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# "Urban Water Consumption: A Micro Level Study of Pimpri Chinchwad"

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***Abstract***

*Present study was conducted in Pimpri Chinchwad to study the household water consumption for this purpose primary data were collected income group wise from 450 households. Pimpri Chinchwad is one of the leading industrial hubs of Maharashtra. Migration along with the natural growth led to rapid increase in population during the last five decades. Due to urbanization demand of water for household consumption is rapidly increase. About 35.29 per cent families used less than 50 litres per capita per day, 16.60 per cent families used 50 to 100 litres per capita per day.*

**Introduction**

Water is the essential requirements of human being. In the society, water is used for drinking; removing wastes, industry, agriculture and other purposes (Peter, 2003). However, an absolute minimum water requirement for humans, depend on their culture and lifestyle (Chenoweth, 2008).Consumption of water is defined as the average quantity of water used in litres per capita per day (Abdul and Sharma, 2007).Water for Human survival is used for drinking, food preparation, and hygiene and sanitation purposes (Aiga and Umenai 2002; Brown and Matlock 2011). It must be noted that these recommendations are based on fundamental health considerations. In view of drinking water and sanitation needs it is suggested that the total lowest amount of clean water required for maintaining sufficient human health is between 2 litres and 80 litres per person per day (Gleick, 1996).

**Study Area**

Pimpri Chinchwad Municipal Corporation (PCMC) is the part of Pune district from state of Maharashtra (India). PCMC lies between 18°33' and 18°43' North latitude and between 73°42' and 73°56' East longitude. The establishment large scale industries have led to the growth to supplementary and small industries in around the industrial belt. The employment opportunity has attracted people from outside area.

The unplanned migration along with the natural growth of population led to rapid increase in population in the Pimpri Chinchwad during the last five decades.

