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Quantitative Study of water consumption and grey water generation in Aurangabad city, Maharashtra (India)

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Abstract: Aurangabad Municipal Corporation is one of the growing corporations in Maharashtra. The generated grey water in the city is directly or indirectly discharged into the Kham river system via various nalas. In Aurangabad, most of the areas do not have proper well planned drainage facilities in form underground drainage pipeline. The present study is one of the effort for the determination of the minimum water consumption by population which is necessary for the sustains of human life. The survey method is used for the collection of water used information. The per capita water consumption was determined .simultaneously the grey water generated from population was also determined in different class of society from different zones of Aurangabad city.

The pattern of domestic water consumption and sewage generation from different households of Aurangabad city of Maharashtra state of India was determined to understand the existing waste water disposal system and understanding how local urban communities are responsible for generation of waste water. The data is collected by using questionnaires method and surveying about 500 households from four zones of Aurangabad Municipal Corporation. The survey has been conducted in the families for determination of daily water consumption and activity wise water consumption, along with understanding of gray water generation, water supply and distance of source of water during the period of pre and post monsoon. Results of the study revealed that the daily average water consumption of Aurangabad city was found about 117.0 l per person per day (SD = 35.8)., about 75 % of the households in Aurangabad are using municipal water supplies remaining population depend on other private water supply sources for safe water quality. However, 55 % to 60% households are not satisfied with duration of water supply and 80 % do not have awareness about proper disposal of waste water. This is to considered immediately to improved health and hygiene by changing public perception through media and by organizing public awareness programs. The outcome of the study can give the benefits to the society by proper policy and planning executives to optimizing the use of water resources for urban development.

Keywords: Gray water generation, water consumption, household, waste water

1. INTRODUCTION

Water, is essential for life. The limited availability of good quality water resources is to posing the great challenge for the fulfillment of an increased demand with increasing human population. The increased in development, and shrinking supplies due to over-exploitation and water pollution are increasing the intensity of problems. Although water is renewable natural resource and abundant in nature covering two-thirds of the planet earth, it is available in very small proportion in the form of usable fresh water and that is to be used effectively for human domestic use . In India, as a result of human development, the increase in demand for water in both urban and rural areas. This may increase extra burden and distribution over sharing and quality of water resources (Abdul and Sharma (2007) **.** Increased demand from industrial sector, urbanization and agricultural crops tends to competition for domestic water consumption. In future, even more water will be required to produce crops because the human's population wills increased up to 9 billion by the end of year 2050. Degradation of environmental quality in many countries of the world is reducing human access to safe and pure potable water

To determining the minimum or basic requirement of water for an individual to maintain good health and sanitation is essential and a top priority if we consider the current status of water availability and the growing water scarcity against a rapidly growing population. This study aims to determine the current domestic water consumption and sewage generation in urban areas. Gray water (GW) or waste water is polluting the nearby water resources. The pollutant loads indicate the type of waste water treatment before disposal in natural water resources.

Therefore present work of determination of per capita minimum water consumption by urban population. The human different activities influence the water demand. Which is necessary for optimizing human activities for the sustenance of human life through water demand and management, it is crucial to know the actual use of water on a household level, for proper water use planning and to reduce water pollution problems.

Decrease in availability of water on earth may increase tensions and disputes over sharing of water resources in many states (Rao 1975; Shaban and Sharma 2007). Urbanization and rise in human population are coupled with climatic change and which may decrease supply of water globally during the twenty-first century (Murad et al. 2007; Wheida and Verhoeven 2007). The wastewater management and treatment economics have become a important topic of discussion of today due to contamination of water (Poyyamoli et al.2013). In general, grey water means wastewater generated from domestic human's activities such as cloth washing, bath, kitchen discharge, wash basins, laundry ,machines, floor washing, and dishwashing etc. It does not include wastewater from toilet. Grey water is to be considered as a largest useful source of water for reuse option at point source, which is around 50–80 % accounting of the total grey water use (Christova-Boal et al.1996; Eriksson et al.2002;Jamrah et al.2006) , Urban wastewater , generally, not contaminated with heavy metals and toxic or poisonous chemicals, that is the grey water generated from low income household of peri-urban areas. Generally good household practices, such as use of small screen plates to capture food particles in kitchen basins, exclusion of fats and oils from dishes plates before cleaning etc, can lead to substantial reduction of organic pollutants of the grey water. Waste generated depends on population, climate, urbanization, socioeconomic criteria (Chinchodkar et al. 2017).

In many cities of the India the public underground sewerage systems do not collect all the domestic households waste water and wherever provided system fails to function in proper manner, due to improper maintenance of drains leads to chocking and seepage of sewage into underground drinking water sources or enter in drinking water supply pipeline through likage and it contaminate surface water resources. Another major concern is the improper operation of sewage treatment plants set up in areas of the cities, where lack of skilled persons or man power to treat sewage and inadequate maintenance of sewage treatment plant may leads to malfunctioning and does not work in efficient manner.

In India domestic urban wastewater is the main source of water pollution in surface water sources and underground water resources, comprising 80 percent of the total water pollution. This is the major source of causative pathogens in water resource and which may leads to water borne diseases in society and the anaerobic bacteria which decrease the dissolved oxygen (DO) level in water bodies (WHO;1992).

