18.2%
<i>Groundwater is unlimited</i>	64	16.7%
Total	384	100.0%

Table above shows the results of the Response of respondents according to the statement 'Groundwater reduction happens mainly because', 7.8% respondents showed that groundwater reduction happens mainly because of water extraction exceeds natural recharge. 57.3% respondents showed that groundwater reduction happens mainly because of rainfall has completely stopped. 18.2% respondents showed that groundwater reduction happens mainly because of rivers absorb groundwater while 16.7% respondents showed that groundwater reduction happens mainly because of groundwater is unlimited. So it can be concluded that 57.3% of respondents agreed that groundwater reduction happens mainly because of rainfall has completely stopped.

Table 5: If water becomes scarce in your area, what should be the first response? Attitude (Theory of Planned Behavior)

Response Option	Frequency	Percent
<i>Reduce daily water use at household level</i>	170	44.3%
<i>Wait for government solutions</i>	50	13.0%
<i>Increase water storage only</i>	100	26.0%
<i>Ignore until it becomes severe</i>	64	16.7%
Total	384	100.0%

The above table showed the results of the Response of respondents according to the statement "If water becomes scarce in your area, what should be the first response"? 44.3% respondents showed that if water becomes scarce in your area, the first response should be to reduce daily water use at household level. 13.0% of respondents showed that if water becomes scarce in your area, the first response should be to wait for government solutions. 26.0% of respondents showed that if water becomes scarce in your area, the first response should be to increase water storage, while 16.7% respondents showed that if water becomes scarce in your area, the first response should be ignored until it becomes severe. So, it can be concluded that 44.3% of respondents showed that if water becomes scarce in your area, the first response should be to reduce daily water use at household level.

Table 6: If water tariffs are increased to discourage excessive use what is your opinion?

Response Option	Frequency	Percent
<i>It is justified to promote responsible usage</i>	130	33.9%
<i>It may work but unfairly affects low-income families</i>	170	44.3%
<i>It will not change people's behavior</i>	30	7.8%
<i>It is unnecessary and should not be implemented</i>	54	14.1%
Total	384	100.0%

The above table showed the results of the Response of respondents according to the statement "If water tariffs are increased to discourage excessive use what is your opinion, 33.9% respondents were of the view that it will justify promoting responsible usage If water tariffs are increased to discourage excessive use. 44.3% respondents were of the view that it may work but

unfairly affect low-income families if water tariffs are increased to discourage excessive use. 7.8% respondents were of the view that it will not change people if water tariffs are increased to discourage excessive use. 14.1% of respondents were of the view that it is unnecessary and should not be implemented if water tariffs are increased to discourage excessive use. So it can be concluded that 44.3% of respondents were of the view that it may work but unfairly affects low-income families if water tariffs are increased to discourage excessive use.

Table 7; If respected community leaders promote water conservation, you would most likely

Response Option	Frequency	Percent
<i>Feel encouraged to follow their guidance</i>	230	59.9%
<i>Consider it but not necessarily change behavior</i>	70	18.2%
<i>Think it is only symbolic advice</i>	54	14.1%
<i>Ignore the message completely</i>	30	7.8%
Total	384	100.0%

The above table showed the response of respondents according to the statement if respected community leaders promote water conservation, you would most likely, 59.9% respondents showed that if respected community leaders promoted water conservation, you would most likely feel encouraged to follow their guidance. 18.2% of respondents showed that if respected community leaders promoted water conservation, you would most likely consider it but not necessarily change behavior. 14.1% of respondents showed that if respected community leaders promote water conservation, you would most likely think it is only symbolic advice while 7.8% respondents showed that if respected community leaders promoted water conservation, you would most likely ignore the message completely. So it can be concluded that 59.9% of respondents showed that if respected community leaders promoted water conservation, you would most likely feel encouraged to follow their guidance.

Conclusion

Environmental advocacy frequently entails educating the public approximately environmental problems, together with pollution, deforestation, climate alternate, and biodiversity loss. Advocates encourage people, corporations, and governments to undertake practices which can be much less dangerous to the environment, such as lowering waste, protecting electricity, and the usage of renewable sources.

A key aspect of environmental advocacy is running to shape environmental guidelines and policies on the neighborhood, countrywide, and worldwide stages. This can involve lobbying for more potent environmental legal guidelines, opposing harmful tasks, and advocating for responsible aid control. Environmental advocacy pursuits to encourage human beings to take action to shield the environment through whether or not character lifestyle adjustments, network involvement or political engagement.

Additionally using mass media can be very beneficial for elevating attention regarding water sanitation which must be achieved simultaneously by way of spreading these facts across diverse social media structures and through using social media influencers who can reach a wide target audience.

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