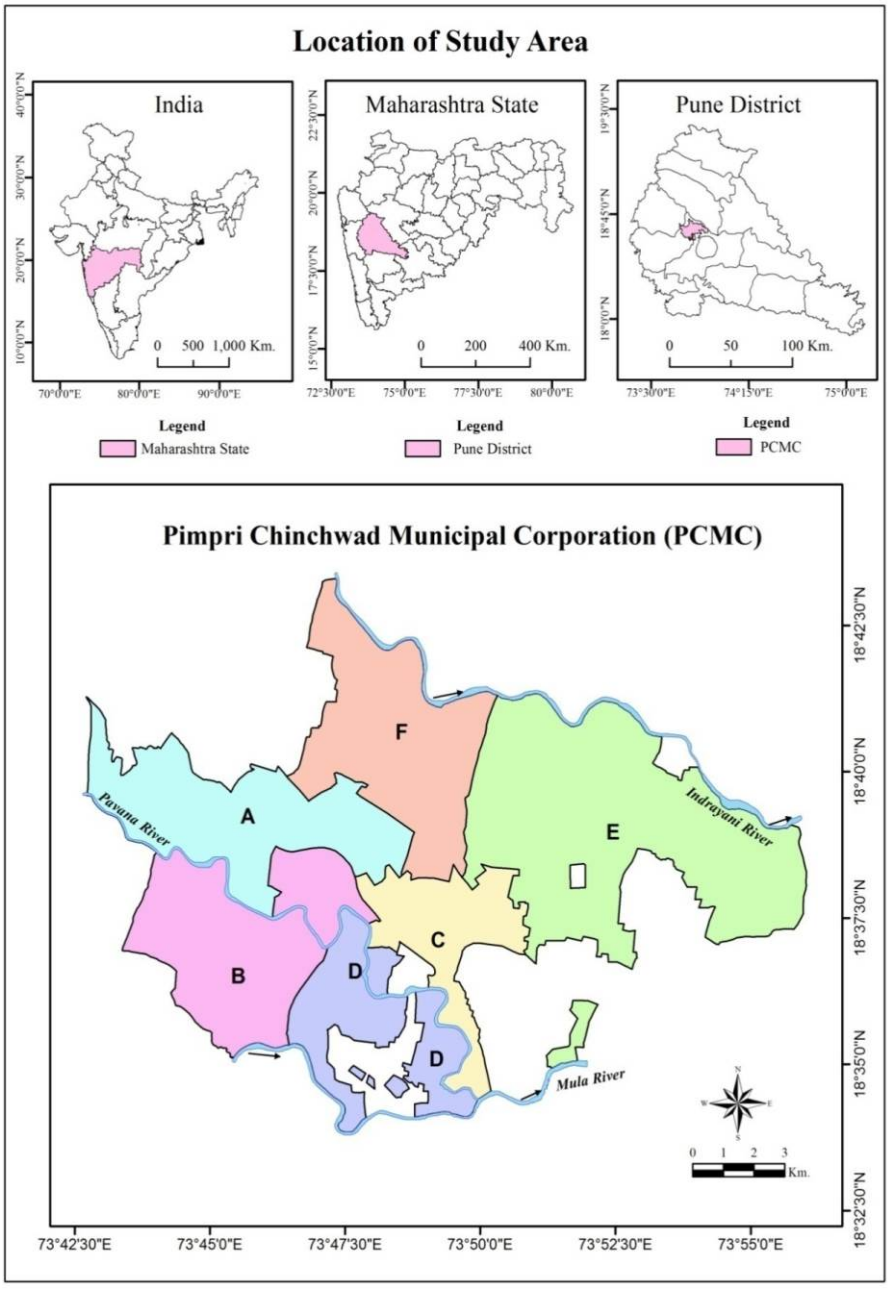
**Objective**

1. To analyse the pattern of domestic water consumption in study area Data base and Methodology Present study was based on primary source of data. Income group wise household use of water data was collected for this questionnaire was formulated and gets filled from individuals visiting house to house. Four wards (A, B, C and E) were selected out of six, to collect information of domestic water use by filling around 450 questionnaires by using stratified random sampling method. 110 questionnaires were gathered from each ward including A, B and C and 120 questionnaires were collected from E ward. Each ward includes big apartments; small apartments, mixed areas, gaothan and slum area. Data was analysed by applying statistic techniques.

**Consumption of Water by Households**

Residential water use includes water use for indoor and outdoor activities. At the household level, various activities like drinking and cooking, bathing, toilets, clothes washing, utensils cleaning, watering the garden and house cleaning are dependent on water accessibility. Residential water use is influenced by several factors, including climate, family income, cost, style and conservation awareness programmes (Inman and Jeffrey, 2006). The highest consumption of water was on clothes washing, bathing and toilets. The following discussion has present detail study of activity wise

consumption of water by households.




**1. Use of Water for Drinking and Cooking**

Water is the basic need of man for drinking and cooking. Use of water for each income category is shown in table 1. Mostly 21 to 30 litre water uses is more in all income groups in per cent near about 41.71 households use of water.

**Table: 1 Use of Water for Drinking and Cooking**

| Drinking and Cooking (water in litres) | | | | | | |
|---|---|---|---|---|---|---|
| Income Group | 01 to 10 | 11 to 20 | 21 to 30 | 31 to 40 | 41 to 50 | < 51 |
| Low | 10.00 | 20.00 | 26.00 | 16.00 | 14.67 | 13.33 |
| Low Middle | 03.53 | 28.24 | 43.53 | 18.82 | 05.88 | 00.00 |
| Middle | 03.53 | 28.24 | 49.41 | 16.47 | 02.35 | 00.00 |
| Middle High | 01.75 | 36.84 | 52.63 | 07.02 | 01.75 | 00.00 |
| High | 01.37 | 23.29 | 36.99 | 24.66 | 13.70 | 00.00 |
| Total | 04.04 | 27.32 | 41.71 | 16.59 | 07.67 | 02.67 |

(Source: Field Survey)

**2. Use of Water for Clothes washing**

Table 2 revealed household water use for clothes washing. People used more than 51 liters of water to clean the clothesin all income groups. On an average per household water consumption in 1 to 10, 11 to 20, 21 to 30, 31 to 40, 41 to 50 and more than 51litre classes was 00.13, 01.91, 11.26, 18.69, 29.05 and 38.96 per cent respectively.