Disposal of domestic sewage from various households of cities and towns is the biggest source of surface water resource pollution in India . All Class I cities and Class II towns together generate an estimated 29129 MLD sewage (WHO;1997). Against this, sewage treatment installed capacity is only 6190 MLD. There remaining gap of 22939 MLD between sewage generation and sewage treatment plant installed capacity. In percentage wise this gap is 78.7 %. Another 1742.6 MLD sewage treatment capacity plant is under planning or construction stage. If this is also added to existing capacity, even then there is a gap of 21196 MLD (equal to 72.7 %) in sewage treatment capacity**.** (CPCB ;2015)

Maharashtra state has total 76 sewage treatment plants having installed treatment capacity of 5160.36MLD.whereas 10 STPs of capacity 344.5 MLD are Non-Operational in nature and 06 STPs of installed capacity131.96MLD are under construction.(Annual status report of CPCB 2015) , Aurangabad corporation has two STP plants CIDCO STP Near Airport, Operational and STP installed capacity is 6.5MLD with ASP technology second one is Near Salim Ali Sarovar HUDCO, Operational with installed capacity 5 MLD of SBR technology**.** (CPCB ;2015)

There is huge quantity of domestic waste water generated in Aurangabad city, which is not treated and directly disposed in sewer system and which is responsible for contamination of surface water resources. If the grey water is isolated from sewage by employing feasible system and which can be reuse immediately for secondary water use such as use of grey water for gardening and maintenance of greenery in urban area. Or by giving primary treatment the grey water can be use for washing of vehicles etc. Hence present work has been undertaken to assess the quantity of grey water generated in Aurangabad city. The toilet waste and other waste water containing pathogenic organisms and toxic chemicals etc can be treated in sewage treatment systems and by removing grey water quantity the load of sewage treatment plant can be

reduced significantly. Hence the present work of assessment of grey water generation in Aurangabad city was undertaken. The potential of reuse of grey water will be presented more or less correctly. Simultaneously the water use will be assessed and it will co relate with the waste water generation in city area, The outcome will be useful for proper water conservation and management

2. STUDY AREA

During the present investigation Aurangabad city from Marathwada region of Maharashtra states was selected for monitoring the water consumption and gray water generation of different households. Aurangabad is a headquarter of Marathwada region of Maharashtra state with historic background. It is situated at latitude 19^0 53' 59'' north and longitude 75^0 20' east (Fig.-1). The city established on the banks of the Kham River. Topographically it is located in the valley region between the Chauka hills on the north and Satara hills on the south. The valley has a breadth of about 15 km and open towards the east which has facilitated for the extension and development of new settlement. Ajantha and Ellora caves have put the city on the tourist map of the world. It is the cultural, religious, educational and industrial center. The average altitude of the city is about 581 m above mean sea level.

Aurangabad has hot summer with May as the hottest month, when the ambient temperature crosses 40^0C. The winter months are pleasantly cool when the temp drops to between 10^0 C and 15^0C. The humidity is rather low except during the monsoon month. December is the coldest month. The annual average normal rainfall is about 726 mm in Aurangabad.

The area of Aurangabad city is about 138 Sq.Km. The population of Aurangabad city was 29000, 5, 73,272 and 8, 72,663 as per 1931, 1991 and 2001 census respectively. Presently, the population of Aurangabad city is about 11,75,116 lakh (Census, 2011).

Aurangabad Municipal Corporation consists of nine zones respectively, Town Hall, Mondha naka, Central naka, Harshool, CIDCO-1,CIDCO-2,Garkheda, Satara, and Kranti chowk with wards (115 electoral wards). The survey was conducted in representative population of these four zones of all wards by preparing a questionnaire to get the average information about water consumption and gray water generation (Fig.-2) in the wards and health problem associated with them due to deterioration of water sources.

3. MATERIALS AND METHODS

3.1 Analysis Of Primary Household Survey

A primary family Questionnaire survey was conducted in pre and post monsoon season from four different zones (Town Hall, Mondha naka, CIDCO and Kranti Chowk) in the Aurangabad Municipal Corporation, with the help of stratified random sampling method, About 500 representative households were selected randomly from all wards to gather information about the water consumption in households and generation of grey water per person at household levels. The family size, economic status, water sources, underground sewerage system etc are factors considered during survey work and for deciding the person for asking the questions. These households were selected as representative population from particular income groups and family sizes from the four zones of Aurangabad Corporation.

To find the quantity of Water used in households and generation of sewage water in day to day activities like washing, for drinking purpose, cooking, and used in toilet. the access and availability of water sources is also considered during questioner method. The response from household persons was recorded in questioner from each zone about 125 household samples were selected randomly. The household composition of respondents in each sample includes head of the household, in most cases female or male i.e., the spouse, or both husband and wife.

