Water Literacy among Rural Households in Kerala: A Study from Kannur District

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Abstract: *Water as a basic human need is a limited natural resource and is very precious in nature. It is estimated that among 1360 million cubic kilometres available, only 0.2 million cubic kilometres is fresh water. In Kerala, 85 percent of drinking water needs are met from ground water. In recent decades human demand and misuse of water continuously increased and shortage of water is a global issue. The careless usage and less availability of water indicate the need for water literacy among people. The study revealed that rural households in Kerala are highly water literate and they ensured environmental sustainability as their responsibility.*

Key Words: *Water Literacy, Rural Households, Kerala.*

Introduction

Water is a limited natural resource, basic human need and a precious national asset. Three fourth of the surface of earth is covered with it. Recently, the demand and misuse of water resource has increased considerably. Water is very essential for the survival of living beings and several problems related to the quality and availability of water like, water pollution and water scarcity is also severe. In the case of Kerala, plenty of water resources including forty four rivers, fresh water lakes, streams and many other water bodies, still safe and pure drinking water are some important features (Niranjan Mandal, 2011). Several projects, schemes and methods were introduced for ensuring the availability of drinking water, water sustainability and water conservation in Kerala. On the other hand, waste water management from bathing, washing and cleaning is also important.

Sustainability of water availability is a major component of environmental sustainability. Kerala, a water rich region, suffers scarcity of water during February to May every year. To face the problem of scarcity of water several water conservation methods were introduced and practiced; various water supply projects are also implemented in districts and selected

panchayaths (Jha and Jain, 2010). In this context, the present paper studied: (i) the use of water and management of water sustainability among rural households, (ii) the efficiency of water supply schemes and (iii) the waste water management in the rural areas of Kerala.

Review of Literature

Srinivasula and Haripriya (2006) examined the factors affecting child health due to drinking water quality and sanitation in Chrornepet and Pallavararn township of Tamilnadu. Verma Manisha (2009) observed the provision of safe drinking water to promote good health and welfare of the people. Umesh Narayan Panjiar (2010) examined the need to ensure sustainable development of water resources and its efficient management. Gautham and Bharadwaj (2010) evaluated the nature and extent of pollution control and effectiveness of it in existence. Singh, et.al (2010), Naleenkumar (2010) and Archana Gupta and Akanksha Shakla (2010) observed that, among many other causes for poverty, scarcity of water is a major one. Karunakaran (2012) analysed the diversification of crops and groundwater depletion in the Kasaragod district in Kerala. Brij Pal (2012) analysed the policies and programmes of rural water supply and sanitation. Rajanbabu (2013) also expressed the variations in climate characteristics responsible for uneven distribution among the availability of water resources. Smitha and Mani (2015) observed the model and procedure followed for implementation of Jalanidhi programme.

Methodology and Materials

The study used primary and secondary data. Secondary data were collected from the official sources of Govt. of Kerala and records of panchayaths. Primary data were collected from households of Kannur district in Kerala. Sixty households from the Kuttiyattoor Grama panchayath in Kannur district was taken for data collection. The data were analysed using statistical techniques and the opinion of respondents was collected to analyse the effectiveness of Jalanidhi project. The respondents are categorised as effective, moderately effective, low effective and the efficiency is determined by analysing the quality of water and accuracy of water availability.

Results, Analysis and Discussion

1. Water Literacy: The term water literacy means water related knowledge. It includes basic knowledge of water source and other aspects that interconnected with it consisting management and related issues. Water literate has basic understanding of use and management, water sustainability

and understanding of the importance and role of water in life (Ramaswamy Iyer, 2010). In Kerala, 85 percent of drinking water needs are met from ground water. About 5 percent of ground water extracted is used for domestic drinking; 85 percent for irrigation and the remaining 10 percent for other sectors including industries (Government of Kerala, 2017).

Table 1: Water Resources Used by People

Water resources used by people	Number of people	Percent
Open well	52	87
Tube well	22	37
Pipe water	36	60
Neighbour's water resources	4	7
Pond	3	5

2. Water Conservation Methods: Water is the most critical input for agriculture and sixty percent of the farms are rain fed in Kerala. Management of water promotes conservation and harvesting of rain water for augmenting surface and ground water resources (Shrikrishnan, 2011). In Kerala major technical methods to conserve water are rain water harvesting, historical water bodies, ponds, these are good opportunities for rain water harvesting in Kerala.

Table 2: Consumption of Water by Households Per Day in the Study Area

Quantity of water (in liters)	Number of households	Percent
Below 250	3	5
250-500	14	23
501-750	18	30
751-1000	16	27
Above 1000	9	15
Total	**60**	**100**

3. Rural Water Supply Schemes in Kerala: The important water supply schemes followed in Kerala are Sector Reform Project, Swajaldhara, Giridhara, Jeevadhara and Jalanidhi.

4. Water Resources Used by People in the Study Area: Table 1 shows the different water resources used by people in the study area and most of the people are using more than one or two water resources.

Table 3: Average Consumption of Water Per Day

Purpose	Quantity of water (in liters)	Percent
Drinking	35	5
Cooking	42	6
Washing	259	37
Bathing/toilet	252	36
Life stock	56	8
Other	56	8
Total	**700**	**100**

5. Water Consumption of People in the Study Area: Table 2 reveals the daily water consumption of family and most of them consume in between 500 to 1000 liters of water every day and the average water required per day for a family is 700 liters (table 3).