**Table: 2 Use of Water for Clothes washing**

| Clothes washing (water in litres) | | | | | | |
|---|---|---|---|---|---|---|
| Income Group | 01 to 10 | 11 to 20 | 21 to 30 | 31 to 40 | 41 to 50 | < 51 |
| Low | 00.67 | 06.00 | 14.00 | 23.33 | 34.67 | 21.33 |
| Low Middle | 00.00 | 02.35 | 16.47 | 28.24 | 38.82 | 14.12 |
| Middle | 00.00 | 01.18 | 12.94 | 25.88 | 22.35 | 37.65 |
| Middle High | 00.00 | 00.00 | 08.77 | 10.53 | 31.58 | 49.12 |
| High | 00.00 | 00.00 | 04.11 | 05.48 | 17.81 | 72.60 |
| Total | 00.13 | 01.91 | 11.26 | 18.69 | 29.05 | 38.96 |

(Source: Field Survey)

**3. Use of Water for Pot Washing**

Water use for vessel washing is essential in house work. Hence 31 to 40 litre water was mostly used in all classes for pot washing. Table 3 shows that use of water for pot washing.

**Table: 3 Use of Water for Pot Washing**

| Pot Washing (water in litres) | | | | | | |
|---|---|---|---|---|---|---|
| Income Group | 01 to 10 | 11 to 20 | 21 to 30 | 31 to 40 | 41 to 50 | < 51 |
| Low | 07.33 | 14.67 | 25.33 | 42.00 | 8.00 | 02.67 |
| Low Middle | 07.06 | 17.65 | 35.29 | 28.24 | 9.41 | 02.35 |
| Middle | 04.71 | 18.82 | 31.76 | 28.24 | 11.76 | 04.71 |
| Middle High | 08.77 | 12.28 | 28.07 | 42.11 | 07.02 | 01.75 |
| High | 01.37 | 10.96 | 15.07 | 36.99 | 27.40 | 08.22 |
| Total | 05.85 | 14.88 | 27.11 | 35.51 | 27.40 | 03.94 |

(Source: Field Survey)

**4. Use of water for Bathing**

Water is the best source of toxic substance removal. It cleanses the body. By washing, all the tiredness, dust particles come out and you start feeling fresh. Therefore water is needed to keep the body clean and to keep skin healthy.So people daily use of water for bathing. Table 4 revealed information about water used for bathing.

**Table: 4 Use of water for Bathing**

| Bathing (water in litres) | | | | | | |
|---|---|---|---|---|---|---|
| Income Grou p | 01 to 10 | 11 to 20 | 21 to 30 | 31 to 40 | 41 to 50 | < 51 |
| Low | 00.00 | 00.00 | 08.00 | 22.67 | 36.00 | 33.33 |
| Low Middle | 00.00 | 00.00 | 14.12 | 23.53 | 37.65 | 24.71 |
| Middle | 00.00 | 00.00 | 02.35 | 22.35 | 38.82 | 36.47 |
| Middle High | 00.00 | 00.00 | 05.26 | 12.28 | 42.11 | 40.35 |
| High | 00.00 | 00.00 | 00.00 | 06.85 | 39.73 | 53.42 |
| Total | 00.00 | 00.00 | 05.95 | 17.54 | 38.86 | 37.66 |

(Source: Field Survey)

**5 Use of water for Toilet**

Table 5 presents information about water use in toilets. Water is widely used in toilet in the home. More than 20 litters of water are consumed per person. According to the survey, water is more than 51 litters water is used for toilets. There are 69.62 per cent of households using more than 51 litters of water in toilet.

**Table: 5 Water Use in Toilets**

| Use in toilet (water in litres) | | | | | | |
|---|---|---|---|---|---|---|
| Income Group | 01 to 10 | 11 to 20 | 21 to 30 | 31 to 40 | 41 to 50 | < 51 |
| LIG | 00.00 | 00.67 | 00.67 | 12.67 | 38.67 | 47.33 |
| LMIG | 00.00 | 00.00 | 01.18 | 04.71 | 31.76 | 62.35 |
| MIG | 00.00 | 00.00 | 00.00 | 03.53 | 18.82 | 77.65 |
| MHIG | 00.00 | 00.00 | 00.00 | 01.75 | 21.05 | 77.19 |
| HIG | 00.00 | 00.00 | 01.37 | 05.48 | 09.59 | 83.56 |
| Total | 00.00 | 00.13 | 00.64 | 05.63 | 23.98 | 69.62 |

(Source: Field Survey)

**6. Use of water for Garden**

A garden or a pot around the house also needs water every day. In the HIG group water11 to 30 litres of water is used for gardening and around 66.67% of households having garden surrounding the house. Table 6 indicates information about water for gardening.

