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Women and Water Management: A Study on Water Supply by Greater Visakhapatnam Municipal Corporation of Andhra Pradesh

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ABSTRACT Freshness and Quality water is essential element for all humans to sustain. Pure and safe water in abundance is inevitable to meet the domestic needs, which has been the prime concern of women universally. Women have a good amount of knowledge about the cleaning and storage methods of water. They play a dominant role in the management of water in tribal, rural and urban areas. The present study explores the relation of women with water and their response on water supply and quality by Greater Visakhapatnam Municipal Corporation (GVMC) of Andhra Pradesh.

INTRODUCTION

Water, being one of the five fundamental cosmic elements known as water, air, fire, sky and earth, is the most essential element for the existence of humans. Man and beast require drinking water and soil water is necessary for vegetation. Surface water is habitat for many kinds of aquatic life. Proper conservation and utilization of water must be given top priority, since it is the most important natural resource. The well being of humans in society is determined by their access to clean water and changing life style and living standards; the demand for water has grown enormously. Millions of people are deprived of the facility of safe and clean drinking water. In this age of sophistication in science and technology, water has become a valuable resource. We must not regard it, as it is available sufficiently to meet all purposes. Water is inevitable for all living species on the earth to sustain.

Since ages the responsibility of managing the household rests on the shoulders of the women. They look after the drinking water needs of their family members, and domestic animals. Their role in water management has been acknowledged universally. They have a good amount of knowledge about the quality, storage, and cleaning methods of water. Women play a dominant role in connection with the management of water in tribal, rural and urban areas. Water pricing system came into existence, because of the increased demand for fresh water. Migration, population growth and new life style have led to water scarcity in our country and Greater Visakhapatnam city, Andhra Pradesh, is not an exception to it.

According to the World Health Organization assessment, there are at least 5 million deaths per year due to the consumption of unsafe drinking water. About one third of these deaths take place in India alone (Mathys 2000). At least 1.4 billion people do not have access to drinking water. The study (Yojana 2006) reveals that Women in a Delhi colony wake up at 3:30 am to turn on the municipal tap. Adequate and regular supply of safe drinking water is one of the serious problems of Indian cities, towns and villages. 'Calcutta Municipal Corporation had failed to provide safe drinking water (Nath 2007). It reveals that the water supply and distribution of Delhi Jal Board in Delhi is unevenly and inequitably distributing the water (Ramaswamy Iyer 2007).

METERIAL AND METHOD

The present study was taken up in Greater Visakhapatnam Municipal Corporation of Andhra Pradesh state. Lack of data resource base with respect to women in particular, posed a problem in their identification and selection for the purpose of sampling. The study has been made to understand the women response, and knowledge on the quality and supply of water by Greater Municipal Corporation of Visakhapatnam. Therefore, we identified 225 households from two urban areas i.e. Jalaripet and China Waltair in Visakhapatnam City to collect required data during

the study period of February to April 2006. As the households of the poor and the middle class concentration is more in these areas and those who face the water problem are selected as study group. Snowball technique is used in the study to enlist the households that are available in these two areas of Visakhapatnam city. The study has begun in approaching the local public taps and from there the snowball moved from house to house. Both primary and secondary data were collected through semi-structured questionnaires, observations, and personal discussions with women. As in the case of several research studies, this study also had certain limitations. Time frame, locating the houses, extension of cooperation from households are some of them. In spite of this the present paper made an attempt to focus some light on the present study.

RESULTS AND DISCUSSION

The study reveals that the majority (60 percent) of the women interviewed are Hindus, while 22.2 percent are Christians, and the remaining 17.8 percent are Muslims. Further, most of them (40 percent) belong to Backward Classes, whereas 33.3 percent are Scheduled Castes, another 22.7 percent are Forward Castes, and 4 percent are Scheduled Tribes. It explains that the majority (40.5 percent) is in the age group of 31-40 years, while 26.7 percent are in the age group of 21-30 years, and 24.9 percent are in the age group of 41-50 years. However, 4.4 percent are in the age group of 51 and above years. The remaining 3.5 percent are less than 20 years respectively.

