

A Study on Perceptions About Water Pollution Among University Students in Kashmir, J&K

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Abstract

The freshwater on the earth is about 3% and due to increase in water pollution levels and climate change, this small percentage of fresh water is decreasing continuously. The current study conducted in Kashmir valley intends to evaluate the University students' awareness regarding water pollution in order to show the environmental education contribution in reducing water pollution. The study was conducted in Higher educational institutions of Kashmir valley in J&K region by field questionnaire survey with 400 students from various universities of Kashmir valley. The self developed validated questionnaire used in this study was divided according to the pollution causes into industrial, agricultural and sewage water pollutants. The data collected was analysed using suitable statistical tools. The study revealed that majority of the students male as well as female students have high interest in environmental conservation, yet, a lack of education in general environmental education, as the current educational curriculum focuses on theoretical aspects more than the practical ones. The study further revealed that the media role is inactive concerning environmental awareness of water pollution. It is concluded that our study provides a scientific view of policy makers for potential future conditions to find solutions that achieve sustainability goals. A water secure world can reduce the poverty, advances education, and increases living standards of people.

Keywords: Kashmir; Agricultural pollution sources; Environmental awareness; Industrial pollution sources; university student's awareness; water pollution.

Introduction

Water which covers 71% of the Earth's surface is the most vital element of nature for human survival on earth besides the air we breathe. It is essential for all forms of life as it heavily influences public health and living standard on earth. 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 clear that sustainable development will not be achieved without a water secure world. The conservation of water includes all the policies, strategies and activities to sustainably manage the natural resource of fresh water, to protect the hydrosphere and to meet the present and future human demand of fresh water. In a latest study

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conducted (Khan et al., 2020), it has been reported that water is an essential component contributing to continuing life on planet earth, existing the cities and prosperity the industries. In another study (Yasin Osman et al., 2019), it was found that managing freshwater sources are a significant issue for policymakers under the impact of climatic and socio economic factors. In the literature (e.g., Fenu & Mallocci, 2020; Zubaidi et al., 2018), we come across various studies which reported that fresh water demand is increasing and between 2010 and 2050 global population may face shortage of fresh water (Zubaidi et al., 2018). The developing countries are facing numerous challenges especially the water supply systems are inadequate (Awoke et al., 2016; Zulu et al., 2020). It was found (Hasan et al., 2019) that water pollution has been in the centre of international attention because of detecting hazardous materials worldwide into water bodies, resulting from different climatic and socio-economic factors. The fresh water sources with good quality represent a high priority to people so protecting the quality of water by collecting and treating the domestic and industrial wastewater is very important to the environment and human health in urban areas (Al-Mamoori & Al-Maliki, 2016; Kiguchi et al., 2016; Noorhosseini et al., 2017).

In urbanization, people from rural areas move to the cities in search of a better life. This leads to a dramatic increase in the number of people living in urban areas. This results in an exponential increase in cities and towns, which puts immense strains on the land and natural resources. As it is, the natural resources are facing serious deterioration issues in view of the unthankful pillaging by humans. The amplification of water needs, the lack of sewage infrastructure, and the lack of wastewater treatment facilities adversely affect water resources and adversely affect the environment and ecology. The urbanization process converts agricultural land, rural areas, and wetlands into paved and impervious urban areas (Sharma et al., 2020). Behavior that is pro-environmental is characterized by the tendency to act in a way that is least harmful to the environment. Knowledge, attitude, and intention all affect pro environmental behavior. According to the theory of reasoned action, attitudes impact behavior and are mediated by intentions. Attitudes towards the environment are determined by the factual knowledge about the environment, social and moral values, as well as by the intentions to act in a sustainable way (Niyaz et al., 2019). A variety of solid, liquid, and gaseous wastes are continuously discharged into the waterways. Pollutants make contact with waterways from a number of sources,

including point sources (especially wastewater discharges), non-point sources, and other diffuse sources. Most of the lakes and ponds in major cities have been severely polluted. Economic activity has been affected by water pollution, making it a major challenge. The severity of the problem and the losses incurred are serious and widespread, this has enormous impacts because of its immediate and direct effects on the human health and livelihood, which we'd rather call survival. The increasing and never-ending demand for clean and pure water is a problem that is gaining a significant attention globally as a result of population growth, droughts and industrialization (Dar et al., 2017).

Kashmir worldwide known for its natural resources is facing pure water scarcity due to influence of many factors including climate change. It is very important to assess the level of awareness of water pollution among university students and its impact on mitigates this problem. The current study explores university students' awareness in Kashmir as this kind of studies have not been conducted recently. The role of higher education in rising awareness can be evaluated and present study could be a platform for studies in the future regarding this topic. The results of our study may be very beneficial to the government to adopt mitigation plans to solve pollution problems.

