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Studies on awareness of drinking water management among educated people of Maharashtra

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Abstract
Water in adequate quantity and quality is essential for survival of human life. India, one of the fortunate countries as far as fresh water resources are concerned as we received fresh water through rain every year. However mismanagement and over and unbalanced use of water specially treated drinking water is the main cause of present drinking water problem and scarcity. Appropriate management of water resources is crucial for future economic development and protection of human health and life itself. Many human uses of water are known to have some impacts on the quality of aquatic environment results in pollution and decrease in the available quantity of fresh water. On this background it is very important to study the level of awareness about water conservation among different people.

Keywords: drinking water, respondents, questionnaire, people

1. Introduction
Water is life as it begins with water and ends without it, this intimate link with life made water the most vulnerable element in human environment to be polluted first and most severely. Though life is dependent on water and in nature water exists in great variety of forms as clouds, rain, snow, ice, and fog. However, strictly speaking chemically pure water does not exist for any appreciable length of time in nature. Even while falling as rain, water picks up small amounts of gases, ions, dust, and particulate matter from the atmosphere. As it flows over or through the surface layers of the earth, it dissolves and carries with it almost everything it touches, including that which is dumped into it by man. These added substances may be arbitrarily classified as biological, chemical, (both organic and inorganic), physical, and radiological impurities. They include industrial and commercial solvents, metal and acid salts, sediments, pesticides, herbicides, plant nutrients, decaying animal and vegetable matter, and living micro-organisms such as algae, bacteria, viruses. These substances may give water bad taste, colour, odour, or appearance, and also cause hardness, corrosiveness, staining or frothing which may damage plants, animals and transmit disease. Today the quantity and quality of available water is gradually decreasing, aggravating the situation. Therefore water treatment becomes very essential before its supply and distribution. Secondly due to pollution water shortages in India will become more pervasive by 2025 and would stress human and economic development.

Water scarcity is the lack of sufficient available water resources to meet the demands of water usage within a region. It already affects every continent and around 2.8 billion people around the world at least one month out of every year. More than 1.2 billion people lack access to clean drinking water[1].

Water scarcity involves water stress, water shortage or deficits, and water crisis. While the concept of water stress is relatively new, it is the difficulty of obtaining sources of fresh water for use during a period of time and may result in further depletion and deterioration of available water resources[2]. Water shortages may be caused by climate change, such as altered weather patterns including droughts or floods, increased pollution, and increased human demand and overuse of water[3]. A water crisis is a situation where the available potable, unpolluted water within a region is less than that region's demand[4]. Water scarcity is being driven by two converging phenomena: growing freshwater use and depletion of usable freshwater resources[5].

Water scarcity can be a result of two mechanisms: physical (absolute) water scarcity and economic water scarcity, where physical water scarcity is a result of inadequate natural water resources to supply a region's demand, and economic water scarcity is a result of poor management of the sufficient available water resources. According to the United Nations Development Programme, the latter is found more often to be the cause of countries or regions experiencing water scarcity, as most countries or regions have enough water to meet household, industrial, agricultural, and environmental needs, but lack the means to provide it in an accessible manner[6].

The reduction of water scarcity is a goal of many countries and governments. The UN recognizes the importance of reducing the number of people without sustainable access to clean water and sanitation. The Millennium Development Goals within the United Nations Millennium Declaration state that by 2015 they resolve to "halve the proportion of people who are unable to reach or to afford safe drinking water[7].

Appropriate management of water resources is crucial for future economic development and protection of human health and life itself. Many human uses of water are known to have some impacts on the quality of aquatic environment.

Water related problem is a coin having two sides, one is its availability or quantity and another its quality. Both these sides directly connected to the people, at this stage it is extremely essential to know the level of social awareness regarding this problem. People, as is well known are directly or indirectly responsible for the pollution and they also have to face the problems that may arise. Now a days level of environmental awareness is increased and among the educated class of the society this awareness is more.

