

Urban Governance

Citizens' Report on Water Supply, Sanitation and Solid Waste Management Services



***In Selected Small and
Medium Towns of India***

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The 74th Constitutional Amendment Act in India confers municipalities the responsibilities to provide services related to water supply, sanitation and solid waste management to the citizens. The services related to such areas are considered to be the basic urban services. However, most municipalities in India fail miserably to provide these basic services to the citizens. This situation is further aggravated in numerous small and medium towns in India. Inappropriate devolution of funds and functionaries to the municipalities along with non-transparent and unaccountable functioning of these municipalities demand action from the citizens and civil society groups to hold them accountable. PRIA with other civil society groups have been engaged in promoting civic engagement with the municipalities with a view to improve the access to municipal services to the citizens.

The present study was one such intervention where the local civil society groups and citizens were facilitated to engage with the municipalities through a participatory research on the status of water supply, sanitation and solid waste management in eight towns across five states of India. A total of 3348 households were engaged in the study directly and numerous citizens were also engaged in the dialogues with the municipalities by sharing the study findings. These dialogues between elected councillors, municipal officials, citizens and civil society groups resulted in concrete action plans in all the towns delineating the responsibilities to be taken up by each stakeholder group.

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EXECUTIVE SUMMARY

Strengthening citizen participation in urban governance has been one of the main objectives of PRIA. A variety of interventions towards the formation and strengthening of citizen collectives for effective participatory governance have been carried out in multiple locations of various small and medium towns. Study on 'Citizen Report on Water Supply and Sanitation Services' is one of the important initiatives undertaken by PRIA. The objectives of the intervention were two fold: (i) enhancing civic engagement and citizen participation and (ii) improving service delivery by the municipalities through enhanced accountability and participation. The specific objective was to assess the status of water supply and sanitation in terms of availability, accessibility, quantity, quality and affordability by involving citizen leaders/volunteers and local civil society actors so as to initiate a citizen monitoring system.

The study is confined to eight cities namely, Dharamshala (Himachal Pradesh), Narnaul and Mahendergarh (Haryana), Rajnandgaon and Janjgir (Chhattisgarh), Jhunjhunu and Karauli (Rajasthan) and Sehore (Madhya Pradesh). Information on water supply and sanitation had been collected through a series of primary household surveys using a structured questionnaire. The approach was to involve active citizen volunteers/leaders in collecting data wherever they were present. Youth from local colleges and senior secondary schools were especially encouraged to participate in carrying out the interview surveys.

The ownership of houses among the surveyed households was quite high. Most of the households belonged to Hindus and Other Backward Classes. About 70 per cent of the households in Karauli, Janjgir and Mahendergarh were non-workers and some of them fall in unspecified category. Except few cities like Sehore and Dharamshala, majority of the households belonged to low income group.

Overall status of water supply and sanitation is not satisfactory. Water supply from IPH exists along with private arrangements in which piped water is supplied from private tube wells to a number of households. Most of the households had faulty and non-functional meters, hence, they were paying lump sum amount to the authority. A higher proportion of households paid up to Rs.50 per month for water supply across the selected cities. Accessibility, quantity and quality of water were found quite satisfactory in all the intervened cities. As far as rating of water supply is concerned, in aggregate, most of the households in the selected cities had rated water supply service as 'average' in terms of accessibility, quantity, quality, frequency, timings and expenditure on water. Most of them were ready to pay up to Rs.50 per month for the improved services.

Regarding sanitation services (latrine, sewerage, drainage and solid waste management), the study shows that most of the households had private latrine with pour flush with septic tank in their houses. However, at the same time, there were some households who had been using open areas for the defecation including those who had private latrine, owing to shortage of water and non-availability of proper sewerage system. Majority of households with private latrine had been using piped individual water connection for sanitary purposes. Sewerage and drainage facility were almost absent. Wherever sewers were available, they over flowed, choked and were broken because of irregular cleaning and maintenance by the municipality in their localities. The municipality took longer than a week times for cleaning of sewers in

Rajnandgaon, Narnaul and Janjgir. Moreover, it was not cleaned at all as complained by the households of Janjgir and Narnaul. As a whole, the present conditions of sewerage system were very alarming and acute across the cities. Most of the households had no drainage system; where it was available, they were not cleaned daily or even in a week.

The overall situation of solid waste management in the cities was not satisfactory since most of the households of all select cities had to dump their waste in the open areas like roadside, land, river, canal etc. The study shows that maximum percentage of such households who followed this practice was found in Mahendergarh, Jhunjhunu, and Sehore. Whereas, the majority of households of Rajnandgaon and Dharamshala threw their waste in the dustbins provided by the private operators and the municipality under door-to-door waste collection. The municipal staff took a lot of time (at duration of a week's time) to collect the waste. The reasons behind this may be the irresponsible attitude of the municipal staff, lack of motivation, and shortage of conservancy staff in the municipality. City streets were not swept daily. With regard to rating of these services, most of the households had rated these services within the range of 'average' to 'very poor'. Hence, most of the households were ready to pay additional money up to Rs.25 for the improvement of the service.

The selected cities of the survey are still in the process of growing rapidly, and mostly what they face is the crisis owing to the haphazard and unplanned urban development. The utmost requirement of these cities is a well laid out development plan and accountability of the service providers. Further, there is a need to accommodate the opinion of the community and the policymakers collectively in order to promote a systematic planning.

Efforts must be taken by the civil society actors to engage the citizen in regular monitoring of services and the findings should be shared with the key decision maker in the municipalities. This act of monitoring and joint planning would definitely enhance accountability of the service providers. The local citizens should be encouraged to form area sabhas and ward sabhas to organize regular dialogue with the municipalities. Efforts should be made to minimize the gaps and lack of coordination between the authorities, which hampers the service delivery, like between IPH and State Government Departments. Public participation (with appropriate levels of representation of women and youth) must be ensured in decision-making, implementation and monitoring of basic amenities related projects. Differential tariffs could be introduced which could be pro-poor and at the same time also help the city municipalities to recover their costs to some extent.

Chapter 1

INTRODUCTION

1.1 Rationale and Objectives

The 74th Constitutional Amendment Act or Part IX A of the Indian Constitution ushered a new hope to democratic decentralization in urban areas. The Amendment Act provided recognition to the municipalities as institutions of local self-governance and conferred “such powers and authority as may be necessary to enable them to carry out the responsibilities conferred upon them including those in relation to the matters listed in the Twelfth Schedule.” Water Supply, Sanitation, Drainage, Sewerage, and Solid Waste Management are some important functions listed in the Twelfth Schedule.

Providing water, sanitation, drainage, sewerage and solid waste management services is a huge challenge to the municipalities. However, the urgency with which these basic urban services must be made available to every citizen in accepted quality and quantity cannot be overstated. The municipalities can only plan and ensure the provision of such services when they have a reliable database, and a sense of extent of citizens' satisfaction. Unfortunately, most municipalities in India in general and small and medium municipalities in particular, do not have any reliable database with regard to such services. Understanding of citizens' satisfaction is sporadic and speculative as opposed to be based on concrete dialogue and evidence.

Strengthening citizen participation in urban governance has been the core focus of PRIA and its partners. A variety of interventions towards formation of citizen collectives such as Mohalla Samitis and Mohalla Swachchata Samitis for effective participatory governance have been carried out in multiple locations of various small and medium towns. The most active members of these Samitis, identified as 'Citizen Leaders' were trained through various capacity building interventions on a variety of issues related to urban governance. These efforts resulted in a meaningful engagement of the Samiti members with their ward level elected councillors and with municipal officials on local issues like water, sanitation, sewerage, drainage, solid waste management, roads, street lights, and birth registration. The fundamental assumption was that organized citizen action would result in improved accountability of the municipal councillors and officials. This would in turn result in better service delivery to the citizens within the current capacity of the municipality.

PRIA and partners have initiated the intervention on 'Performance Monitoring of Municipalities on Key Municipal Services by Ward Committees/ Mohalla Samitis/ Area Sabhas. The intervention involved active citizen volunteers/ leaders to collect information on the state of key municipal services in their locality and to use the data to advocate for provision of improved service delivery from the Municipality.

The purposes of the intervention were two-fold: (i) enhancing civic engagement and citizen participation, and (ii) improving service delivery by the municipalities through enhanced accountability and participation. The specific objective was to assess the status of water supply and sanitation in terms of availability, quality and affordability by involving citizen leaders/ volunteers and local civil society actors so as to initiate a citizen monitoring system.

1.2 Methodological Approach

Information on basic services has been collected through a series of primary household surveys using a structured questionnaire. The approach was to involve active citizen volunteers/ leaders in data collection wherever they were present, or to initiate the data collection process and then gradually identify and mobilize other active citizen volunteers to get involved in data collection. Youth from local colleges and senior secondary schools were especially encouraged to participate in carrying out the interview surveys. Water supply, sanitation, sewerage, drainage and solid waste management have been taken up as the key services in this intervention.

The surveys did not subscribe to any sampling regime – the effort was to get information from as many households as possible in each neighbourhood of a given ward. In order to make the sample more representative, care was taken to include households from different social backgrounds and economic status, though the focus remained on the poor and marginalized households, such as those in slums and squatter settlements.

One of the limitations of the survey was its dependence on the perception of the people with regard to various services. The data generated from household survey was not triangulated with the municipality or other authorities while conducting the survey, as it was assumed that the survey findings would be shared with municipal officials and elected councillors. As a result in some places data inconsistency has been observed at the time of analysis.

1.3 Coverage

The survey was carried out in eight cities of five selected states, namely Dharamshala (Himachal Pradesh), Narnaul and Mahendergarh (Haryana), Rajnandgaon and Janjgir (Chhattisgarh), Jhunjhunu and Karauli (Rajasthan), and Sehore (Madhya Pradesh). Table 1.1 shows that among the selected states, maximum households (701) were surveyed in Rajnandgaon (Chhattisgarh) across 7 wards. On the other hand, only 5.35 per cent to total number of households in Janjgir (Chhattisgarh) were covered for survey. Sehore (Madhya Pradesh) had maximum number of wards (16) covered for survey, whereas Mahendergarh (Haryana) and Dharamshala (Himachal Pradesh) had minimum number of wards (4) covered for the household survey.

Table 1.1: Municipality Wise Distribution of Surveyed Households (%)

Sl. No.	Name of State	Sl. No.	Name of Municipality	No. of Wards	No. of Wards Surveyed	Number of Wards	No. of Households Surveyed	
							Ab.	%
1	Rajasthan	1	Karauli	35	8	1,7,10,13, 20, 27,34, 35	485	14.48
		2	Jhunjhunu	35	8	7,9,14,15,21, 22,26, 34	259	7.74
2	Chhattisgarh	3	Rajnandgaon	45	7	3,5,6,10, 17, 19,20	701	20.94
		4	Janjgir	21	5	2,3,6,16, 21	179	5.35
3	Haryana	5	Namraul	23	6	1,2,14,17, 19,22	553	16.52
		6	Mahendergarh	15	4	9,11,13,14	310	9.26
4	Madhya Pradesh	7	Sehore	35	16	1,2,3,4,7,11, 12,13,14,16, 17,20,22,23, 25,26	516	15.41
5	Himachal Pradesh	8	Dharamshala	11	4	2,3,5,8	345	10.30
Total							3348	100.00

1.4 About the Report

The present report is the outcome of the household survey on municipal performance on key services such as water supply, sanitation, solid waste management etc. that were undertaken in the intensive wards (the wards where PRIA and partners have been intervening intensively to facilitate citizen participation) of the selected cities. The survey was carried out involving members of Mohalla Samitis. The study findings are a key input in dialogues involving various stakeholders, particularly citizens, ward councilors, and municipal officials, which was organized to initiate action to improve municipal service delivery.

Chapter 1 of the report provides Introduction of the study including demographic profiles of the wards, economic and occupational status of the selected population. Chapter 2 proceeds to discuss in detail the status of water supply, Chapter 3 discusses the status of Sanitation and Solid Waste Management and Chapter 4 delves into preliminary analysis and suggesting ways forward.