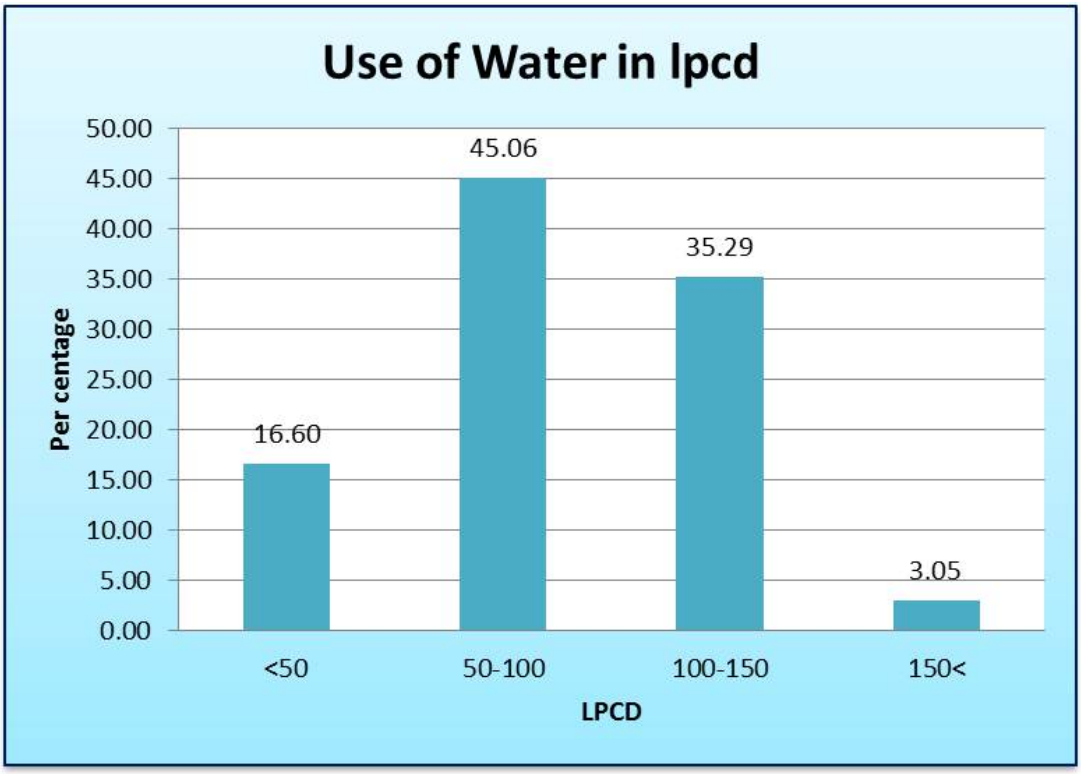
**Table: 6 Use of water for Garden**

| Water for Garden or Pot (water in litres) | | | | | | |
|---|---|---|---|---|---|---|
| Income Group | 01 to 10 | 11 to 20 | 21 to 30 | 31 to 40 | 41 to 50 | < 51 |
| Low | 87.36 | 11.49 | 01.15 | 00.00 | 00.00 | 00.00 |
| Low Middle | 77.78 | 15.56 | 06.67 | 00.00 | 00.00 | 00.00 |
| Middle | 80.36 | 19.64 | 00.00 | 00.00 | 00.00 | 00.00 |
| Middle High | 78.72 | 21.28 | 00.00 | 00.00 | 00.00 | 00.00 |
| High | 64.62 | 27.69 | 06.15 | 00.00 | 01.54 | 00.00 |
| Total | 77.77 | 19.13 | 02.79 | 00.00 | 00.31 | 00.00 |

(Source: Field Survey)

**Conclusion**

In study area, there are 35.29 per cent families using less than 50 litres per capita per day, 16.60 per cent families using 50 to 100 litres per capita per day and 45.06 per cent families using 100 to 150 litres per capita per day.




There are 3.05 per cent families who use water more than 150 litres per capita per day.

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