Materials and Methods

In the current study conducted in Kashmir valley, 400 university students (selected via online/offline mode), studying in various Universities of Kashmir valley were chosen at random for this study. To collect information a well-designed validated questionnaire was used. The students who participated in this study were given a verbal explanation regarding the purpose of present study and were assured that confidentiality would be maintained throughout the study. The data collected using simple random sampling technique, was tabulated and analyzed with the help of standard statistical tools.

Results and discussion

The data presented in Table 1, reveals that in response to statement 1, i.e., is it permissible to throw auto lubricants in sewage pipes, majority of the respondents (57.5%) said yes thereby showing poor knowledge about pollution. In response to statement 2, i.e., Does the agricultural activity cause water pollution, majority of the respondents (63.5%) said yes thereby showing good knowledge about

pollution caused by agricultural related activities. In response to statement 3, i.e., Does the media have a positive contribution in raising environmental awareness, majority of the respondents (58.5%) said yes thereby showing positive response to the environmental awareness by media. In response to statement 4 i.e., Is the car wash water in the residential areas a correct habit? majority of the respondents (61.0%) said No, thereby showing good knowledge about the negative consequences of car washing in residential areas. In response to statement 5, i.e., Is the plants' water being treated in your province? majority of the respondents (61.0%) said Yes, thereby, showing positive response regarding the water treatment facilities. In response to statement 6, i.e., Does the agricultural activity deplete the oxygen of the aquatic organism? majority of the respondents (43.5%) said yes, thereby showing the good knowledge regarding the negative impacts of agricultural runoffs into the water bodies. In response to statement 7, i.e., Does the factories/automobile workshops affect the river water? majority of the respondents (78.5%) said yes, thereby the good knowledge regarding the negative impacts industrial and other effluents into water bodies. In response to statement 8, i.e., Is there a need to prevent the drainage of plants water in the river, majority of the respondents (47.5%) said yes, thereby showing positive approach towards prevention of drainage directly into water bodies. In response to statement 9, i.e., Does the power plants affect water quality? A good number of the respondents (38.5%) said yes, showing good knowledge about the pollution of water due to power plants. In response to statement 10, i.e., Does the wastewater deplete the oxygen of the aquatic organisms, majority of the respondents (84.5%) said yes, depicting well awareness regarding the role of waste water in oxygen depletion of aquatic organisms. In response to statement 11, i.e., Does the agricultural activities increase the growth of some plant, majority of the respondents (73.5%) said yes, thereby showing good knowledge about the cultural eutrophication. In response to statement 12, i.e., Do you feel concerned if the wastewater went directly into the river? A good number of respondents (59.5%) said yes, thereby showing concern regarding water pollution. In response to statement 13, i.e., Does wastewater affect aquatic life, majority of the respondents (87.5%) said yes, thereby showing good knowledge regarding the affects of water pollution on the aquatic life. In response to statement 14, i.e., Do you think that there is an urgent need to raise environmental awareness? majority of the respondents (79.5%)

said yes, depicting positive approach towards the prevention of water pollution by raising the environmental awareness. In response to statement 15, i.e., Do you concern about water pollution? majority of the respondents (68.5%) said yes, depicting a good approach towards the ill impacts of water pollution.

Table 1: General Perception of water pollution among University Students of Kashmir.

Statement	Response		
	Yes (%)	No (%)	No Idea (%)
Is it permissible to throw auto lubricants in sewage pipes?	57.5	30.5	12.0
Does the agricultural activity cause water pollution?	63.5	26.0	10.5
Does the media have a positive contribution in raising environmental awareness?	58.5	23.5	28.0
Is the car wash water in the residential areas a correct habit?	11.5	61.0	17.5
Is the plants' water being treated in your province?	63.5	28.5	18.0
Does the agricultural activity deplete the oxygen of the aquatic organism?	43.5	27.5	29.0
Does the factories/automobile work shops affect the river water?	78.5	14.5	7.0
Is there a need to prevent the drainage of plants water in the river?	47.5	30.5	22.0
Does the power plants affect water quality?	38.5	32.5	19.0
Does the wastewater deplete the oxygen of the aquatic organisms ?	84.5	7.5	8.0
Does the agricultural activities increase the growth of some plant ?	73.5	12.5	15.0
Do you feel concerned if the wastewater went directly into the river?	59.5	8.5	32.0
Does wastewater affect aquatic life ?	87.5	6.5	6.0
Do you think that there is an urgent need to raise environmental awareness?	79.5	9.5	11.0
Do you concern about water pollution?	68.5	12.5	19.0

Results and discussion

The data shown in Figure 2, revealed that the major of the respondents rural (31.5%) as well as urban (28.0%) reported that quality of drinking water in their area is adequate whereas as rural (19.5%) as well as urban (17.5%) reported that quality and

supply of drinking water is poor and only rural (8.0%) and urban (9.5%) reported that quality of drinking water is excellent.