1.5 Demographic Profile of the Surveyed Population

Demographic profile of the surveyed wards is discussed with regard to the relationship of the head of the household with the respondent, the age and sex of the head of the household, caste, religion, ownership of the houses, education status etc. The

demographic characteristics of the surveyed population reflect the macro demographic picture of urban population in the cities.

Relationship of the head of the household with the respondent is shown in Table 1.2. It shows that most of the respondents were head of the households, this pattern was higher in Jhunjhunu at 69.1 per cent and lowest in Dharamshala at 11.9 per cent. This is followed by daughters of the head of the households with 39.7 per cent in Janjgir and lowest in Jhunjhunu at 1.2 per cent. On the other hand, highest percentage of respondents (46.7 per cent) in Dharamshala did not respond in this regard.

Table 1.2: Relationship between Head of the Household and the Respondent (%)

Name of Municipalities	Relationship with the Head of the Household							Total
	Self	Wife	Daughter	Son	Daughter in Law	Others	No response	
Karauli	NA	NA	NA	NA	NA	NA	NA	485
Jhunjhunu	69.1	1.2	1.2	20	0.4	8.1	-	259
Rajnandgaon	39.1	34.9	10.6	10.8	2.8	1.1	0.6	701
Janjgir	33.0	10.6	39.7	2.2	5.6	-	8.9	179
Narnaul	43.6	17.0	4.9	14.8	6.5	13.2	-	553
Mahendergarh	19.0	21.3	3.5	20.0	1.0	35.2	-	310
Sehore	36.2	30.4	5.6	17.8	1.0	8.9	-	516
Dharamshala	11.9	5.8	11.9	1.2	22.6	-	46.7	345

Note: Others include father and mother of the head of the households, son-in-law, mother-in-law etc.

NA: Data Not Available

The caste composition of the surveyed households can be seen in Table 1.3. A substantial proportion of the surveyed households belonged to other backward classes in all selected cities except Mahendergarh (12.3 per cent) and Dharamshala (2.6 per cent). Highest percentage of households in Mahendergarh (61 per cent) and Dharamshala (42.3 per cent) belonged to Scheduled Castes category. On the other hand, highest percentage of Scheduled Tribe was found in Dharamshala (17.7 per cent) and lowest in Mahendergarh (0.3 per cent).

Table 1.3: Caste Distribution of Households (%)

Name of Municipalities	Caste					Total
	General	Scheduled Castes	Scheduled Tribes	Other Backward Class	Others	
Karauli	41.7	21.0	2.1	35.2	-	480
Jhunjhunu	22.0	8.1	8.9	60.6	0.4	259
Rajnandgaon	33.0	21.4	6.4	38.6	0.6	701
Janjgir	17.3	21.2	9.5	52.0	-	179
Narnaul	16.5	26.0	10.3	44.5	2.7	553
Mahendergarh	25.8	61.0	0.3	12.3	0.6	310
Sehore	7.0	28.1	4.8	58.1	1.9	516
Dharamshala	35.7	42.3	17.7	2.6	1.7	345

Data on religion of the surveyed households is presented in Table 1.4. It shows that the percentage of Hindus was highest in Mahendergarh (99.7 per cent) and lowest in Karauli (69.5 per cent). On the other hand, highest percentage of Muslims were found in Karauli (30.1 per cent) and Jhunjhunu (24.3 per cent) and in rest of the cities it varied from 0.3 per cent to 6.2 per cent.

Table 1.4: Religion Distribution of Households (%)

Name of Municipalities	Religion			
	Hindu	Muslim	Others	Total
Karauli	69.5	30.1	0.4	480
Jhunjhunu	74.9	24.3	0.8	259
Rajnandgaon	94.3	2.3	3.4	701
Janjgir	97.8	2.2	-	179
Narnaul	96.4	0.5	3.1	553
Mahendergarh	99.7	0.3	N.A.	310
Sehore	92.6	6.2	1.2	516
Dharamshala	98.0	1.7	0.3	345

Regarding ownership of the houses, Table 1.5 shows that majority of the households were residing in their own houses. Mahendergarh had highest percentage of such households at 99.7 per cent, followed by Narnaul at 96.4 per cent. On the other hand, 19 per cent households had been residing in rented houses in Janjgir and one per cent in Mahendergarh.

Table 1.5: Ownership Distribution of the Houses (%)

Name of Municipalities	Ownership			
	Owned	Rented	Other	No Response
Karauli	95.6	3.3	-	1.1
Jhunjhunu	93.8	5.0	-	1.2
Rajnandgaon	89.4	10.3	-	0.3
Janjgir	66.5	19.0	-	14.5
Narnaul	96.6	3.2	-	0.2
Mahendergarh	99.0	1.0	-	-
Sehore	89.5	7.4	-	3.1
Dharamshala	85.5	11.3	0.3	2.9

Data on educational qualification of the household members is presented in Table 1.6. It reveals that the overall literacy status of the population is high in Dharamshala where 77.8 per cent of the population had completed schooling and 14.6 per cent were graduates and post graduates. 7.6 per cent members were found illiterate. On the other hand, Narnaul had higher percentage of illiterate persons (24.3 per cent), followed by Janjgir (16.1 per cent) and Mahendergarh (15.7 per cent) and the lowest were found in Sehore (6.9 per cent).

Table 1.6: Educational Status of the Surveyed Population (%)

Name of Municipalities	Educational Status										Total
	Primary	Junior High	Secondary	Higher Secondary	Graduation	Post Graduation	Illiterate	Minor & Other			
Karauli	13.9	28.2	15.7	11.4	11.9	2.5	16.4	-			2430
Jhunjhunu	17.1	15.8	12.5	12.9	3.3	1.3	8.4	28.7			1489
Rajnandgaon	-	-	-	-	-	-	-	-			-
Janjgir	14.6	21.1	17.2	8.5	6.3	6.3	16.1	10.1			863
Narnaul	15.7	19.4	15.2	13.0	7.2	1.3	24.3	3.9			2282
Mahendergarh	30.8	29.3	13.2	5.7	1.9	1.3	15.7	2.1			1302
Sehore	24.4	24.9	12.5	9.6	4.1	3.0	6.9	14.4			2359
Dharamshala	27.54	17.23	18.36	14.62	9.60	5.01*	7.63	-			1416

* include others also

Table 1.7: Primary Occupation of Surveyed Households Members (%)

Name of Municipalities	Primary Occupation/Economic Activity										Total
	Service	Business	Daily Labourer	Hawkers	Factory / Industrial Workers	Shopkeeper	Others	Minor & Un-specified (non-workers)			
Karauli	31.3	2.9	3.7	18.3	2.2	5.7	-	35.9			2430
Jhunjhunu	11.5	7.9	2.6	0.7	0.3	2.3	1.6	73.1			1489
Rajnandgaon	11.9	7.2	13.9	0.8	0.2	3.1	27.6	36.1			2624
Janjgir	6.7	3.1	11.2	0.6	0.2	1.5	5.9	70.8			863
Narnaul	5.2	1.5	14.6	-	-	-	50.2	28.5			2282
Mahendergarh	3.5	2.6	17.1	-	-	-	2.8	74.0			1302
Sehore	4.4	4.7	19.4	-	-	-	41.3	30.2			2359
Dharamshala	24.1	10.4	39.7	0.6	0.6	12.2	11.6	0.9			-

Occupational profile of the household members as shown in Table 1.7 shows that more than 70 per cent members were non-workers (i.e. minor and unspecified cases) in Jhunjhunu, Janjgir, and Mahendergarh. On the other hand, majority of workers (39.7 per cent) were found daily labourers in Dharamshala whereas around 12 per cent were employed in service category in Rajnandgaon, which included salaried employees. In Narnaul, 50.2 per cent members were engaged in "others" category of occupation, which had minor counts such as industrial labours, hawkers, etc.

In order to examine the economic profile of the households, the monthly income of the households has been divided into three groups namely, high-income group (HIG) (Rs.15,000 and above), middle-income group (MIG) (Rs.5000 to Rs.15000) and low-income group (LIG) (up to Rs.5000). Data presented in Table 1.8 shows that among the selected cities, maximum percentage of households (80 per cent) who had monthly income below Rs.5000 per month were found in Sehore, while 1.2 per cent households in Janjgir belonged to high income category. 68.3 per cent households belonged to middle income group in Jhunjhunu.

Table 1.8: Income Category Wise Distribution of Surveyed Households (%)

Name of Municipalities	Monthly Income Category				Total
	Low Income Group (Up to Rs.5000)	Middle Income Group (> Rs.5000 to < Rs.15000)	High Income Group (Rs.15000 & Above)	Not specified	
Karauli	76.6	19.7	3.7	-	485
Jhunjhunu	16.6	68.3	15.1	-	259
Rajnandgaon	57.6	34.0	8.4	-	701
Janjgir	76.0	22.9	1.2	-	179
Narnaul	6.2	24.4	69.4	-	553
Mahendergarh	64.5	29.4	6.1	-	310
Sehore	80.0	18.2	1.7	-	516
Dharamshala	23.5	44.3	30.1	2.0	345

Chapter 2

WATER SUPPLY

2.1 Sources of Water Supply

The State Irrigation and Public Health (IPH) department is responsible for the water supply to the residents in most of the intervened states. As far as source of water supply is concerned, Table 2.1 shows that most of the households of the selected cities had individual piped water connection from municipality. Highest percentage of households (96.1 per cent) of Jhunjhunu were dependent on this source, followed by Karauli (60.2 per cent). A significant percentage of households (49.7 per cent) of Janjgir were using public stand post serviced by municipality and they were 38.4 per cent in Mahendergarh. Less than one percent households (0.2 per cent) in Karauli had been using private well/pond.

Table 2.1: Primary Sources of Water Supply for Households (%)

Sl. No.	Sources	Kar	Jhu	Raj	Jan	Nar	Mah	Seh	Dha
1	Piped individual house connection from Municipality	60.2	96.1	44.5	1.7	49.7	59.7	30.6	13.0
2	Private tube well	5.4	1.2	7.7	39.1	1.3	-	9.1	47.3
3	Private well / pond	0.2	-	2.7	7.3	0.4	-	1.9	2.6
4	Public stand post serviced by Municipality	9.1	-	-	49.7	0.2	38.4	11.4	-
5	Community well/pond	1.6	2.3	1.8	1.6	9.6	1.9	22.1	0.3
6	Group connection serviced by Municipality	-	0.4	35.8	-	8.5	-	6.8	28.7
7	Private vendor	-	-	4.8	-	1.1	-	-	-
8	Tanker supply by Municipality	-	-	1.1	0.6	29.3	-	-	1.2
9	Others	23.5	-	1.6	-	-	-	16.3	2.0
10	Not specified	-	-	-	-	-	-	1.7	4.9
	Total (No. of Households)	485	259	701	179	553	310	516	345

2.2 Mode of Payment for Water Supply

Data on mode of payment for water supply is shown in Table 2.2. It shows that most of the households in the selected cities paid lump sum amount for water supply. Maximum percentage of such households were found in Jhunjhunu at 74.5 per cent, followed by Rajnandgaon at 73.5 per cent. This may be because of non-functional meters in most of the selected cities. On the other hand, a substantial percentage of households (34.5 per cent) in Sehore had been paying water charges according to the meter reading. But, a substantial proportion of households at 65.5 per cent in Sehore and nearly 50 per cent households in Narnaul did not respond in this regard.

Table 2.2: Mode of Payment for Water Supply for Households (%)

Name of Municipalities	Mode of Payment			Total
	Lump sum	As per Meter Reading	No Response	
Karauli	48.9	20.6	30.5	485
Jhunjhunu	74.5	19.3	6.2	259
Rajnandgaon	73.5	-	26.5	701
Janjgir	N.A.	N.A.	N.A.	-
Narnaul	49.9	-	49.9	553
Mahendergarh	54.8	-	45.2	310
Sehore	-	34.5	65.5	516
Dharamshala	33.0	26.4	40.6	345

2.3 Expenditure on Water Supply

Households incur some expenditure on a regular basis on the procurement of water, whether it is payment to the public water supply provider, or private vendor, or time/money spent on procuring water from a source located outside the premises at some distance. A detailed picture of the pattern of expenditure on water by source of supply and by income group is given in this section.