It shows that the nearly 17.8 percent of the Women are illiterate. About 24.4 per cent of the women completed middle level of education, and 24.4 percent of the respondents have reported that the education of secondary school level, while those who reported that the education of college level is only 11.1 and 6.7 percent are Intermediate and Degree level. Further, the study analyzes the income source of the respondents, the majority of the respondents reported that the main source of income is through private employment are 35.5 percent, and through permanent (Govt.) employment are 26.7 percent, while through (traditional occupation) cloths washing are 16 percent, whereas through pensions are nearly 6.7 percent, and through petty business are 15.1 percent. A majority of the respondents (33.3 percent) has reported that their monthly income between Rs.5001/- to Rs.7000/-. Nearly 28.9 percent reported that their monthly income is less than Rs.3000/- and Rs.3001/- to Rs.5000/-, however, Rs.8.9 percent reported that their monthly income is Rs.7001/- and above.

Table 1: Profile of the respondents

Characteristics	*Number*	*Percent*
1) Religion (N=225)		
Hindu	135	60.0
Christian	50	22.2
Muslim	40	17.8
2) Social Status (N=225)		
Forward Caste	51	22.7
Backward Class	90	40.0
Scheduled Caste	75	33.3
Scheduled Tribes	9	4.0
3) Present Age (in years) (N=225)		
Less than 20	8	3.5
21-30	60	26.7
31-40	91	40.5
41-50	56	24.9
51 and above	10	4.4
4) Level of Education (N=225)		
Illiterate	40	17.8
Primary	35	15.6
Middle	55	24.4
Secondary	55	24.4
Intermediate	25	11.1
Degree	15	6.7
5) Source of Income (N=225)		
Petty business	34	15.1
Pension	15	6.7
Washing clothes	36	16.0
Govt. employed	60	26.7
Private employed	80	35.5
6) Monthly Income (in Rupees) (N=225)		
< 3000/-	65	28.9
Rs 3001/- to Rs 5000/-	65	28.9
Rs 5001/- to Rs7000/-	75	33.3
Rs 7001/- and above	20	8.9
7) Type of House (N=225)		
Thatched	90	40.0
Building	135	60.0
8) Family Size (in persons) (N=225)		
2	15	6.7
3	35	15.6
4	95	42.2
5	40	17.8
6	25	11.1
7	8	3.5
8	7	3.1

It is noticed from the study that the 42.2 percent of the households are having 4 members as family size, and 17.8 percent of the respondents are having 5 members as family size, nearly 15.6 percent of the respondents are having 3 members as family size, whereas 11.1 percent of the respondents are having their family size is 6. The remaining 14.3 per cent of the respondents are having 2, 7, 8 members as family size. The study shows that the majority (60 percent) of the re-

spondents are living in buildings and remaining (40 percent) are living in thatched houses respectively.

Explain that nearly 61 percent of the women have reported that they are fetching the drinking water from Public taps (Table 2). Minimum 17 households in the study area share each public tap, and 28 percent of the women collect the water from the shared own taps. These shared taps belong to house owners, which are shared by the owners and rented households. The whole command on these taps is the owners of the house. This kind of situation can be seen in the residential areas. However, a little (11.1 percent) of the respondents are collecting the water from the bore-wells. Further, it explore that the majority (68.9 percent) of the respondents has reported that they required 2 pots / vessel (binds) of drinking water for their drinking purpose per day, and 20 percent of the respondents reported that they required 3 pots / vessels (binds) of dirking water for their drinking purpose per day. Remaining 6.7 percent and 4.4 percent are required 4 pots of drinking water and the 5 pots of drinking water for their drinking purpose in a day respectively.