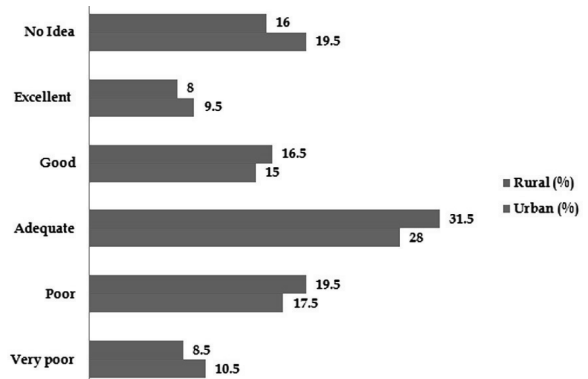


Fig. 1: Perception of Students towards quality of drinking water in Kashmir.

The data shown in Figure 2, revealed that the major causes of water pollution as per respondents understudy are Urban waste water (23.5%), followed by poor drainage system (21.5%), agricultural activities around water bodies (21.0%) i.e., water pollution is caused by excessive use of pesticides and other chemicals/manures, industrial/business activities near water bodies (19.0%) and easy access

to livestock in water bodies (15.0%). The results of our study are in agreement with the earlier study (Niyaz et al., 2019).

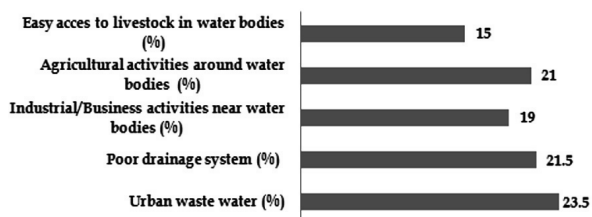


Fig. 2: Perception of Activities that cause water pollution.

The pictures 1, below show the drainage problems around major water bodies of Kashmir. The J&K government has spent millions of rupees on the construction of water tanks and filtration plants, but many of these schemes are either defunct or do not function properly. Despite billions of rupees spent on the maintenance of Dal Lake over the last three decades, the Lakes and Waterways Development authority, a government owned body, is yet to find a solution to the pollution problem in Kashmir. It is expected government in future will take adequate steps to tackle this issue.



Picture 1

The pictures 2, below shows some improvement in water flow/quality. In the picture people are shown fishing in running water in Srinagar. It is

expected government will take more adequate steps in future to protect the water bodies, the soul of Kashmir from pollution.



Picture 2

The pictures 3, below shows the role played by youth, NGOs and government in order to protect the water bodies. It is expected government will

take more steps in future to protect the water bodies, the soul of Kashmir.



In the literature, we come across many reports showing that drinking water is linked with an increase in risk cancer and other diseases. In a report published in Indian Journal of Medical and Pediatric Oncology in October 2010, 389 of 432 cases of primary malignant brain tumors were reported to be those of orchard farm workers as they were directly exposed to various pesticides and drinking contaminated water. The figures are risen now as per latest statistical reports and the most affected districts in Kashmir were reported as Anantnag, Baramulla, Budgam and Shopian. In Jammu & Kashmir, every day, women folk especially girls are forced to travel a long distance through dense forest to collect water for themselves and their cattle. In remote hamlet of J&K, dozens tribal girls have dropped out of school as a result of difficulty in obtaining portable water.

Conclusion

Water resources pollution and its effects and the Global water crises have grave consequences on communities' health and safety, so, to solve environmental problems, they must be recognized. According to a UN report, in the world around 844 million people do not have access to basic drinking water. In the Global change in precipitation, increase in temperature, melting of glaciers, rising sea level waters, displacement of people, irregular monsoons cause an extraordinary threat to human survival. The distribution of drinking water got effected by climatic change, melting of glaciers, besides domestic factors. Despite the fact that Kashmir has one of the longest total lengths of rivers and canals, still facing water crisis. To tackle the drinking water crisis in Kashmir policy intervention is required.

Our study indicates that there is a significant weakness in awareness of the damage caused by agricultural activity, industrial pollution, sewage and the pollutants that negatively affect the aquatic environment. The results revealed that a lack of education in general and environmental education, as education focuses on theoretical aspects more than the practical ones. It is noticed that water resources pollution is one of the most challenging environmental problems due to its impact on societies' security, especially developing ones. The researchers suggest that to deal with glacier melting threats and scarcity of drinking water, traditional ground water structures like dug wells and springs can be built in Kashmir valley to develop the ground water resources in valley. In 11 Indian states as per Central Ground Water Board, a government body, there is a state ground water department, a nodal agency for ground water investigation and ground water structure. The valley of Kashmir should have also ground water department to investigate ground water and keep an eye out for illegal activities that degrade the ground water in Kashmir. It is concluded, if the university students were knowledgeable and become involved in environmental issues through being taught about water pollution, it is expected they could potentially make a great impact. Therefore, current research recommends adopting compulsory environmental courses for university students to reinforce the idea of sustainable development.

Conflicts of Interest

The authors declare no conflict of interest of any kind.

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