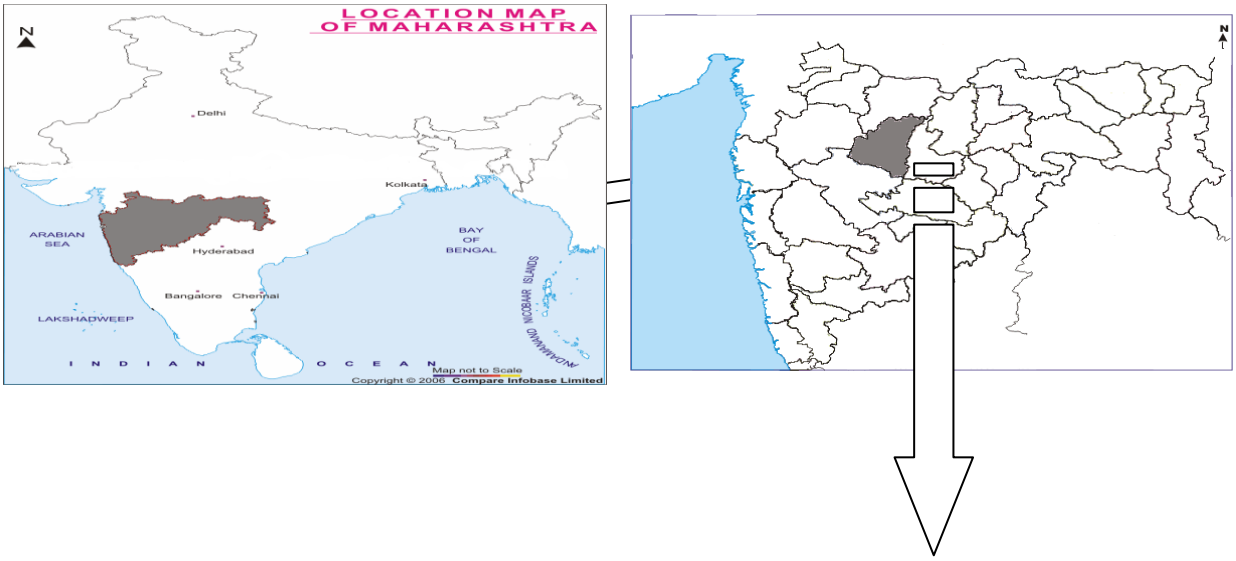
The survey was conducted for four months in all wards of Aurangabad city in four zones to elicit information on a host of issues pertaining to household sewage disposal and health damage owing to domestic sewage mixed with drinking water sources. The per capita household consumption of water and disposal of gray water are the key indicators for generation of sewage water. Whether the selected households have toilet facilities along with the underground sewerage system facilities for the disposal of household wastewater? Is main question The mode of disposal of greywater by the various households and cost implications of provision for sewage disposal facility developed is an important part of the survey. In addition, information was elicited to know about the willingness of households to pay for improved drainage system.

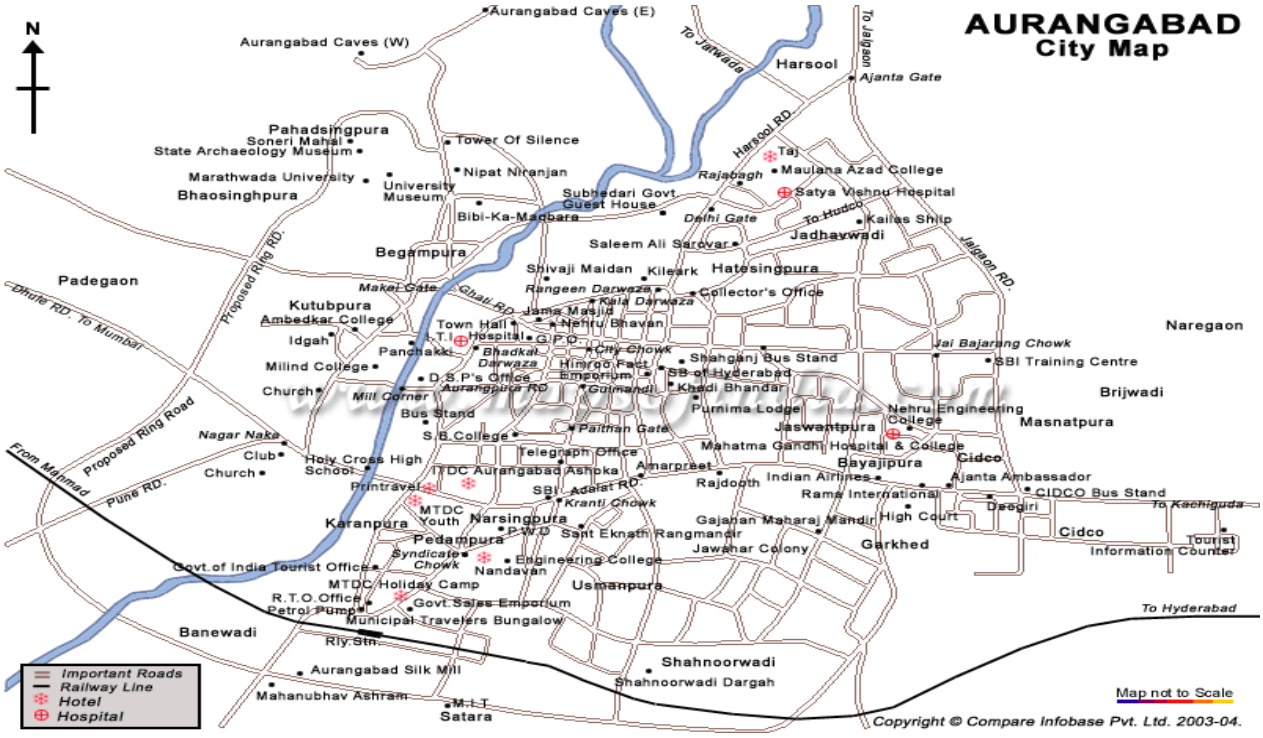
This section mainly deals with the empirical analysis of data to find out the relationship between the quantity of household generated sewage water and the selected socio-economic variables such as family size, family income ,access to water supply, quantity of household waste water discharged etc and the number of households connected with underground drainage system in specific area. The cost incurred for connection