Table 2.3 reveals that most of the households in the selected cities spent upto Rs.50 per month on water. Highest percentage of such households were found in Jhunjhunu (87.3 per cent) and Narnaul (23.1 per cent). 31.3 per cent households in Dharamshala were paying monthly water charges between Rs.50 to Rs.100. However, 87.9 per cent households in Sehore did not give any response or did not pay charges for water supply. This pattern was followed by households in Rajnandgaon at 77.1 per cent.

Table 2.3: Monthly Total Expenses on Water Supply by Households (%)

Name of Municipalities	Amount (Rs.)							No response/ Didn't Pay	Total
	Up to 50	51 - 100	< Rs.100	101 - 200	201 - 500	> 500			
Karauli	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	-	
Jhunjhunu	87.3	3.9	-	4.2	-	-	4.6	259	
Rajnandgaon	8.8	13.7	0.4	-	-	-	77.1	701	
Janjgir	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	-	
Narnaul	23.1	6.5		13.4	27.7	2.2	27.1	553	
Mahendergarh	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	-	
Sehore	4.3	3.5	-	4.3	-	-	87.9	516	
Dharamshala	8.1	31.3	15.1	-	-	-	45.5	345	

2.4 Accessibility to Water Sources

Accessibility to water sources is an important indicator to measure the service delivery level. Distance traveled by households to fetch water is presented in Table 2.4. Data shows that 100 percent households in Jhunjhunu and 80.4 per cent in Janjgir had access to water, including both, where the source was less than 50 meter far and own household premises. It further shows that 12.3 per cent households in Sehore got access to water within their household premises. However, 22.9 per cent households in Sehore had to travel more than 50 meter to fetch water. It clearly shows that 9.7 per cent households in Sehore had to walk more than 250 meters to collect water.

Table 2.4: Distance Travelled by Households to Fetch Water (%)

Name of Municipalities	Distance (Meter)							Total
	< 50 ^a	>50 to <100	>100 to <250	> 250	Other	No response	Within Household premises	
Karauli	58.5	14.8	8.4	0.6	6.2	5.7	3.5	485
Jhunjhunu	100	-	-	-	-	-	-	259
Rajnandgaon	29.1	18.3	3.4	2.6	10.6	36.0	-	701
Janjgir	80.4	14.5	4.5	-	-	0.6	-	179
Narnaul	41.0	21.2	15.2	3.1	1.1	18.4	-	553
Mahendergarh	30.6	8.1	4.2	8.7	1.3	47.1	-	310
Sehore	47.9	22.9	7.0	9.7	0.2	-	12.3	516
Dharamshala	44.6	4.1	1.2	0.6	-	49.6	-	345

^a Including own household premises

Data on time spent by households to fetch water is shown in Table. 2.5. 100 per cent households in Jhunjhunu spent less than 30 minutes to fetch water as compared to other cities. This was followed by Janjgir with 89.4 per cent. 25.5 per cent households in Narnaul had to spend more than 30 minutes to 1 hour to fetch water. However, majority of households in Narnaul (16.8 per cent) also spent greater time (i.e. more

than one hour) to collect water as compared to other cities. However, 47.5 per cent households did not respond on this issue.

Table 2.5: Time Spent by Households to Fetch Water (%)

Name of Municipalities	Time						
	< 30 m	> 30 m to < 1 h	> 1 h	Other	No response	Within household premises	Total
Karauli	60.4	6.2	10.1	-	23.3	-	485
Jhunjhunu	100	-	-	-	-	-	259
Rajnandgaon	46.5	14.8	4.7	0.9	33.1	-	701
Janjgir	89.4	10.0	-	-	0.6	-	179
Narnaul	38.9	25.5	16.8	0.7	18.1	-	553
Mahendergarh	33.6	10.3	9.0	0.3	46.8	-	310
Sehore	50.6	24.6	15.5	0.6		8.7	516
Dharamshala	44.3	6.7	1.2	0.3	47.5	-	345

2.5 Availability of Water Supply

Data on water availability in the select households is shown in Table 2.6. It shows that most of the households (69.2 percent) in Rajnandgaon had between 51-100 litres of water available for consumption per day, while 67.6 percent in Janjgir had between 101-200 litres water. Nearly 57 percent households in Jhunjhunu had more than 200 litres water available for consumption. However, 14.2 per cent households in Dharamshala did not respond on this issue.

Table 2.6: Available Amount of Water Per Day Per Households (%)

Name of Municipalities	Amount Water ¹							Total
	Up to 50	51-100	>100	101-200	201-500	>500	No response	
Karauli	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	-
Jhunjhunu	4.6	0.8	-	26.3	57.1	1.2	10.0	259
Rajnandgaon	15.6	69.2	-	5.3	-	-	9.1	701
Janjgir	13.4	18.9	-	67.6	-	-	-	179
Narnaul	15.7	34.4	-	38.3	11.6	-	-	553
Mahendergarh	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	-
Sehore	22.7	25.6		34.1	17.6	-	-	516
Dharamshala	51.0	17.4	17.4	-	-	-	14.2	345

¹ Litre per day per household

2.6 Frequency of Water Supplied

With regard to frequency of water supply for group connection, Table 2.7 reveals that 44.2 per cent households in Mahendergarh received water daily. While 10.7 per cent

households in Sehore received water on alternate day. However, highest percentage of households in Sehore (70.2 per cent) were receiving water on every third, fourth or even fifth day. It shows that the frequency of water was very poor in this city.

Table 2.7: Frequency of Water Supply for Group Connection (%)

Name of Municipalities	Frequency of Water Supply				Total
	Daily	Alternate Day	Other	No Response/ Not Applicable	
Karauli	13.2	0.2	72.2	74.2	485
Jhunjhunu	N.A.	N.A.	N.A.	N.A.	-
Rajnandgaon	32.7	0.9	0.4	66.0	701
Janjgir	N.A.	N.A.	N.A.	N.A.	-
Narnaul	5.8	-	-	94.2	553
Mahendergarh	44.2	0.3	-	55.5	310
Sehore	19.2	10.7	70.2	-	516
Dharamshala	N.A.	N.A.	N.A.	N.A.	-

In case of individual water connection, Table 2.8 shows that 93.4 per cent households in Jhunjhunu had been receiving water daily, followed by Mahendergarh (53.2 per cent). While, 33.6 per cent households in Narnaul were receiving water on alternate day followed by Sehore at 10.7 per cent. On the other hand, a substantial percentage of households (70.1 per cent) in Sehore did not give any response on this issue.

Table 2.8: Frequency of Water Supply for Individual Connection (%)

Name of Municipalities	Frequency of Water Supply			Total
	Daily	Alternate Day	No Response/ Not Applicable	
Karauli	63.7	0.8	35.9	485
Jhunjhunu	93.4	0.4	6.2	259
Rajnandgaon	52.8	-	47.2	701
Janjgir	N.A.	N.A.	N.A.	-
Narnaul	14.1	33.6	52.3	553
Mahendergarh	53.2	-	46.8	310
Sehore	19.2	10.7	70.1	516
Dharamshala	N.A.	N.A.	N.A.	-

Table 2.9 shows the flow of water in the selected households. Highest percentage of households (73 per cent) in Jhunjhunu reported a medium pressure of water flow in the city as compared to others. 33.9 per cent households in Mahendergarh reported for low pressure of water flow. On the other hand, large proportion of households did not respond to this question. Maximum of such households (87.25 per cent) were found in Dharamshala followed by Narnaul (48.6 per cent).

Table 2.9: Pressure/Flow of Water Supply for Households (%)

Name of Municipalities	Flow of Water Supply				
	High Pressure	Medium Pressure	Low Pressure	No Response / Not Applicable	Total
Karauli	15.7	37.1	27.0	20.2	485
Jhunjhunu	3.5	73.0	22.4	1.2	259
Rajnandgaon	3.7	28.1	24.5	43.60	701
Janjgir	N.A.	N.A.	N.A.	N.A.	-
Narnaul	6.9	28.8	15.7	48.6	553
Mahendergarh	2.9	61.3	33.9	1.9	310
Sehore	9.5	54.3	8.9	27.3	516
Dharamshala	2.90	8.99	0.87	87.25	345

2.7 Quality of Water Supply

As far as quality of water supply is concerned, Table 2.10 reveals that 94.2 per cent households in Jhunjhunu had been receiving clean water. However, 23.6 per cent households in Sehore reported that they received muddy water. It meant that majority of households were satisfied with the quality of water supply across the selected cities. Hence, very few households reported any occurrence of ailment due to impure water. It is evident from Table 2.11 that 98.7 per cent households in Mahendergarh didn't report any occurrence of ailment due to impure water, followed by Narnaul and Janjgir at 93 per cent. However, 95.7 per cent households in Dharamshala did not give any response in this regard.

Table 2.10: Quality of Water Supply as Reported by Households (%)

Name of Municipalities	Quality of Water Supply				Total
	Clean Water	Muddy Water	Any Other Impurity	No Response	
Karauli	66.8	25.1	8.1	-	485
Jhunjhunu	94.2	2.7	1.9	1.2	259
Rajnandgaon	75.6	6.3	18.1	-	701
Janjgir	88.3	8.4	3.4	-	179
Narnaul	49.7	8.5	6.9	34.9	553
Mahendergarh	92.3	5.2	0.6	1.9	310
Sehore	47.3	23.6	3.5	25.6	516
Dharamshala	88.7	2.9	2.6	5.8	345

Table 2.11: Occurrence of Ailment due to Impure Water as Reported by Households (%)

Name of Municipalities	Complaint on Ailment			
	Yes	No	No Response	Total
Karauli	-	-	100.0	485
Jhunjhunu	1.6	85.7	12.7	259
Rajnandgaon	N.A.	N.A.	N.A.	-
Janjgir	6.7	93.3	-	179
Narnaul	5.2	93.5	1.3	553
Mahendergarh	1.0	98.7	0.3	310
Sehore	6.2	60.9	32.9	516
Dharamshala	-	4.3	95.7	345

2.8 Rating of Water Supply

In order to assess the level of satisfaction by the citizens with regard to accessibility, availability, quantity, frequency, and quality of water supply, the households were asked to rate these aspects of service in five points scale in terms of very good, good, average, fair and poor.

The level of satisfaction with regard to quantity of water supply is graphically presented in Figure 2.1. It shows that 73.3 per cent households in Dharamshala and 69.5 percent in Jhunjhunu had rated the quantity of water as average. On the other hand, 71.9 per cent households in Karauli rated it as 'good'. This was followed by Janjgir (65.9 per cent), while, 26 per cent households in Narnaul city were not satisfied at all and therefore, they rated it as 'very poor'.

With regard to frequency of water supply, Figure 2.2 shows that 76.1 per cent households in Rajnandgaon rated it as 'good', while 71.9 per cent households in Dharamshala and 69 per cent in Mahendergarh had rated frequency of water as 'average'. On the other hand, 46.3 per cent households in Sehore rated it as 'poor'. A substantial percentage of households (49.4 per cent) did not give any reply on this issue.

The level of satisfaction with regard to timings of water supply is presented in Figure 2.3. It reveals that nearly 80 per cent households in Rajnandgaon were satisfied with this service and hence, had rated it as 'good'. 69.5 per cent households in Jhunjhunu and 63.8 per cent in Dharamshala had rated this aspect of service as 'average'. On the other hand, about 46 per cent households in Sehore were not satisfied with this service and hence they had rated it as 'poor' and 14.2 per cent in the same city rated it as 'very poor'.

Rating of quality of water supply is shown in Figure 2.4. It shows that 74.5 per cent in Jhunjhunu rated it as 'average', whereas 65.9 per cent in Rajnandgaon and 58.7 per cent in Janjgir had rated it as 'good'. However, only 29 per cent households in Sehore had rated this aspect of the service as 'poor'.

The level of satisfaction with regard to accessibility of water supply is presented in Figure 2.5. It shows that 82.5 per cent households in Narnaul and nearly 70 per cent in Mahendergarh rated it as 'average'. On the other hand, 46.9 per cent households in Sehore rated it as 'poor'.