A majority (60 percent) of the respondents reported that they spent nearly one-hour and above per day towards collection of drinking water from public taps as well as shared own taps and bore-wells. The shared own tap households need not to worry about the collection of drinking water. About 26.7 percent of the respondents spent their time nearly 45 minutes for collection of drinking water, and 13.3 percent of the respondents spent their time nearly 30 minutes per day. Later the Greater Visakhapatnam Municipal Corporation does not satisfy 73.3 percent of the respondents with the supply of drinking water and only 26.7 percent of the respondents are satisfied with the supply of drinking water.

165 respondents have reported the reasons for dissatisfaction. The majority (35.1 percent) of the respondents have reported that the water supply time is not sufficient. About 27.3 percent of the women have reported that dust is seen in the water, and 25.5 percent of the women have reported that the flow of water is very slow, whereas 12.1 percent of the respondents have reported that the supply schedule is not followed regularly.

The study depicts that the majority (58.8 percent) of the respondents have reported that they

Table 2: Women response on water supply and quality

S. No.	Characteristics	Number	Percent
1.	*Source of Drinking Water (N=225)*		
	Public Tap	137	60.9
	Public Bore wells	25	11.1
	Shared own tap	63	28.0
2.	*Per Day Water Required for Drinking Purpose (N=225)*		
	2 Pots / Vessels	155	68.9
	3 Pots / Vessels	45	20.0
	4 Pots / Vessels	15	6.7
	5 Pots/ Vessels	10	4.4
3.	*Time Spent for Drinking Water Collection (N=225)*		
	15-30 minutes	30	13.3
	31-45 minutes	60	26.7
	46-1 hour and above	135	60.0
4.	*Satisfaction on Supply of Water (N=225)*		
	Satisfied	60	26.7
	Not satisfied	165	73.3
5.	*Reasons for not Satisfaction (N=165)*		
	Dust has seen in the water	45	27.3
	Supply time is not sufficient	58	35.1
	Slow flow of water from tap	42	25.5
	Supply schedule is not followed	20	12.1
6.	*Alternative for Drinking Water (N=165)*		
	Previous day water is used	20	12.1
	Barrow water from other houses	19	11.5
	Adjust with availability of water	97	58.8
	Bore-well water is used	26	15.8
	Buy water bottles	3	1.8
7.	*Problems Facing in Collection of Water (N=225)*		
	Yes	189	84.0
	No	36	16.0
8.	*If yes, what are those Problems (N=189)*		
	Some times Disputes raised	97	51.0
	Fighting situation	50	27.0
	Slow flow of water	42	22.0
9.	*Water Required for Domestic Chores (N=225)*		
	10-12 Pots/ Vessels	143	63.5
	13-15 Pots/ Vessels	37	16.5
	16-18 Pots/ Vessels	26	11.6
	19 and above Pots/ Vessels	19	8.4
10.	*Source of Water for Domestic Chores (N=225)*		
	Heaving motor facility	38	16.9
	Street Bore-well and public Tap	132	58.7
	Owned Municipal Tap	55	24.4
11.	*Satisfaction on Water for Domestic Chores (N=225)*		
	Sufficient	14	66.2
	Not sufficient	76	33.8
12.	*If Not, Alterative for Insufficient of Water for Domestic Chores (N=76)*		
	Reduce the needs	27	35.5
	Pay Rs.10/- for three buckets of water	20	26.3
	Water related works postponed	29	38.2
13.	*Knowledge about Purity of Water (N=225)*		
	Use cloth for filtering	58	25.8
	Boil the water	75	33.3
	Boil & Filter the water	43	19.1
	Use Aqua Guard/Water Filters	05	2.2
	Proper chlorination in tanks	44	19.6

Table 2: Contd....