along with an assessment of the factors influencing grey water generation and water consumption. This is followed by an establishment of a prospective model for grey water re-use, along with an appraisal of the possible alternatives which may be utilized at the household level to re-use grey water in Aurangabad city, so as to achieve sustainable development in the sector of water supply and sewage management. The results of the different methods have been represented tabular and graphical form and chi-square test etc. The study has been carried out during pre and post monsoon season.

3.2 Primary Household Survey Period

The survey was conducted with the help of detailed interview schedule during April to August 2016. The study period covered both pre monsoon as well as post monsoon seasons. The water use data and grey water generation data of pre monsoon and post monsoon season was collected.





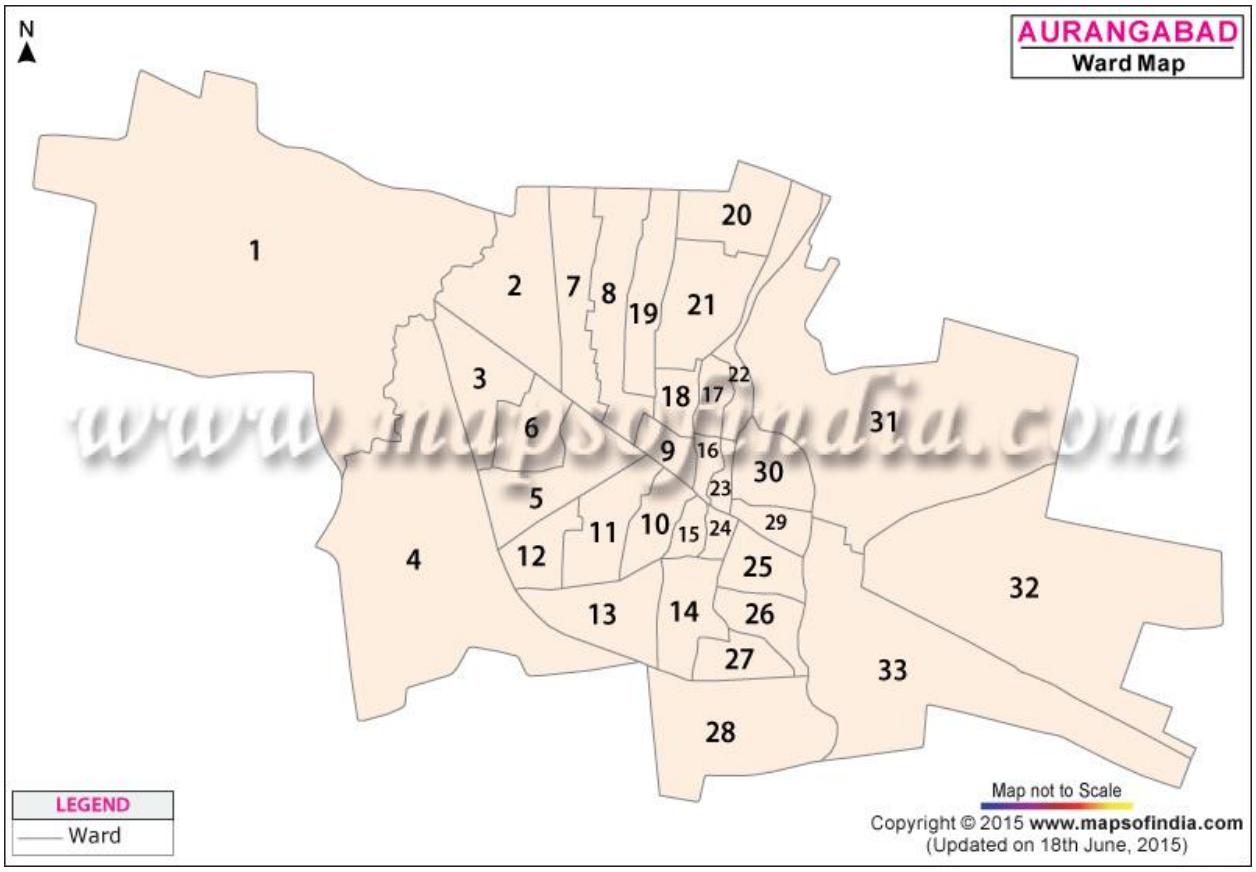


Fig. 2. The study area showing ward map of Aurangabad Municipal Corporation

4. RESULTS AND DISCUSSION

To collect the information about per capita water consumption and grey water generation, the questioner method was used. The random sampling technique was employ for selection of persons for asking questions. The four zones of Aurangabad city were surveyed and samples were randomly selected from family size, persons below 2 in family, 3-5 persons per family, 6-9 persons per family & 10 and above and results were compiled in table1 & 2. The average value of water consumed and grey water generated in liters were determined from total surveyed persons. About 500 household were surveyed and results were summarized in table 1and Fig. 3& 4 For pre monsoon season. The post monsoon data is summarized in table 2 and Fig.5 & 6.