In the light of this background it is interesting to study the people's perceptions about drinking water management.

Material and method

A questionnaire was designed and administered in order to generate primary data on the varied dimensions of the public opinion about drinking water management. A questionnaire of 10 questions was designed and administered in a well-educated class of people belonging to various districts of Maharashtra. Questionnaires collected from people staying in different districts of Maharashtra. Questionnaires were collected randomly from about 17 districts of Maharashtra.

Result and discussion

These people are staying at different residential levels like village, city, taluka etc. All these people are well educated and have completed their education at least at post graduate level in different subjects.

When they have been asked about supply of drinking water 66.66% respondents are saying that they have continuous drinking water supply. While rest of the respondents are getting water supply at decided time may be for some hours daily. It is important to know number of family members of each family as water use depends on number of persons. Majority of respondents have three or four family members. Following table represents percentage having particular no of family members.

Table 1: Percentage having particular Number of family members

Sr. No.	Percentage	Family members
1	3.3	02
2	20.00	03
3	33.33	04
4	16.66	05
5	6.66	06
6	3.3	08
7	1.6	09
8	3.3	10

Daily drinking water requirement is asked and again it is recorded as per the percentage of respondent's required typical amount of drinking water daily in litres.

Table 2: Percentage of respondent's required typical amount of drinking water daily in litres

Sr. No.	Water requirements in Litres	Percentage
1	200	6.6
2	300	5
3	400	8.3
4	500	28.3
5	600	3.3
6	700	3.3
7	800	10
8	900	5
9	1000	10
10	1500	8.3

Every individual is responsible for the generation of some waste water daily however the quantity differs depending on many factors. It is important to know about the discharge of this generated waste water. This disposal should be environment friendly. To know this type of data respondents are asked about the discharge of waste water they generated. Sewage and its disposal has a direct concern with the pollution of drinking water. In many cities and villages sewage is discharged directly without any treatment in the nearby fresh water body like river or tank. This results in the pollution of that water body. Further if this pollution is not controlled in time then that water body may become eutrophic during the course of time. 73.33% respondents discharge sewage by general system by discharging it simply in municipal sewage system. 5% respondents are discharging it by digging soaking pits it helps in recharging ground water. 13.33% respondents discharge it by using it for watering plants. 85% respondents are agree with water saving needs said yes as they are trying to save drinking water. Researcher was expecting not to get any percentage for the option 'no' of this question but still 10 % are not trying to save drinking water. 5% respondents did not reply.

As educated citizen we should know about drinking water treatment plant as well as sewage water treatment plant of our city. 71.66 respondents know about drinking water treatment plant of city they belongs 28.34% still do not know. 38.33 % respondents do not know sewage treatment plant of city 61.67% respondents know sewage treatment plant.

Now-a day's water is purchased by people as per their needs. Respondents are asked about this it is concluded that majority of the people prefer mineral water outside their home it indicates that people are not sure about the purity of drinking water outside home. In travelling as part of health security and to solve the problem of water availability most of the people demand for mineral water. 65% respondents

prefer mineral water outside home still 35% respondents do not prefer mineral water outside home.

In travelling 51.66% respondents purchase mineral water bottle 48.34 % do not prefer mineral water bottle during travelling. Out of 48.34 % respondents, 30 % carries sufficient water with them even in travelling.18.34% carries water bag but when needs purchase water bottle. 13.34 % (out of 65% that prefer water bottle.) prefers water bottle outside their home not only in travelling but also even during local transport.

Conclusions

- More than fifty percent respondents are getting drinking water supply continuously throughout the day.
- Some respondents are aware about water pollution and they discharge sewage by environment friendly method.
- Majority people(85%) agree that we must save drinking water and they are trying to save drinking water
- Most of the people are not sure about purity of drinking water outside their home
- Majority people discharge sewage by general discharge method.

Recommendation

Level of social awareness must be increased particularly it must be action oriented.

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