Rating of expenditure on water supply is shown in Figure 2.6. It shows that 82.5 per cent households in Narnaul rated the expenditure incurred on water supply as 'average', while 13.8 per cent in Rajnandgaon rated it as 'good', implying by and large satisfaction with the amount of money they had to spend on water supply. On the other hand, nearly 47 per cent households in Janjgir and 36.4 per cent in Sehore had rated it as 'poor', whereas 11.6 per cent in Sehore rated it as 'very poor'. A significant proportion of households (40.6 per cent) in Mahendergarh and 39.4 per cent in Jhunjhunu did not respond to this question.

2.9 Willingness to Pay for Improved Water Supply

Any increment in water charges is often opposed on the concern that it would be an unwelcome burden on the people. However, some times people are willing to pay a little more if it means better service. The survey asked the people whether they were willing to pay more for improved water supply services.

Number of households willing to pay additional money for improved water supply services in the selected cities is presented in Table 2.12. It shows that 96 per cent households in Jhunjhunu were willing to pay additional money for improved water supply services. This is followed by Jhunjhunu (77.6 per cent) and Janjgir (72.6 per cent). However, at the same time, 40.6 per cent households in Dharamshala did not show interest in paying extra money for the improvement of water supply service. According to the respondents, the state of water supply service seems to be satisfactory which was also reflected by the rating of services given by the citizens.

Table 2.12: Number of Households Willing to Pay Additional Money for Improved Water Supply Services (%)

Name of Municipalities	Willingness to Pay			Total
	Willing	Unwilling	No Response	
Karauli	-	100	-	485
Jhunjhunu	77.6	21.2	1.2	259
Rajnandgaon	N.A.	N.A.	N.A.	-
Janjgir	72.6	27.4	-	179
Narnaul	96.0	2.9	1.1	553
Mahendergarh	50.3	49.4	0.3	310
Sehore	43.6	23.3	33.1	516
Dharamshala	59.4	40.6	-	345

Table 2.13 reveals that maximum households (78.3 per cent) in Narnaul were willing to pay additional money upto Rs.50 per month for the improvement of the services, followed by Jhunjhunu (57.1 per cent). A negligible proportion of households (1.4 per cent) in Sehore had shown their interest in paying extra money of Rs.100 per month or above.

However, a large proportion of households (40.6 per cent) were not willing to pay extra money for the improvement of service. On the other hand, 55 per cent households in Sehore did not respond on this issue.

Table 2.13: Additional Amount of Money that Households Willing to Pay for Improved Water Supply Services (%)

Name of Municipalities	Willingness to Pay						Total
	1 - 50	< 20	51 - 100	> 100	No Response	Unwilling to pay	
Karauli	-	-	-	-	-	100.0	485
Jhunjhunu	57.1	-	18.9	1.5	21.2	-	259
Rajnandgaon	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	-
Janjgir	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	-
Narnaul	78.3	-	17.7	-	4.0	-	179
Mahendergarh	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	-
Sehore	13.8	-	6.6	1.4	55.0	23.3	516
Dharamshala	53.9	4.9	-	-	0.6	40.6	345

Figure 2.1: Rating of Water Supply Services : Quantity

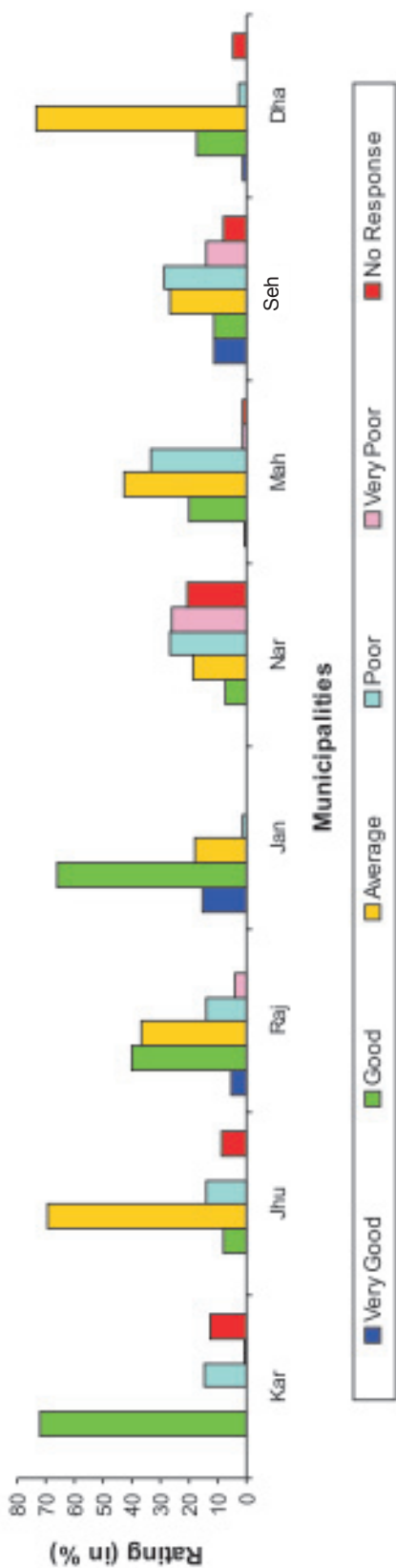
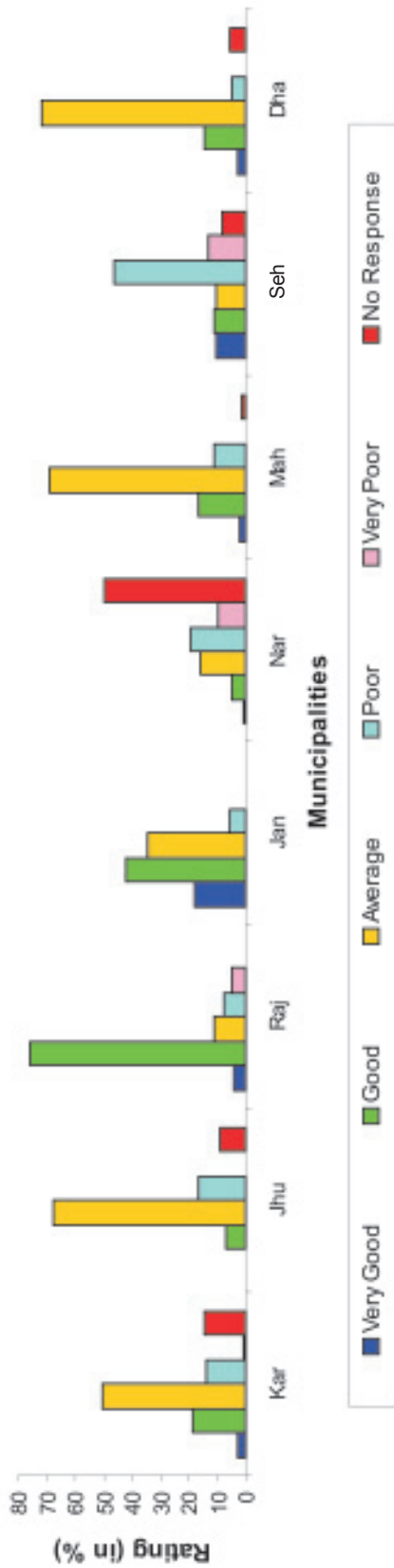


Figure 2.2 : Rating of Water Supply Service - Frequency



Note : Kar - Karauli Jhu - Jhunjhunu Raj - Rajnandgaon Jan - Janjgir Nar - Narnaul Mah - Mahendergarh Seh - Sehare Dha - Dharamshala