Table 1: family size, water consumption and sewage generation (liters) in pre monsoon season, from Aurangabad city.

	Water consumption at households (in liters)					**Households greywater generation (in liters)**			
Family size (No of persons)	**Below 250**	**250-500**	**501-750**	**751 & above**	**Total**	**100 & Below**	**100-250**	**250 & above**	**Total**
2 & Below	25 [24.27] (29.06)	56 [54.36] (17.23)	13 [12.62] (22.03)	9 [8.73] (30)	103 [100] (20.6)	25 [24.27] (28.08)	68 [66.01] (20.42)	10 [9.70] (12.82)	103 [100] (20.6)

3 to 5	37 [11.74] (43.02)	242 [76.82] (74.46)	28 [8.88] (47.45)	8 [2.53] (26.66)	315 [100] (63)	48 [15.23] (53.93)	236 [74.92] (70.87)	31 [9.84] (39.74)	315 [100] (63.0)
6 to 9	13 [27.08] (15.11)	18 [37.5] (5.53)	10 [20.83] (16.94)	7 [14.58] (23.33)	48 [100] (9.6)	10 [20.83] (11.23)	17 [35.41] (5.10)	21 [43.75] (26.92)	48 [100] (9.6)
10 & above	11 [32.35] (12.79)	9 [26.47] (2.76)	8 [23.52] (13.55)	6 [17.64] (20.0)	34 [100] (6.8)	6 [17.64] (6.74)	12 [35.29] (3.6)	16 [47.05] (20.51)	34 [100] (6.8)
Total	86 [17.2] (100)	325 [65.0] (100)	59 [11.8] (100)	30 [6.0] (100)	500 [100] (100)	89 [17.8] (100)	333 [66.6] (100)	78 [15.6] (100)	500 [100] (100)

Source: Primary data collected by using questioner method.
Note: Figures in parenthesis indicates percentage

[ ] indicates row wise
( ) indicates column wise

Family size is taken as the major factor to estimate the consumption of water and its sewage disposal. The family size of household will determine the level of water consumption.

The above table indicates that among 315 households , 236, (74.92 %) generate 100-250 liters of sewage per day; 48 (15.23 %) below 100 liters, 31 (9.84 %) above 250 liters. Among the total sample, 103 households has a family size with less than two members. Among these 68 (66.01 %) households generate 100-250 liters of sewage water. Next to this, 25 (24.27 %) households produce below 100 liters, and only 10 (9.70 %) household produce grey water in the above 250 liters during pre monsoon season.

Among the 500 households sampled, 48 have a family size of 6 to 9 members each. Among these, 17 (35.41 %) households produce 100-250 liters of waste water per household per day. 21 (43.75 %) households about above 250 liters, and only 10 (20.83%) household generate below 100 liters of grey water. Thirty-four households with a large family size of more than 10 members among this group 14 households have more access to water supply which in between 500-750 liters and above 751 liters per day and the same time 16 (47.05%) households that are generating wastewater above 250 liters, 12 (35.29%) generate in between 100-250lit. and six household (17.64%) grey water generation below 100 liters respectively, per day.

As per the classification of family size by the municipal corporation in the study area the average family size has 4 members. In the present study 315 (63 %) households have an average family size with 3 to 5 members each. Among this, 28 (47.45 %) households are utilizing between 501 and 750 liters and 8 household (26.16) consume above 750 liters water, 242 (74.46%) households consume 251 to 500 liters water, and only which is slightly higher when compared to other households;37 (43.02 %) households have minimum access to water supply with below 250 liters.

More than one-fifth of the households (56 ; 17.23 %) have a family size with less than two persons; these households utilize between 251 and 500 liters of water. Twenty five (29.06%) households consume below 250 liters of water and only 13 households (22.03%) consume between 501 and 750 liters and nine (30%) households consumes above 750 liters for domestic use.

The grey water generation per household footprint, a scale has been devised, depicting 'Very low, Low, Medium, High, and Very high' water consumption which results in generation of grey water (Losby and Whitmore, 2012).

Forty eight (48) households have a family size between 6 and 9 members; among these 18 (5.53 %) households use 251–500 liters, 10 (16.94%) households are consuming 501–750 liters of water and only seven (14.58%) households have access to more than 750 liters of water supply for their domestic use per day and 13 household (15.11%) consumes below 250 liters. Thirty Four households have more than 10 members in the family; among this 8 (13.55 %) households consume 501–750 liters of water; 6 (20.0 %) households utilize 751 and above liters of water. As increases in no. of persons in family size it will lead to increases level of water consumption at the household level. Hence same results shown by (Rezaul K. Chowdhury, et al.2015) i.e. Grey water production in

Muscat ranges between 80 to 83% of the total internal domestic water consumption, while this study found only about 69% of internal residential water is greywater**.** Hence in areas with limited water supply the generated waste water will have more pollution load as a function of family size. India, only recently the Brihanmumbai Municipal Corporation (BMC) of the Indian state of Mumbai has passed the by-laws to make it mandatory for all new residential and commercial building to have rainwater harvesting system and also Grey Water reuse system. Recycling of water is also a condition under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) to get funds for projects in India, which is an encouraging step towards better water security and sustainability. From the study of (Othman A. Al-Mashaqbeh et.al 2012) it is mentioned that the water supplied by public network is insufficient and they are relying on other resource.