Table 4: Edification of Children about the Importance and Methods of Saving Water

Edification of Children	Percent
Families which inform their children about the importance of water	63
Families which do not inform their children about the importance of water	37
Families which shows interest in their children about how to save water	55
Families which do not show interest in their children about how to save water	45

Table 4 analyses the data of families which informed their children about the importance of water for saving water; and families which do not inform their children about the importance of water. The table shows that 63 percent of households informed their children to save water. It also shows the details of families which show interest in their children to save water or minimize the amount of water required for different activities. 55 percent of households edify their children about how to save water and 45 percent of households do not give importance to such things.

Table 5: Efficiency of Water Supply Schemes in the Study Area

Schemes	More efficient (in %)	Efficient (in %)	Less efficient (in %)
Jalanidhi	8	33	59
Pazhassi scheme	7	57	36

6. Efficiency of Water Supply Schemes in the Study Area: Safe and pure drinking water is the most urgent requirement of the people. In the study area there are Jalanidhi and Pazhassi irrigation schemes. The efficiency of these projects are analysed from the response of the households (table 6).

Table 6: Response on Assistance Received from the Govt for Water Conservation

Assistance	Percent
Rain Water Harvesting Scheme	**9**
MGNREGP	**9**
No Assistance	**82**

7. Water Conservation Methods in the Study Area: The exploitation of earth's natural resources posed a threat to sustainability. The management of valuable resources of soil, water and biomass through various conservation programmes is very essential. This also promotes conservation and harvesting of rain water for augmenting surface and ground water resources. The

conservation methods are both traditional and modern. The government introduced various schemes for water conservation and provide assistance to the people (table 6).

Table 7: Distances between Well and Septic Tank in the Study Area

Distances between Well and Septic Tank (in Meters)	Number of Households	Percent
Below 4	6	10
4-7	12	20
More than 7	42	70
Total	**60**	**100**

8. Water Related Pollution in the Study Area: The distance between well and septic tank creates a chance for the presence of coli form bacteria in the water, leads to spread of various diseases. Table 7 indicates that in 70 percent of the family, the distance between well and septic tank is more than 7 meters while the requirement is 7 meters; among the remaining 30 percent, it is less than 7 meters.

In urban areas there are so many reasons for pollution, but in the case of rural sector it is comparatively less. In each family, wastes are created by daily activities and are disposed using many methods (table 8).

Table 8: Waste Disposal in the Study Area

	Organic waste	Plastic waste	Cloth waste	Paper waste
Waste pit	20 (33)	6 (10)	8 (13)	4 (7)
Compost	26 (43)	-	-	-
Biogas	6 (10)	-	-	-
Collection by panchayath	-	42 (70)	-	-
Throwing away	8 (14)	8 (13)	4 (7)	6 (10)
Burn out		4 (7)	48 (80)	50 (83)
Total	**60 (100)**	**60 (100)**	**60 (100)**	**60 (100)**

Figures in bracket shows percentage to total

The major types of waste generated from domestic activities are organic waste, plastic waste, paper waste and cloth waste. The disposal of organic waste is 33 percent, and 43 percent are disposing it in compost and 10 percent in biogas. Majority of plastic waste (70 percent) is collected by panchayaths; 14 percent households thrown away and remaining 7 percent burn out plastics. Majority of cloth waste (80 percent) and paper waste (83 percent) is burnt out.

9. Waste Water Re-Use in the Study Area: In the case of domestic usage of water, waste water is mainly generated from bathing and washing. This is reused for watering the plants, trees and garden and for cleaning purposes. Table 9 depicts the details of reuse of waste water by households.

Table 9: Waste Water Reuse in the Study Area

	Households which Reuse Waste Water	Households which do not Reuse Waste Water	Total
No. of households	32	28	60
Percent	53	47	100

In the study area, the main source of waste water generation is domestic activities, such as bathing and washing. In most houses it is reused for watering plants, kitchen garden and trees and is also used for cleaning bathroom, toilet and outside areas of house. Another way of managing is converting waste water from kitchen to biogas plants.

Table 10: Waste Water Management in the Study Area

Methods of Waste Water Management	Percent
Reuse for Watering Plants	**55**
Reuse for Cleaning	**25**
Convert to Biogas Plants	**20**

Table 10 depicts the methods of waste water management in rural areas. In the study area, 55 percent of households reuse water for watering plants, 25 percent for the purpose of cleaning and 20 percent for biogas plants.

Conclusion

In the present century, water is a global issue, particularly in the consumption, saving and management; but the present generation is not so serious about these facts. Kerala is a water rich region with two rainy seasons and 44 rivers; but the state suffers scarcity of it. To face these problems, several water conservation methods are in practice. The careless usage and less availability of water indicate the need for water literacy among people. Among the rural households in Kerala, attitude towards the consumption and conservation of water varied on the basis of availability of it. In water scarce areas, the households are very careful in the usage and protection of water and they also teach their children for the careful usage. In joint family system, the elders have control over the activities of youngsters, but in nuclear families the households do not give importance for controlled consumption.

Most of the families are efficient in waste disposal and waste water management and reusing it for watering trees, plants and cleaning purposes. In conclusion the rural people are very conscious about the importance of water sustainability and treats conservation of environmental resources as their responsibility. So, most of the rural households can considered as water literate; but still importance of effective use and management of water sustainability is essential.

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