Figure 2.3: Rating of Water Supply Services - Timing

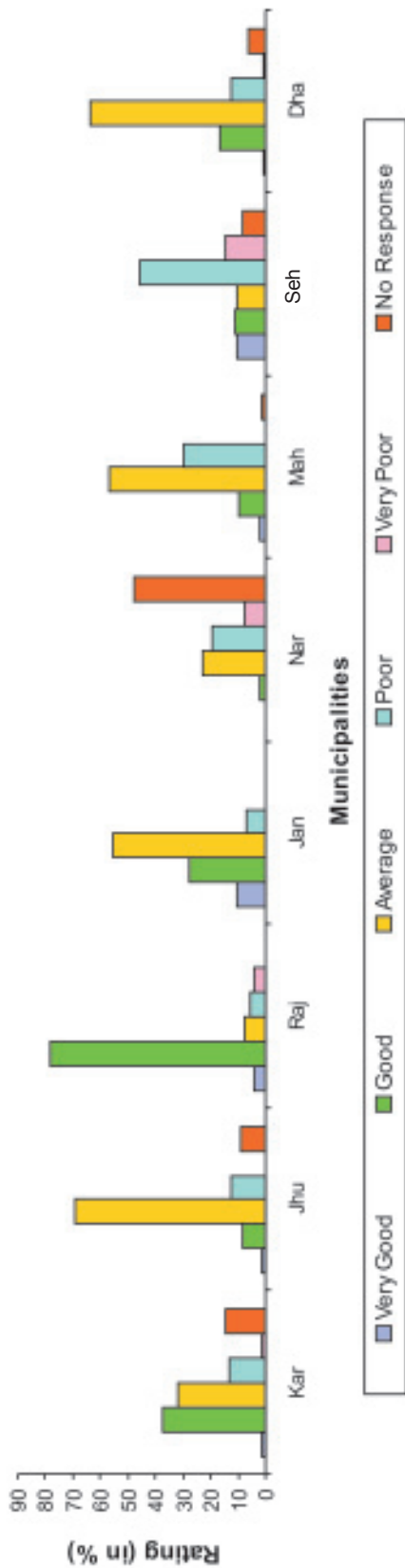


Figure 2.4: Rating of Water Supply Services - Quality

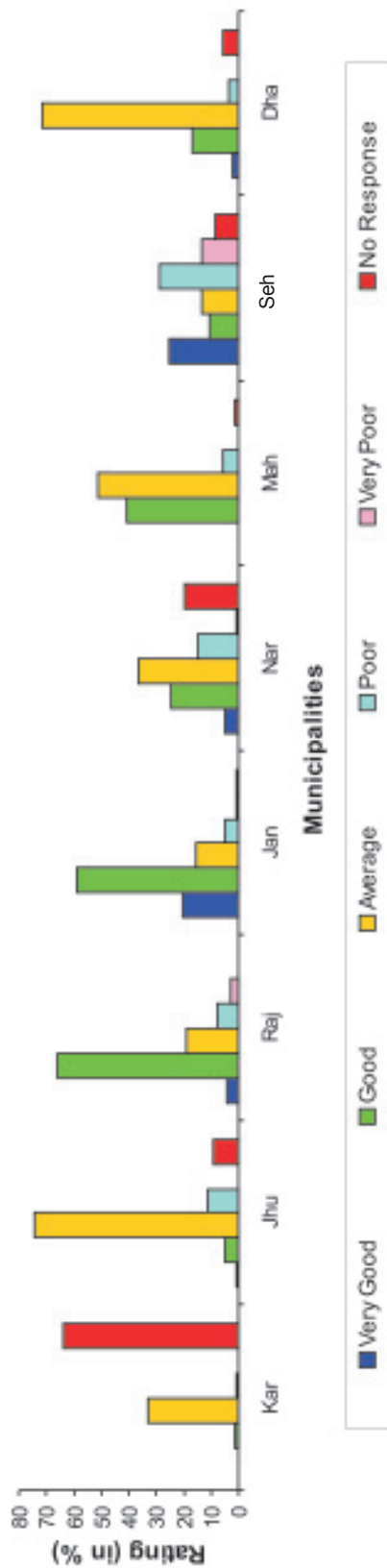


Figure 2.5 : Rating of Water Supply Services: Accessibility

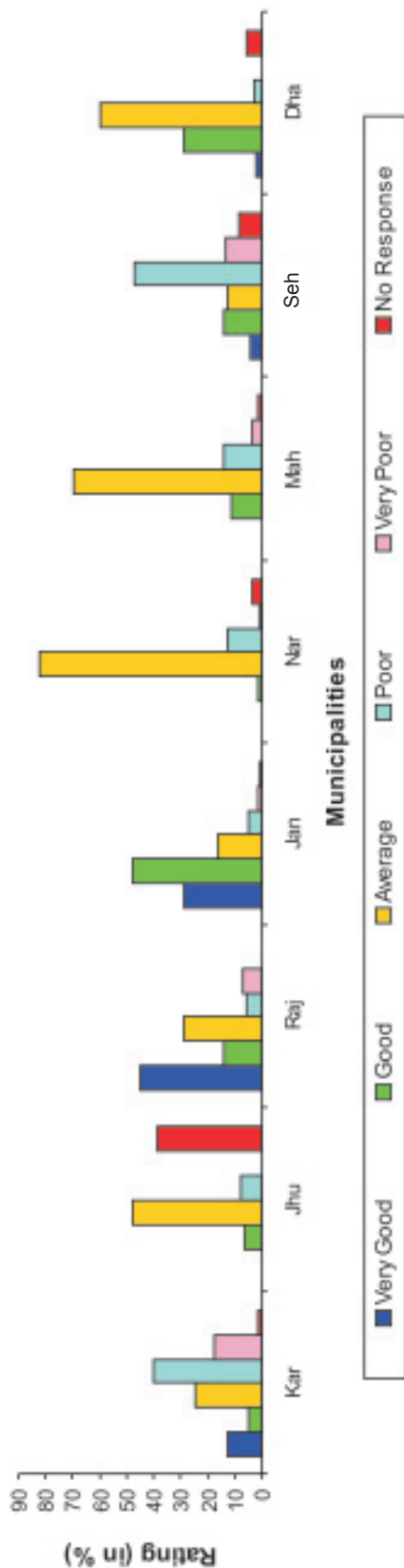
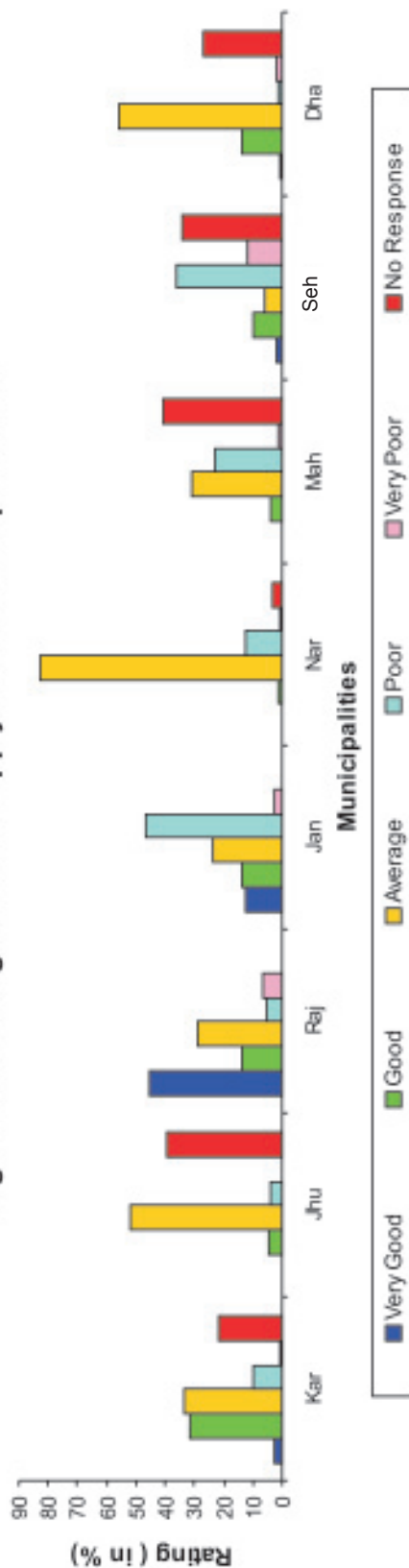


Figure 2.6: Rating of Water Supply Services : Expenditure



Chapter 3

SANITATION

Sanitation is one of the important functions of municipalities. It includes community latrine, sewerage (waste water), drainage system and solid waste management. Adequate provision of sanitation is imperative to maintain public health. In this section, two important services namely, sanitation and solid waste management have been discussed in detail.

3.1 Latrine Facility

Place of defecation for households of the selected cities is presented in Table 3.1. It shows that maximum percentage of households (95.7 per cent) in Jhunjhunu had private latrine as compared to other cities. Sehore stood at second place with 76.2 per cent. On the other hand, a substantial percentage (48.4 per cent) of households in Janjgir had been using open areas for defecation including a few households who were using private latrine as well as open areas for defecation. This was because of shortage of water and non-availability of sewerage system in the city. 13.40 per cent households in Rajnandgaon were using other places for defecation. Other places include pay and use latrine, community latrine and not applicable cases.

Table 3.1: Place of Defecation for Households (%)

Name of Municipalities	Place of Defecation				Total
	Private latrine	Neighbour's latrine	Open defecation	Other places	
Karauli	66.6	3.10	28.9	1.40	485
Jhunjhunu	95.7	0.4	3.5	0.4	259
Rajnandgaon	62.6	0.1	23.8	13.4	701
Janjgir	44.7	-	48.4	6.9	188
Narnaul	64.6	-	35.4	-	553
Mahendergarh	N.A.	N.A.	N.A.	N.A.	-
Sehore	76.2	0.8	23.1	-	516
Dharamshala	61.7	1.74	27.2	9.3	345

Data related to types of private latrine is shown in Table 3.2. It shows that maximum percentage of households (64.3 per cent) in Sehore had pour flush with septic tank followed by Jhunjhunu (59.8 per cent) and Dharamshala (57.1 per cent). On the other hand 45.9 per cent households in Rajnandgaon and 38.3 per cent in Janjgir had been using dry/ bucket type latrine. Highest percentage of households (55.3 per cent) in Janjgir were using other type of latrine such as pay and use latrine, community latrine etc.

Table 3.2: Type of Own Latrine for Households (%)

Name of Municipalities	Type of Own Latrine					Total
	Pour flush with septic tank	Pit latrine	Dry / bucket latrine	Other	Open defecation	
Karauli	N.A.	N.A.	N.A.	N.A.	N.A.	-
Jhunjhunu	59.8	39.4	0.8	-	-	259
Rajnandgaon	15.3	2.4	45.9	37.20	-	701
Janjgir	3.2	3.2	38.3	55.3	-	188
Narnaul	15.6	23.1	19.9	6.0	35.4	553
Mahendergarh	-	45.2	3.2	-	51.6	310
Sehore	64.3	11.6	4.1	0.4	19.6	516
Dharamshala	57.1	2.90	1.74	38.26	-	345

Table 3.3 shows that 90 per cent households in Jhunjhunu and 85.70 per cent in Karauli were using piped individual house water connection for sanitary use. 62.8 per cent households in Janjgir had been using public stand post serviced by municipality. On the other hand, as high as 47.90 percent households in Sehore and 41 per cent in Karauli did not give any response.

3.2 Sewerage System

Data on sewerage system in the selected cities is shown in Table 3.4. Highest percentage of households (99.8 per cent) in Karauli reported that they had no sewerage system in their locality. However, maximum percentage of households (86 per cent) in Jhunjhunu and 78.9 per cent in Sehore had sewerage system, which was mostly overflowed, choked and was broken. Maintenance of sewerage system was poor wherever it was available across the cities. Maximum percentage of households (47.3 per cent) in Dharamshala did not respond.

Table 3.3: Sources of Water for Sanitary Use for Households belong to Different Income Categories (%)

Sl. No.	Source of Water	Kar	Jhu	Raj	Jan	Nar	Mah	Seh	Dha
1	Piped individual house connection from Municipality	85.7	90.0	44.1	1.6	31.5	26.5	20.3	11.59
2	Private tube well	6.3	1.5	11.8	21.3	0.2	13.9	5.4	33.33
3	Private well / pond	0.7	-	1.4	5.6	0.9	21.9	0.6	8.11
4	Public stand post serviced by Municipality	2.1	-	39.5	62.8	6.1	-	10.3	3.19
5	Community well/pond	1.0	1.5	2.0	8.0	-	-	10.3	0.29
6	Group connection serviced by Municipality	-	0.4	0.8	0.5	23.7	-	1.0	-
7	Private vendor	-	-	0.3	-	0.2	-	-	-
8	Tanker supply by Municipality	-	-	-	-	-	-	-	0.58
9	River/Canal/Lake	-	-	-	-	2.0	-	4.3	-
10	Other	4.2	-	-	-	35.4	37.7	-	42.90
11	No response	41.0	6.6	-	-	-	-	47.9	-
	Total	485	259	701	188	553	310	516	345

Table 3.4: Availability of Sewerage at Household Premises for Households(%)

Name of Municipalities	Availability of Sewerage			
	Yes	No	No Response/ Not Available	Total
Karauli	0.2	99.8	-	485
Jhunjhunu	86.1	5.8	8.1	259
Rajnandgaon	57.8	40.9	1.3	701
Janjgir	35.6	64.4	-	188
Narnaul	65.6	34.3	-	553
Mahendergarh	70.6	29.4	-	310
Sehore	78.9	20.3	0.8	516
Dharamshala	17.8	33.9	47.3	345

Place of sewerage disposal for households who belonged to selected cities is presented in Table 3.5. It shows that highest percentage of households (79.9 per cent) in Jhunjhunu had connection between household's sewerage system and municipal sewerage system. This is followed by Narnaul (54.4 per cent) and Rajnandgaon (53.6 per cent). However, 90.2 per cent households in Dharamshala either did not respond or data was not available.

Table 3.5: Place of Household Sewerage Disposal (%)

Name of Municipalities	Place of Household Sewerage Disposal						Total
	Municipal sewerage	Municipal rainwater drain	River/ Pond	Open land	Septic tank / soak pit Not Applicable	Other/No response/	
Karauli	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	-
Jhunjhunu	79.9	2.7	3.9	0.4	-	13.1	259
Rajnandgaon	53.6	0.8	0.4	3.4	2.1	39.5	701
Janjgir	29.8	-	-	4.3	1.6	64.4	188
Narnaul	54.4	2.0	-	4.5	4.0	35.1	553
Mahendergarh	11.9	19.0	0.3	13.2	25.8	29.6	310
Sehore	21.5	40.5	5.2	12.0	2.5	18.2	516
Dharamshala	1.45	4.93	-	-	3.48	90.2	345

Data related to types of sewerage at household premises is presented in Table 3.6. It reveals that 88.3 per cent households in Rajnandgaon had been using open pucca drains, however, 62.6 per cent in Jhunjhunu were using covered pucca drain followed by 22.3 per cent in Janjgir. Maximum households in Dharamshala (88.4 per cent) did not response.

Table 3.6: Type of Sewerage at Household Premises (%)

Name of Municipalities	Type of Sewerage						Total
	No drain	Open kutchra drain	Open pucca drain	Covered pucca drain	Underground pucca drain	No response/ Not Applicable	
Karauli	99.4	-	0.6	-	-	-	485
Jhunjhunu	-	5.8	19.7	62.6	1.5	10.4	259
Rajnandgaon	0.1	1.0	88.3	0.4	8.0	2.1	701
Janjgir	-	2.7	6.4	22.3	4.3	64.4	188
Narnaul	-	7.4	17.0	4.7	36.5	34.3	553
Mahendergarh	-	1.3	22.6	29.3	18.4	31.6	310
Sehore	-	38.0	38.6	2.2	1.7	19.6	516
Dharamshala	-	2.03	4.64	-	4.93	88.4	345

Frequency of cleaning of municipal sewer as reported by households belonging to the selected cities is presented in Table 3.7. A substantial percentage of households (40.5 per cent) in Jhunjhunu and 35.4 per cent in Narnaul reported that the municipality took more than a week's times to clean the sewerage system. 27.8 per cent households in Rajnandgaon reported that the city municipality workers came 2-3 times in a week for cleaning the municipal sewers. On other hand, nearly 31 per cent households in Sehore complained that the municipality never cleaned the municipal sewers at all. This is followed by Janjgir (23.4 per cent) and Narnaul (20.4 per cent).