Jayakwadi is one of the largest earthern dams in Asia. with total storage capacity 2,909 m^3& effective live storage capacity is 2,171 m^3. ,There are total 27 water gates for the Dam**.** (ESR 2015)

Sometimes causative pathogens may enter the water supply system through mixing of sewage at points of leakages in water supply lines. AMC regularly gets analyzed the drinking water samples from the district public health laboratory. In case of contamination, the source is traced and measures are implemented as per plan**.** (ESR Aurangabad 2015).

This work represents the research output of the survey conducted in different class and family size of four zones of Aurangabad, including the analysis waste water generation and to the behavior of domestic water consumers

Table 2: post monsoon seasons water use and grey water generation (liters) from Aurangabad city

	Water consumption at households (in liters)					**Households greywater generation (in liters)**			
Family size (No of persons)	**Below 250**	**250-500**	**501-750**	**751 & above**	**Total**	**100 & Below**	**100-250**	**250 & above**	**Total**
2 & Below	45 [43.68] (32.37)	42 [40.77] (14.23)	9 [8.73] (21.95)	7 [6.79] (28)	103 [100] (20.6)	15 [14.56] (27.77)	51 [49.51] (19.69)	37 [35.92] (19.78)	103 [100] (20.6)
3 to 5	65 [20.63] (46.76)	226 [71.74] (76.61)	19 [6.03] (46.34)	5 [1.58] (20)	315 [100] (63)	26 [8.25] (48.14)	191 [61.90] (73.74)	98 [31.11] (52.40)	315 [100] (63)
6 to 9	14 [29.16] (10.07)	21 [43.75] (7.11)	7 [14.58] (17.07)	6 [12.5] (24)	48 [100] (9.6)	8 [16.66] (14.81)	9 [18.75] (3.47)	31 [64.58] (16.57)	48 [100] (9.6)
10 & above	15 [44.11] (10.79)	6 [17.64] (2.03)	6 [17.64] (14.63)	7 [20.58] (28)	34 [100] (6.8)	5 [14.70] (9.25)	8 [23.52] (3.08)	21 [61.76] (11.22)	34 [100] (6.8)
Total	139 [27.8] (100)	295 [59] (100)	41 [8.2] (100)	25 [5] (100)	500 [100] (100)	54 [10.8] (100)	259 [51.8] (100)	187 [37.4] (100)	500 [100] (100)

Source: Primary data collected by using questioner method.
Note: Figures in parenthesis indicates percentage
[ ] indicates row wise
( ) indicates column wise

The observations show the water use and grey water generation during post monsoon season. In the present study work 315 (63 %) households have an average family size with 3 to 5 members each. Among this, 19 (46.34 %) households are utilizing between 501 and 750 liters and 5 household (20%) consume above 750 liters water, 226 (76.61%) households consume 251 to 500 liters water, and 65 (46..76 %) households have minimum access to water supply with below 250 liters. The households (42 ; 14.23 %) have a family size with less than two persons; these households utilize between 251 and 500 liters of water. Forty five (32.37%) households consume below 250 liters of water and only 9 households (21.95%) consume between 501 and 750 liters and 7 (28%) households consumes above 750 liters for domestic use. it was observed that the minimum water use in post monsoon season as compared to pre monsoon season.

Forty eight (48) households have a family size between 6 and 9 members; among these 21 (7.11 %) households use 251–500 liters, 7 (17.07%) households are consuming 501–750 liters of water and only six (24%) households have access to more than 750 liters of water supply for their domestic use per day and 14 household (10.07%) consumes below 250 liters. Thirty Four households have more than 10 members in the family; among this 6 (14.63 %) households consume 501–750 liters of water; 7 (28.0 %) households utilize 751 and above liters of water. As increases in no. of persons in family size it will lead to increases level of water consumption at the household level.

The results indicates that among 315 households , 191, (73.74 %) generate 100-250 liters of sewage per day; 26 (48.14%) below 100 liters, 98 (52.40 %) above 250 liters. Among the total sample, 103 households has a family size with less than two members. Among these 51 (19.69 %) households generate 100-250 liters of sewage water. Next to this, 15 (27.77 %) households produce below 100 liters, and 37 (19.78 %) household produce grey water in the above 250 liters.

Among the 500 households sampled, 48 have a family size of 6 to 9 members each. Among these, 9 (3.47 %) households produce 100-250 liters of waste water per household per day. 31 (16.57 %) households about above 250 liters, and only 8 (14.81%) household generate below 100 liters of grey water. .

The grey water generation per household in post monsoon season is high as compared to pre monsoon season .where as water consumption is is slightly less in post monsoon season. (Losby and Whitmore, 2012). which is observed in my study work.