S. No.	*Characteristics*	*Number*	*Percent*
14.	*Practice of Purity of Water (N=225)*		
	Aware of purity but not practiced	165	73.3
	Use water filters	25	11.1
	Just boils the water	35	15.6
15.	*Management of Contaminated Water (N=225)*		
	Dust/Reddish Water thrown out	83	36.9
	Boil the water	56	24.9
	Boil & Filter with cloth	43	19.1
	Don't Know	43	19.1
16.	*Reasons for Drinking Water Contamination (N=225)*		
	Overhead tanks are not properly cleaned	42	18.7
	Water pipes leakage & damage	78	34.7
	Bad Drainage system and insanitation	33	14.7
	No chlorination per schedule	25	11.1
	Road repairs	42	18.7
	Can't say	25	11.1

adjust with availability of water, and 15.8 percent of the respondents have reported that they depend upon bore well water, whereas 12.1 percent of the respondents depend upon previous day's storage water when the water supply is day-by-day system. Borrowing of the water from other households is 11.5 percent. The remaining 1.8 percent reported that they buy the water bottles and water packets.

"*Some observations were made here while collecting the data in these areas for the study that the women who are not able to adjust with public taps they are paying Rs.50/- per month towards water charges to the owners of the owned taps, and now and then no specific time is maintained by the Municipal Corporation in the supply of drinking water. During summer season drinking water is supplied day-by-day" (Field Notes 2006).*

Out of 225 women, 189 women have (84 percent) reported that the problems then face in collection of water and the remaining 16 percent reported no problems. Majority (51 percent) of the respondents reported that sometimes water disputes are raised, and fighting situation among the women is reported 27 percent. The remaining 22 percent stated that the supplied *Neela Dara* (tap water flow) is slow. If the taps water flow is increased then only the problem of water may be solved. And the majority (63.5 percent) of the women stated that 10-12 vessels of water are sufficient for their regular domestic chores. Nearly 16.5 percent of the respondents have reported that the13-15 vessels of water are sufficient. Around 11.6 percent of the respondents have reported that the16-18 vessels of water are sufficient, and remaining 8.4 percent of the respondents have reported that the 19 and above vessels of water are sufficient for their regular domestic chores.

The study reveals that the majority (58.7 percent) of the respondents reported that the source of water for their domestic chores is street bore wells, and own motor facility for their domestic chores is 24.4 percent, remaining 16.9 percent of the respondents reported that the source of water for their domestic chores is covered by municipal tap water. It shows that the large proportion (66.2 percent) of the respondents have reported that they are getting sufficient water for their domestic chores. However, 33.8 percent of the respondents have reported that the water is not sufficient for their domestic chores. Regarding the alternative arrangements for insufficient water for domestic chores 38.2 percent of the respondents stated that they postponed the water related works, and 35.5 percent of the respondents are reduce their daily water needs. About 26.3 percent of the respondents have paid an amount of Rs.10/- per three bucket of water to a daily wage labour.

It depicts that 33.3 percent of the respondents have stated that boiled the water for purification, and 25.8 percent of the respondents have reported that the using of cloth purifies the water, while19.6 percent of the respondents have reported that proper chlorination in GVMC water tanks for purification, about 19.1 percent of the respondents have stated that the water should be boiled and filtered for purification. However, only 2 percent of the respondents have reported that they are using Aqua Guards to purify the water. It reveals that the majority (73.3 percent) of the women are aware of water purification but they are not practicing it in their regular life. And 15.6 percent of the women have just boiling the water but it is not filtered. The remaining 11.1 percent of the women using the water filters for purifying drinking water.

With regard to contaminated water management, the respondents have stated that the dust/reddish water is thrown into drainage (36.9 percent), about 19.1 percent of the respondents have stated that the contaminated water is boiled and filtered with a cloth, and 24.1 percent of the respondents have reported that the water is boiled only but it is not filtered. Whereas 19.1 percent

of the women have reported that they were not aware of the contaminated water management The majority (34.7 per cent) of the respondents have reported that the contamination of drinking water is due to water pipes leakage and damage, and 18.7 percent of the respondents have stated that the contamination of drinking water is due to overhead tanks are not cleaned properly, while another 18.7 percent of the respondents have replied that the contamination of drinking water is due to road repairs. However, 14.7 percent of the respondents have stated that the contamination of drinking water is due to bad drainage system and insanitation, and 11.1 percent of the respondents have stated that the contamination of drinking water is due to no chlorination as per schedule, whereas 11.1 percent of the respondents do not say any thing regarding the reasons for contamination of drinking water.