Table 3.7: Frequency of Cleaning of Municipal Sewer (%)

Name of Municipalities	Frequency of Cleaning of Municipal Sewer						Total
	Daily	2-3 times in a week	Weekly	Longer than a week	Never	No response	
Karauli	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	-
Jhunjhunu	1.2	23.5	9.3	40.5	12.0	13.5	259
Rajnandgaon	14.3	27.8	20.4	25.5	5.4	6.5	701
Janjgir	1.6	9.6	11.2	26.6	23.4	27.7	188
Narnaul	0.4	-	0.5	35.4	20.4	43.2	553
Mahendergarh	1.5	22.3	41.2	13.6	10.1	2.3	310
Sehore	1.2	8.3	8.5	32.0	30.8	19.2	516
Dharamshala	1.2	4.6	6.4	0.6	16.2	71.0	345

3.3 Drainage System

Providing proper drainage system is the key responsibility of the city municipality. Data related to drainage system in the selected cities is presented in Table 3.8. It reveals that maximum percentage of households (63.9 per cent) in Mahendergarh had no drainage system followed by Karauli (59 per cent) and Janjgir (48.9 per cent). However, 87 per cent households in Rajnandgaon and 74.6 per cent in Sehore confirmed the availability of drainage system in their localities.

Table 3.8: Availability of Drainage Facility As Reported by Households (%)

Name of Municipalities	Availability of Drainage Facility			Total
	Yes	No	No Response	
Karauli	40.8	59.0	1.2	485
Jhunjhunu	66.8	32.4	0.8	259
Rajnandgaon	87.0	12.6	0.4	701
Janjgir	51.1	48.9	-	188
Narnaul	56.1	43.9	-	553
Mahendergarh	36.1	63.9	-	310
Sehore	74.6	25.2	0.2	516
Dharamshala	60.0	40.0	-	345

Regarding the presence of water logging problem, Table 3.9 reveals that 76.5 per cent households in Jhunjhunu and 72.6 per cent households in Rajnandgaon hadn't reported complains about water logging problems in their localities. However, highest percentage of households in Mahendergarh (96.7 per cent) reported that there was water-logging problem in their colony, followed by Sehore (65.5 percent) and Dharamshala (53.9 per cent).

Table 3.9: Presence of Water Logging Problem as Reported by Households(%)

Name of Municipalities	Presence of Water Logging Problem			
	Yes	No	No Response	Total
Karauli	44.5	54.8	0.6	485
Jhunjhunu	22.0	76.5	1.5	259
Rajnandgaon	26.8	72.6	0.6	701
Janjgir	38.9	60.1	-	188
Narnaul	44.5	55.5	-	553
Mahendergarh	96.7	3.3	-	310
Sehore	65.5	31.8	2.7	516
Dharamshala	53.9	46.1	-	345

Data on frequency of water logging problem is presented in Table 3.10. Maximum proportion of households (42 per cent) in Dharamshala reported that the frequency of water logging was less than 5 times in a year, while 30.8 per cent households in Sehore reported it was more than 10 times in a year. On the other hand, a large proportion of households (78.4 per cent) in Jhunjhunu did not give any response.

Table 3.10: Frequency of Water Logging Problem Every Year as Reported by Households (%)

Name of Municipalities	Frequency of Water Logging / Year				
	<5 times /yr	5-10 times /yr	>10 times /yr	No Response / Not Applicable	Total
Karauli	-	-	-	-	-
Jhunjhunu	2.7	1.5	17.4	78.4	259
Rajnandgaon	18.7	3.6	6.4	71.3	701
Janjgir	14.4	11.7	8.5	65.4	188
Narnaul	16.1	18.1	6.9	58.9	553
Mahendergarh	-	-	-	-	-
Sehore	13.6	20.4	30.8	35.3	516
Dharamshala	42.0	9.0	3.0	46.1	345

3.4 Solid Waste Management

Municipalities are entrusted with the responsibility of solid waste management. Solid wastes include wastes such as residential, commercial, industrial, institutional etc. It is broadly divided into two categories viz. biodegradable waste and non-biodegradable waste.

Here, residential waste is discussed with regard to paper waste, plastic waste and other waste such as ashes, domestic animal's food waste etc. Data on paper waste is presented in Table 3.11. It reveals that maximum percentage of households (75 per cent) in Rajnandgaon had been generating half kilograms of paper waste followed by Dharamshala (68.7 per cent). A minor percentage of households (2.02 per cent) in

Dharamshala generated more than one kilograms of paper waste. On the other hand, 94.2 per cent households in Jhunjhunu and 81.8 per cent in Sehore did not respond on the issue.

Table 3.12 shows that 100 per cent households in Rajnandgaon had been generating half kilograms (0.5 kg.) of plastic waste followed by Janjgir (63.8 per cent) and Dharamshala (59.4 per cent). Highest percentage of households (5.8 per cent) of Jhunjhunu were generating more than one kilogram of plastic waste. A large proportion of households in Jhunjhunu (93 per cent) did not give any response, followed by Sehore (82.4 per cent).

Table 3.11: Amount of Paper Waste Generated Per Household (%)

Name of Municipalities	Amount of Paper Waste				
	Up to 0.5 Kg	> 0.5 Kg to 1 Kg	> 1 Kg	No Response	Total
Karauli	N.A.	N.A.	N.A.	N.A.	-
Jhunjhunu	2.7	2.7	0.4	94.2	259
Rajnandgaon	75.0	-	-	25.0	701
Janjgir	47.8	-	-	52.1	188
Narnaul	35.8	-	-	64.2	553
Mahendergarh	N.A.	N.A.	N.A.	N.A.	-
Sehore	18.2	-	-	81.8	516
Dharamshala	68.7	-	2.02	29.2	345

Table 3.12: Amount of Plastic Waste Generated Per Household (%)

Name of Municipalities	Amount of Plastic Waste				
	Up to 0.5 Kg	> 0.5 Kg to 1 Kg	> 1 Kg	No Response	Total
Karauli	N.A.	N.A.	N.A.	N.A.	-
Jhunjhunu	0.8	0.4	5.8	93.0	259
Rajnandgaon	100	-	-	-	701
Janjgir	63.8	-	-	36.2	188
Narnaul	46.5	-	-	53.5	553
Mahendergarh	N.A.	N.A.	N.A.	N.A.	-
Sehore	17.6	-	-	82.4	516
Dharamshala	59.4	1.5	0.3	38.8	345

As far as, other waste is concerned, it is observed from Table 3.13 that highest percentage of households (90.7 per cent) in Rajnandgaon were generating upto 2 kg of other wastes such as ashes, domestic animal's good waste etc. This was followed by Dharamshala (82.9 per cent) and Janjgir (54.8 per cent). More than 20 per cent households of Jhunjhunu were generating between 2 to 5 kilograms of other wastes. Highest percentage of households (85.5 per cent) in Sehore did not give any response.

Table 3.13: Amount of Other Waste Generated Per Household (%)

Name of Municipalities	Amount of Other Waste				
	Up to 2 Kg	> 2 Kg to 5 Kg	> 5 Kg	No Response	Total
Karauli	N.A.	N.A.	N.A.	N.A.	-
Jhunjhunu	6.6	20.8	11.2	61.4	259
Rajnandgaon	90.7	-	-	9.3	701
Janjgir	54.8	-	-	45.2	188
Narnaul	N.A.	N.A.	N.A.	N.A.	-
Mahendergarh	N.A.	N.A.	N.A.	N.A.	-
Sehore	14.5	-	-	85.5	516
Dharamshala	82.9	-	-	17.1	345

Data on disposal of solid waste by households is presented in Table 3.14. It shows that almost 55 per cent households of Janjgir and Sehore threw their waste on the open land/canal followed by Narnaul (50.3 per cent) and Rajnandgaon (38.7 per cent). Maximum households in Jhunjhunu (48.3 percent) threw their wastes on the road. Only 14.8 per cent households in Rajnandgaon threw waste in the private bin for door-to-door collection, which reflected a sensible habit adopted by these households.

According to Table 3.15, 67.4 per cent households in Rajnandgaon reported that the municipal staff had been collecting waste from their locality followed by Jhunjhunu (64.9 per cent) and Sehore (38.4 per cent). On the other hand, a large percentage of households in Janjgir (79.3 per cent) reported that private agency had been collecting waste, which shows the success of privatization of solid waste management in the city as compared to other cities. The city of Narnaul had 40 per cent households who were of the same opinion. Importance of community in the management of solid waste was observed in case of Sehore city where 25.8 per cent households collected large quantity of waste. However, 10.7 per cent households of Dharamshala did not give any response.

Data on frequency of solid waste collection is shown in Table 3.16. It shows that a highest proportion of households (66.9 per cent) in Sehore reported that the municipal staff took longer than a week's time to collect wastes from their colony, which had caused serious health problems to the residents. This was due to various reasons like lack of motivation, shortage of conservancy staff, etc. A substantial percentage of households (43.5 per cent) in Dharamshala felt that the municipal staff collected wastes from their colony only 2-3 times in a week. However, nearly 61 per cent households in Janjgir were of the opinion that the municipal staff had never collected wastes. Hence the Corporation opted for the privatization of waste. About 14 per cent households of Sehore did not give response.

Table 3.14: Mode of Disposal of Solid Waste by Households (%)

Name of Municipalities	Mode of Disposal of Solid Waste								Total
	Private bin for door to door collection	Community bins	Open disposal on road	Open disposal on empty land / canal	Burning	Burying	No response	Total	
Karauli	-	0.4	1.0	6.0	-	-	92.6	485	
Jhunjhunu	7.0	17.4	48.3	23.2	-	0.8	3.5	259	
Rajnandgaon	14.8	7.6	37.9	38.7	0.7	0.3	-	701	
Janjgir	9.8	0.5	30.9	54.8	-	13.8	-	188	
Narnaul	-	4.5	35.3	50.3	0.2	-	-	553	
Mahendergarh	-	28.4	65.5	6.1	-	-	-	310	
Sehore	3.5	12.6	20.2	54.7	1.4	7.6	0.2	516	
Dharamshala	2.9	59.4	1.2	25.2	5.8	0.3	5.2	345	

Table 3.15: Collector of Solid Waste (%)

Name of Municipalities	Collector of Solid Waste						Total
	Municipal staff	Private agency contracted by Municipality	Community members	Other	No response	Total	
Karauli	N.A	N.A	N.A	N.A	N.A	N.A	
Jhunjhunu	64.9	5.4	1.5	27.4	0.8	259	
Rajnandgaon	67.4	0.3	0.5	31.1	0.7	701	
Janjgir	20.7	79.3	-	-	-	188	
Narnaul	35.8	40.3	9.6	13.9	0.4	553	
Mahendergarh	-	-	4.8	40.3	54.8	310	
Sehore	38.4	4.3	25.8	28.7	2.9	516	
Dharamshala	27.5	11.88	20.9	28.99	10.72	345	

Table 3.16: Frequency of Solid Waste Collection (%)

Name of Municipalities	Frequency of Solid Waste Collection							Total
	Daily	2-3 times in a week	Weekly	Longer than a week	Never	No response		
Karauli	5.8	5.2	39.2	41.9	7.4	0.6	485	
Jhunjhunu	12.4	18.5	13.1	23.2	27.8	5.0	259	
Rajnandgaon	18.3	22.0	16.1	12.7	30.8	-	701	
Janjgir	1.1	8.0	8.0	22.3	60.6	-	188	
Narnaul	2.7	32.9	27.1	24.6	12.3	0.4	553	
Mahendergarh	-	-	32.2	35.2	32.2	0.3	310	
Sehore	0.4	4.3	13.6	66.9	1.0	13.9	516	
Dharamshala	8.41	43.5	6.1	7.3	22.6	12.2	345	

Data on street cleaning in the select cities is shown in Table 3.17. Most of the households were of the view that the city streets were not cleaned regularly. Highest percentage of such households were found in Janjgir (89.9 per cent) followed by Rajnandgaon with 61.8 per cent. On the other hand, a large percentage of households (67 per cent) in Dharamshala reported that the city streets were cleaned regularly. However, maximum proportion of households in Karauli (64.7 per cent) did not response to this question.