4.1 Data Analysis

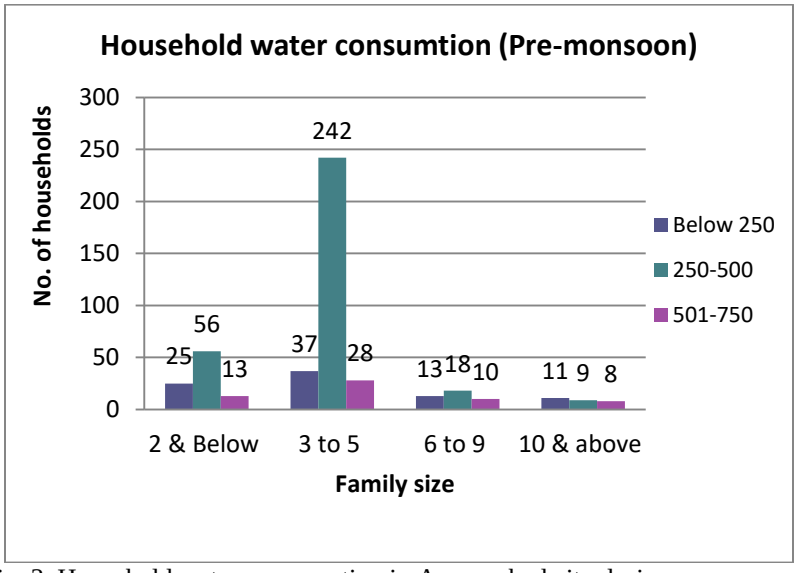


Fig. 3. Household water consumption in Aurangabad city during pre monsoon

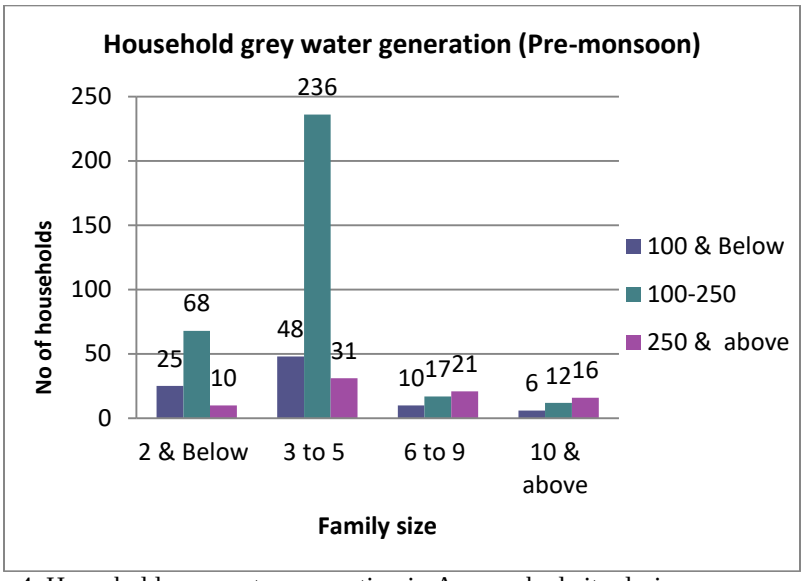


Fig. 4. Household grey water generation in Aurangabad city during pre monsoon

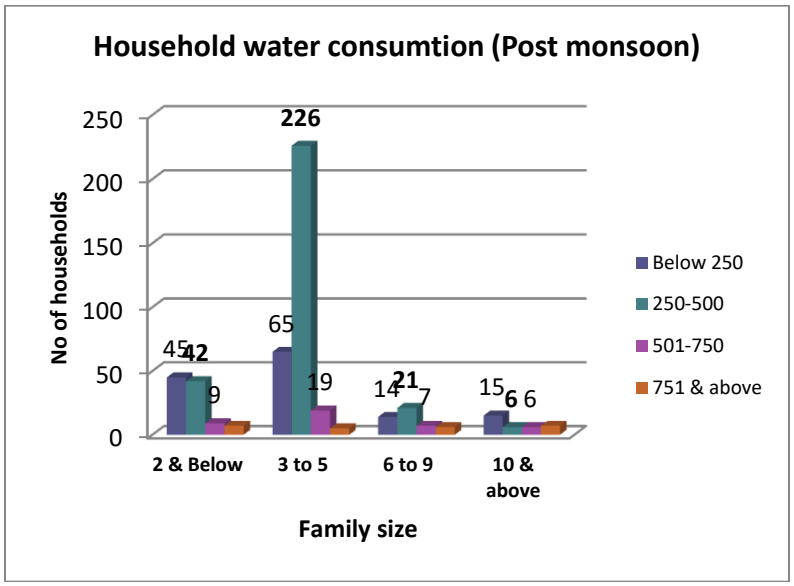


Fig. 5. Graph showing household water consumption in Aurangabad city during post monsoon