To improve the quality of water, it reveals that the 23.6 percent of the respondents suggested that the water tanks are to be cleaned and chlorinated as per schedule, and 24.4 percent of the respondents suggested to improve the hygienic condition in and around the reservoirs, while 37.4 percent of the respondents suggested that the proper water filterization at reservoir level and proper check-up and supervision on water pipes and taps. However, 14.6 percent of the respondents did not suggest any thing to improve the quality of water (Table 3).

Table 3: Suggestions of the respondents

1.	*Suggestion to Improve the Quality of Water (N=225)*		
	Cleaning and chlorination of over head tanks/water tanks as per schedule	53	23.6
	Proper water filterisation at reservoir level	42	18.7
	Improve the hygienic condition around reservoirs	33	14.6
	Proper check-up on pipes & taps	42	18.7
	Can't say	55	24.4
2.	*Suggestions to Improve the Supply of Water (N=225)*		
	Minimize the wastage of water	48	21.3
	Proper supervision on water flow	43	19.1
	Supply of water with speed flow	53	23.6
	Supply water as per schedule	51	22.7
	Regular water supply	20	8.9
	Can't say	10	4.4

With regard to improve the water supply, the study shows that the 23.6 percent of the respondents suggested that the supply of water must be forceful / speed flow, and 22.7 percent of the respondents suggested to supply the water as per schedule, while 21.3 percent of the respondents suggested that the minimize the wastage of water. However, 19.1 percent of the respondents suggested that the proper supervision on water flow is required; whereas 8.9 percent of the respondents suggested that the water is to be supplied regularly without fail. About 4.4 percent of the respondents did not suggest any thing in this regard.

CONCLUSION

Adequate fresh water supply is the most important prerequisite for sustaining human life and subsequent sustainable development. Therefore providing safe drinking water to urban areas is of paramount importance in developing countries. The data reveals that there is acute water shortage in these areas particularly in summer season. Traditionally, only women bear the responsibility of collection, preservation of water. Some times women are assisted by their children or husbands. Women control the family members in utilizing the water as per requirements. The study (Nath 2007) depicts that Women and children collect water for household purpose, transport it to home, store it for cooking, cleaning, washing and watering household animals. The importance of water quality for health is clear. Most of the women are aware of purifying water but they are not practicing the purification of water. Lower income group people are getting little quantity of water for drinking purpose. A minimum of 17 households are collecting the water from a public tap, due to this, they have to adjust with the little quantity of water. An article (Ramaswamy Iyer 2007) reveals that there are areas in Delhi where poor people should manage with 30 liters per capita per day (lpcd) or less, and other areas in Delhi where middle class and rich people use 400 to 500 lpcd or more. And the water is polluted due to bad drainage system, pipe leakages, lack of proper of chlorination, supervision on quality and supply of water. Hence, necessary action should be taken to prevent contamination and minimize water loss. Public bore wells are the only source for domestic chores in lower income group areas. Periodically the overhead tanks and reservoirs should be cleaned and chlorinated. Water should be regularly supplied as per schedule with forceful/speed flow and minimize the wastage of water, and part of it must be recovered for certain uses.

Government should explore the option of

working together with Non Governmental Organizations (NGOs) and the people in the cleaning and restoration of rivers, reservoirs and tanks. Women should be educated through inter personal communication, training, formal and non-formal education which could contribute to the water management. Women should also get the necessary technical training needed to plan and manage the water supply facilities to them. NGOs should support the women in giving simple techniques and solve their drinking water problems; it leads to the overall improvement in water management. Water resource management should be based on a participatory approach, to achieve equity the role of women in water management needs to be strengthened and their participation broadened. Policies related to water and sanitation needs to be reviewed for gender sensitivity. Women's role should be promoted in water management and should be increasingly trained on water maintenance and to perform leadership roles in Drinking Water Users' Association.

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