Table 3.17: Status of Street Sweeping (%)

Name of Municipalities	Street Sweeping			Total
	Yes	No	No response	
Karauli	19.4	15.8	64.7	485
Jhunjhunu	44.8	54.4	0.8	259
Rajnandgaon	38.2	61.8	-	701
Janjgir	10.1	89.9	-	188
Narnaul	58.4	41.2	0.4	553
Mahendergarh	29.9	30.1	40.0	310
Sehore	43.6	54.7	1.7	516
Dharamshala	67.0	23.8	9.2	345

Regarding the frequency of street cleaning, Table 3.18 shows that most of the households (46 per cent) in Karauli were of the view that the streets of their colony had never been cleaned. A substantial percentage of households (31.4 per cent) in Narnaul and 25.2 per cent in Dharamshala received this service 2-3 times in a week, while, 15.2 per cent households in Rajnandgaon received this service daily. A significant proportion of households in Mahendergarh (91.8 per cent) did not respond to the question. As regards to the payment for this service, no one paid money to municipal sweepers for street cleaning in their locality.

Table 3.18: Frequency of Street Sweeping (%)

Name of Municipalities	Frequency of Street Sweeping						Total
	Daily	2-3 times in a week	Weekly	Longer than a week	Never	No response/ Not applicable	
Karauli	12.4	13.6	11.1	10.1	46.0	6.8	485
Jhunjhunu	2.7	20.1	10.4	10.0	4.6	52.1	259
Rajnandgaon	15.2	13.2	5.1	4.6	4.6	61.8	701
Janjgir	1.1	2.1	4.3	2.7	-	89.9	188
Narnaul	2.7	31.4	13.9	10.0	0.7	41.2	553
Mahendergarh	-	-	3.2	52.2	11.9	91.8	310
Sehore	3.5	10.7	9.9	19.2	4.3	52.5	516
Dharamshala	4.1	25.2	4.9	2.3	28.7	34.8	345

3.5 Rating of Services

Peoples' perceptions about the sanitation services are studied in this section. The respondents were asked to rate the services which are categories into five levels i.e. very good, good, average, poor, and very poor.

Regarding the availability of sewerage system, Figure 3.1 shows that majority of households (61.4 per cent) in Jhunjhunu had rated this service as 'average', while 32.4 per cent households in Janjgir rated it as 'good'. On the other hand, it is noticed from the figure that nearly 67 per cent households in Sehore had rated it as 'poor' and 32.4 per cent in Janjgir rated it as 'very poor'. However, highest percentage of households in Dharamshala (87.8 per cent) did not respond on this issue. Hence, the respondents of these cities were not much satisfied with this service.

Figure 3.1: Rating of Services: Availability of Sewerage System

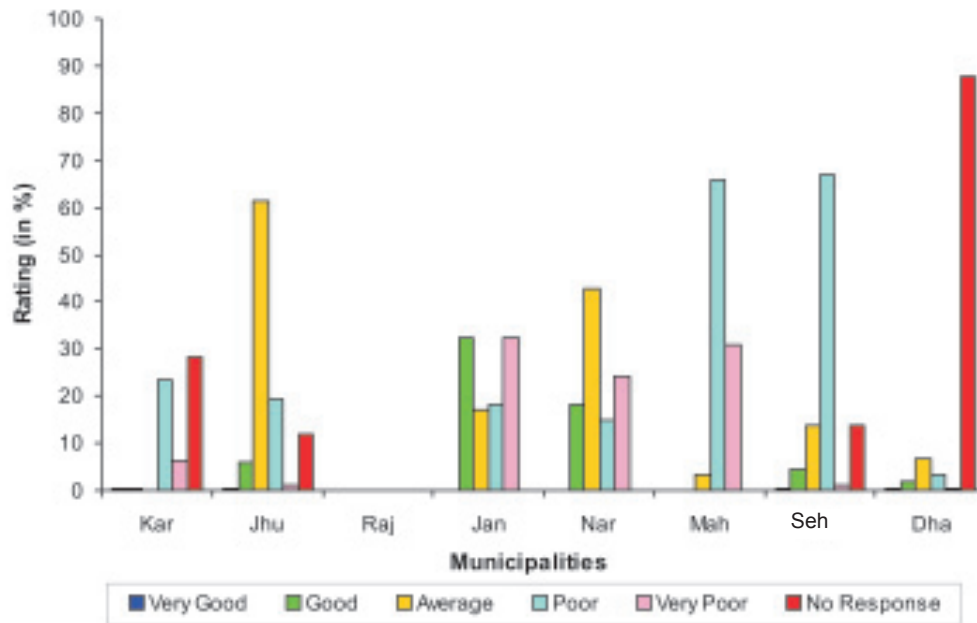


Figure 3.2 represents the rating of the cleaning of sewerage system. It reveals that majority of the households (56 per cent) in Jhunjhunu had rated the cleaning of sewerage system as 'average'. On the other hand, 66.5 per cent households in Sehore rated it as 'poor' and 35.6 per cent in Janjgir rated it as 'very poor'. As a whole, the selected households were not satisfied with the cleaning of sewers in their colonies. However, 86.6 per cent households in Dharamshala were silent on this issue.

Regarding the availability of municipal rainwater drainage, Figure 3.3 shows that most of the households in Jhunjhunu (58.3 per cent) had rated the availability of drainage system in their locality as 'average'. 26.6 per cent households in Janjgir had rated it as 'good' and negligible proportion of households in Jhunjhunu and Narnaul had rated it as 'very good'. On the other hand, majority of households (72.9 per cent) in Sehore and 37 per cent in Dharamshala had rated the availability of drainage system as 'poor'.