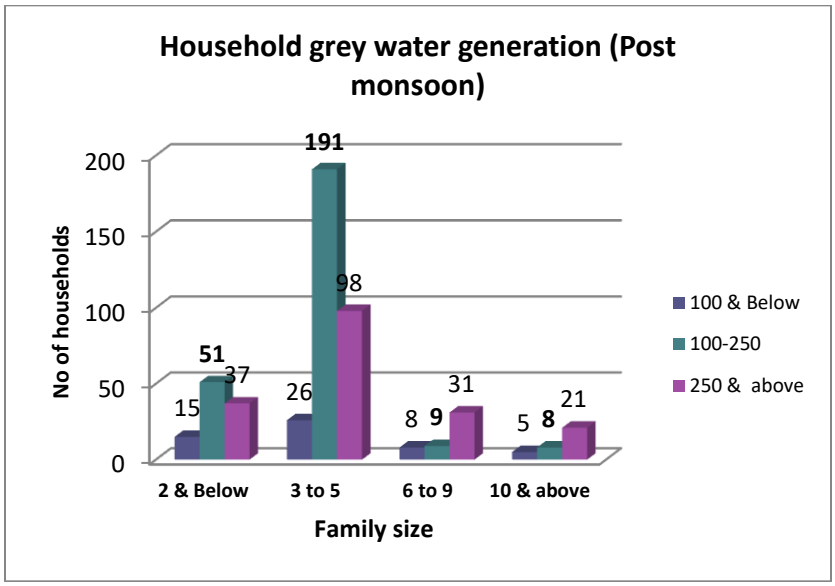


Fig. 6. Graph showing household grey water generation in Aurangabad city during post monsoon

4.2 Hypothesis Testing (Pre-Monsoon)

H_0: There is no association between family size and water consumption from respective households

H_1: There is association between family size and water consumption from respective households

Chi-sq	Df	p-value
68.383	9	0.000

From the above table we show that p-value is less than 5% level of significance (95% confidence interval). Hence we reject null hypothesis and accept alternative hypothesis. Therefore we conclude that there is association between family size and water consumption from respective households during the pre-monsoon season.

H_0: There is no association between family size and households sewage generation (in liters)

H_1: There is association between family size and households sewage generation (in liters)

Chi-sq	Df	p-value
74.065	6	0.000

From the above table we show that p-value is less than 5% level of significance (95% confidence interval). Hence we reject null hypothesis and accept alternative hypothesis. Therefore we conclude that there is association between family size and households sewage generation (in liters) during the pre-monsoon season.

4.3 Post-Monsoon:

H_0: There is no association between family size and water consumption from respective households

H_1: There is association between family size and water consumption from respective households

Chi-sq	Df	p-value
82.531	9	0.000

From the above table we show that p-value is less than 5% level of significance (95% confidence interval). Hence we reject null hypothesis and accept alternative hypothesis. Therefore we conclude that there is association between family size and water consumption from respective households during the post-monsoon season.

H_0: There is no association between family size and households sewage generation (in liters)

H_1: There is association between family size and households sewage generation (in liters)

Chi-sq	Df	p-value
43.741	6	0.000

From the above table we show that p-value is less than 5% level of significance (95% confidence interval). Hence we reject null hypothesis and accept alternative hypothesis. Therefore we conclude that there is association between family size and households sewage generation (in liters) during the post-monsoon season.

4.4 Determinants Of Domestic Water Consumption In Aurangabad City

The present work explored the determinants of domestic water consumption in Aurangabad is not continuous 24-hrs water supply. Currently the city receives about 135

MLD water supply through many sources such as Jayakwadi dam, Harshul, Nahar E Amabari, the main source is Jayakwadi dam. A probability sample with a confidence interval (CI) of 95% was established by applying question survey to collect data on 500 households. Consecutively, the model reflecting the water consumption in households was identified through a multiple regression analysis using ordinary least squares (OLS). The analysis revealed that the statistically significant variables that explain the domestic water consumption in the home with a share of 31.6% were low water cost, number of bathrooms in the household, After obtaining the model, the monthly water consumption was calculated in a group of houses throughout the equation to compare it with the water consumption measured by the operating agency, and it showed an acceptable approximation (78–90%). The results contribute to improving the current understanding of factors influencing the use of the vital liquid, and they may be useful in the development of policies to promote the sustainable use of water resources.

5. CONCLUSION

For a long time the sewage problem is remained as unexplored due to lack of attention and constraints in data collection especially from the urban household sector. In the present study an attempt has been made to investigate the problems and prospects of sewage generation and pattern of water consumption in the household sector despite the different.

The use of grey water can be contributed to a more sustainable use of water resources by reducing water demand through greywater reuse and recycling. The generation of greywater can be decrease as it is correlated with water supply.

Total sewage quantity generated from the household sector was considered essential in this study due to the fact that the sewage treatment facility needs to commensurate with the waste water quantity produced. Industrialization and urbanization has increased the density of population in the urban area, which led to the poor sanitation facilities due to mass discharge of sewage that has led to improper disposal ,Among four zones in AMC, the maximum amount of domestic sewage is generated in A zone and the minimum quantity of sewage generation is from D zone. From the study analysis, Maximum water consumption is observed in the family size in between 3 to 5 of 294 households and greywater generation. it has been confirmed that more than 65 percent of waste water in Aurangabad City Corporation drained into Kham river is from the domestic sector. Newly constructed houses (both individual and multi storage building) should have wastewater treatment facility Sewerage service tax should be imposed on each and every household based on family size, income, standard of living and access to water supply.

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