Figure 3.2: Rating of Services: Cleaning of Sewerage System

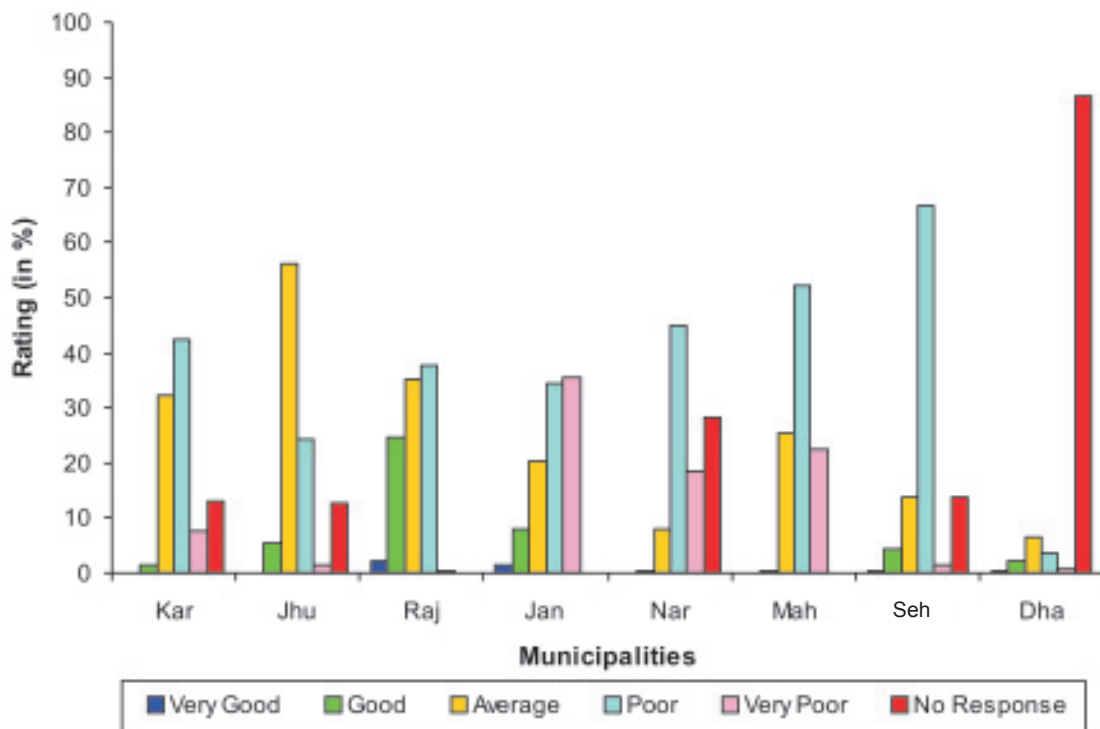


Figure 3.3: Rating of Services: Availability of Municipal Rainwater Drainage

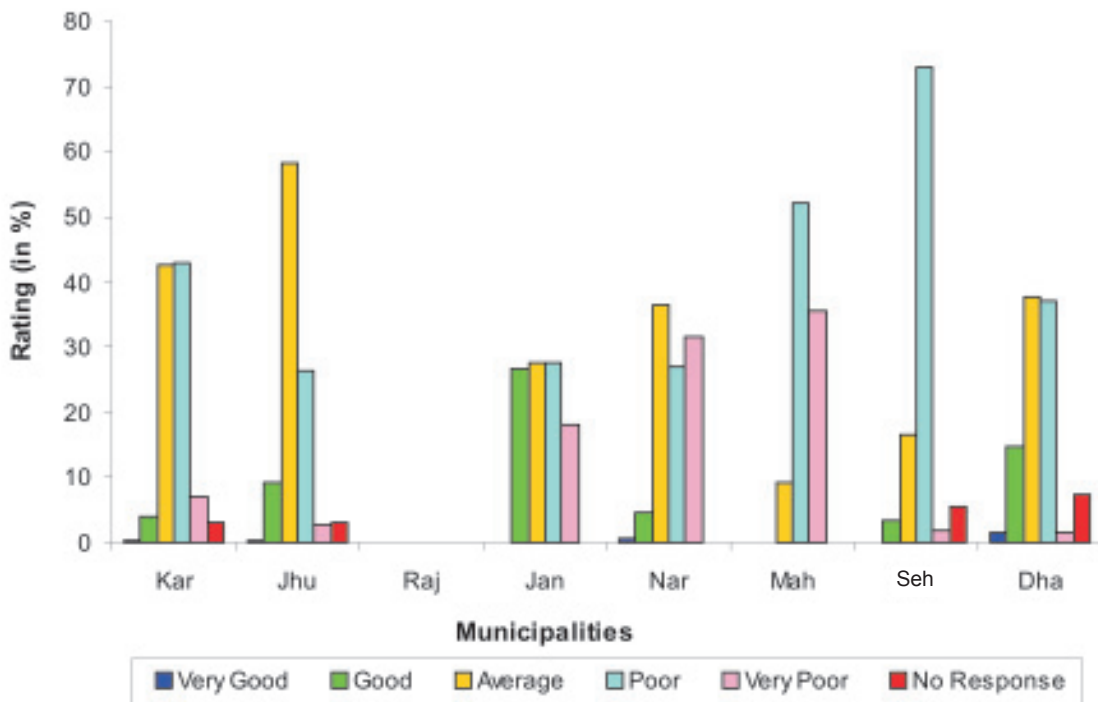


Figure 3.4: Rating of Services: Cleaning of Municipal Rainwater Drainage

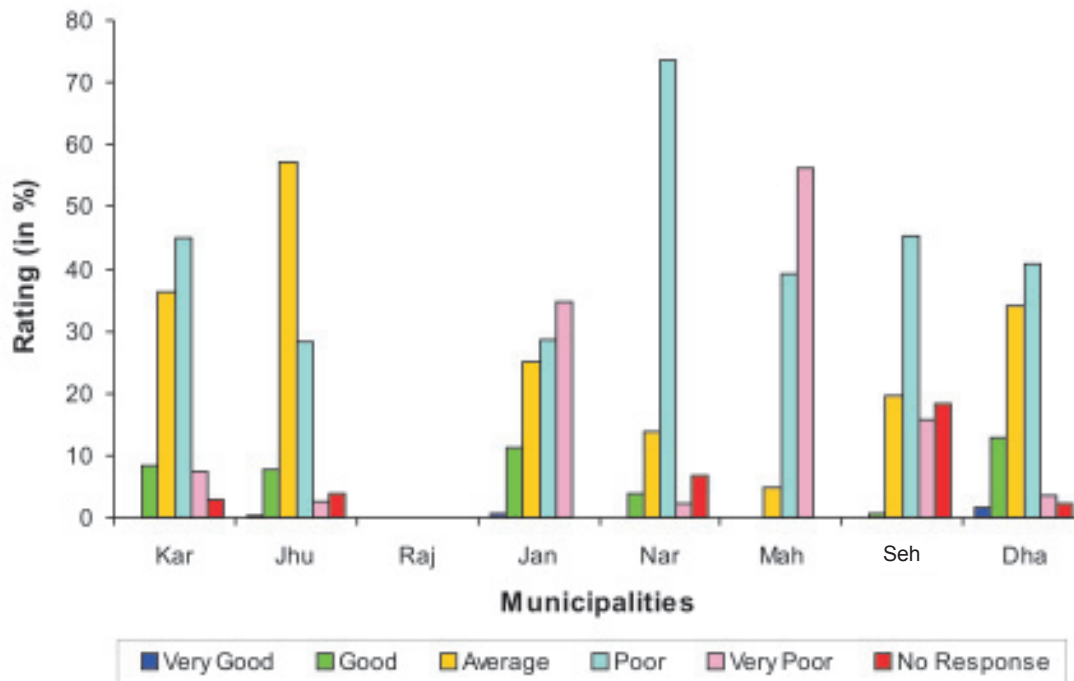


Figure 3.5: Rating of Services: Water Logging / Flooding of Streets

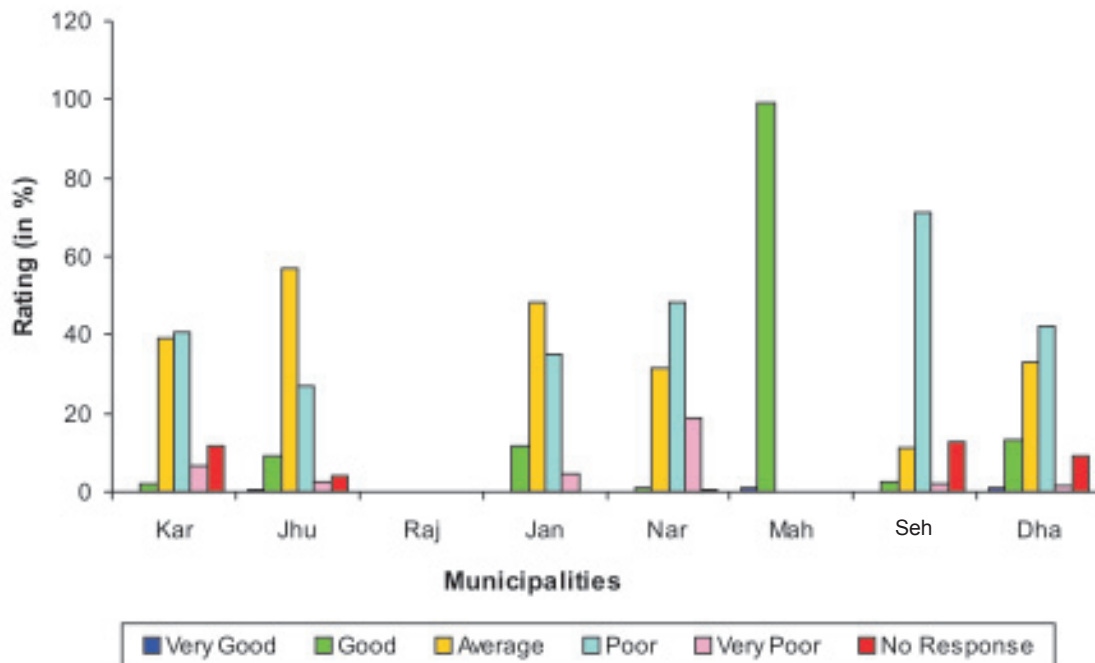


Figure 3.4 reveals that 57 per cent households in Jhunjhunu had rated the cleaning of municipal drains as 'average'. 13 per cent households in Dharamshala rated it as 'good' and again less than one per cent households in Jhunjhunu and Janjgir had rated this service as 'very good'. However, highest percentage of respondents in Narnaul (73.6 per cent) were dissatisfied with this service and had rated it as 'poor' and 34.6 per cent in Janjgir voted the cleaning of drains as 'very poor'. 18.3 per cent households did not respond on this issue.

Data on water logging problem is presented in Figure 3.5, which shows that 56.8 per cent households in Jhunjhunu and 48.4 per cent in Janjgir had rated services related to water logging as 'average'. Whereas 71.1 per cent households in Sehore and 48.1 per cent in Narnaul rated it as 'poor' and 19 per cent respondents in Narnaul had rated it as 'very poor'.

Level of satisfaction of the solid waste collection and street sweeping is shown in Figure 3.6. It reveals that very few households (below 10 per cent) of the selected cities had rated the service as 'good' and 'very good' for the collection of solid waste and street sweeping. This showed that most of the people were not satisfied with the service. Therefore, nearly 58 per cent households from Jhunjhunu had rated it as 'average' and 81.4 percent households in Dharamshala rated it as 'poor' for this service, while 21 per cent households in Narnaul had rated it as 'very poor'. The presence of this situation is due to reasons like low frequency of waste collection in the select cities, irresponsible attitude of the municipal staff and lack of motivation etc.

Figure 3.6: Rating of Services: Solid Waste Collection and Street Sweeping

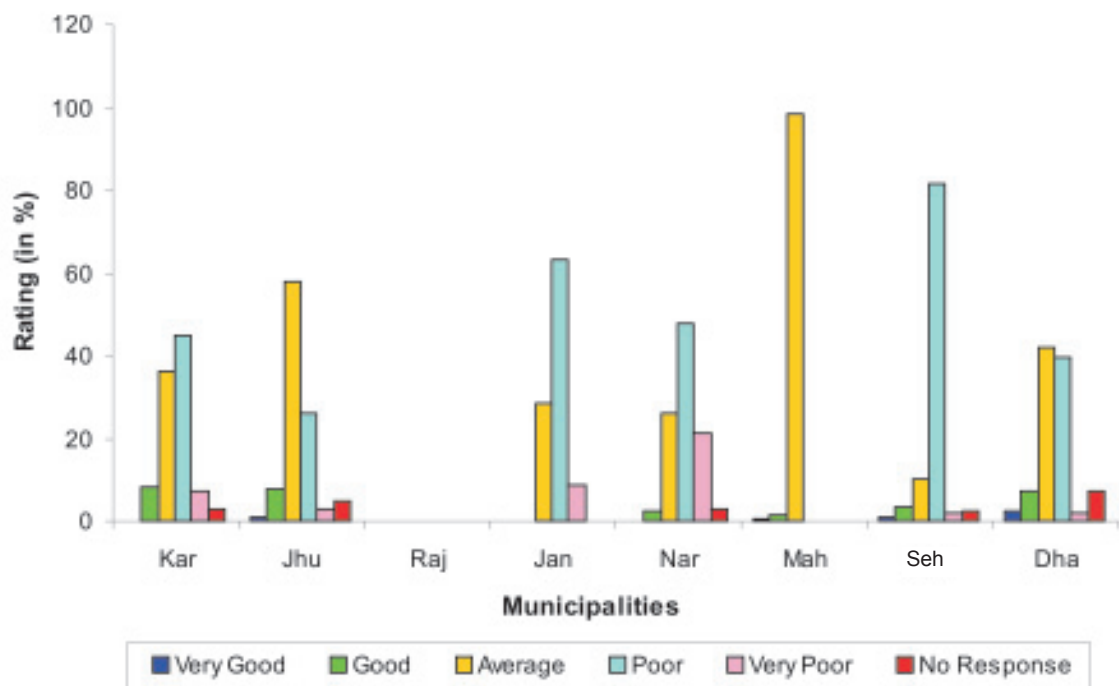
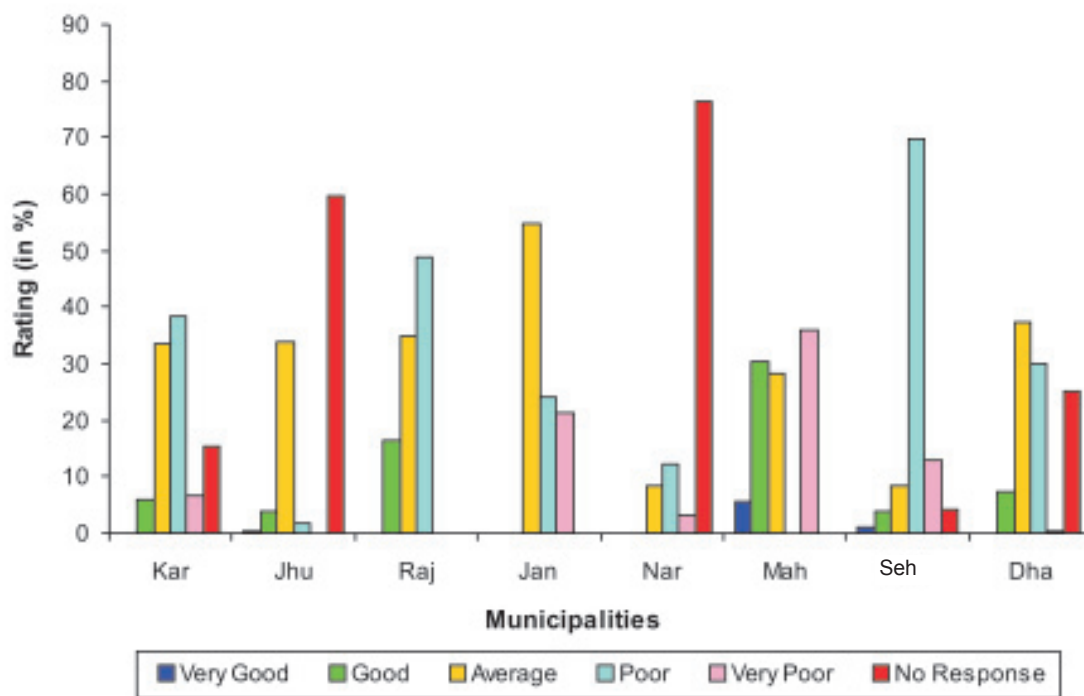


Figure 3.7: Rating of Services: Solid Waste Expenses



Regarding the expenses on solid waste, Figure 3.7 shows that more than 50 per cent households in Janjgir rated it as ‘average’ however, large proportion of households (69.8 per cent) in Sehore were not satisfied with this service and therefore they had rated it as ‘poor’. 21.3 per cent households in Janjgir rated it as ‘very poor’.

3.6 Willingness to Pay for Improved Sanitation Services

Willingness to pay is totally dependent on the performance of service delivery of municipality and related to the satisfaction level of citizens. It is generally paid for the better service delivery. The discussion above suggests that the residents were not much satisfied with the service and required much better level of service delivery from the local authority in terms of provision, operation and maintenance of service. Therefore, respondents were asked their view on the willingness to pay for better service delivery level in their locality.

Data on willingness to pay more for better public latrine services is presented in Table 3.19. It reveals that highest percentage of households (53.7 per cent) were ready to pay additional money for the improvement of the public latrine. On the other hand, highest percentage of households (96.5 per cent) of Karauli and 84.5 per cent in Narnaul had not shown any interest in paying extra amount for this purpose. A large percentage of households (74.2 per cent) of Sehore did not respond to this question.

Table 3.19: Willingness to Pay More for Better Services:Public Latrine (%)

Name of Municipalities	Willingness to Pay – Public Latrine				
	Yes	No	Can't Say	No Response	Total
Karauli	1.0	96.5	-	2.5	485
Jhunjhunu	37.1	42.1	18.5	2.3	259
Rajnandgaon	35.1	64.9	-	-	701
Janjgir	53.7	46.3	-	-	188
Narnaul	11.9	84.5	3.6	-	553
Mahendergarh	18.4	80.6	1.0	-	310
Sehore	3.9	20.7	1.2	74.2	516
Dharamshala	53.4	8.7	6.1	31.9	345

Table 3.20 reveals that 53 per cent households in Janjgir and Dharamshala were ready to pay below Rs.25 per month for the improvement of this service. On the other hand, highest percentage of households in Karauli (99 percent) and 88.3 per cent in Mahendergarh did not give any response.

Table 3.20: Amount of Money Willing to Pay for Better Services: Public Latrine (%)

Name of Municipalities	Amount (Rs.) Willing to Pay – Public Latrine					
	< 25	25-50	51-100	>100	No Response	Total
Karauli	1.0	-	-	-	99.0	485
Jhunjhunu	23.9	7.7	2.7	1.5	64.1	259
Rajnandgaon	35.1	-	-	-	64.9	701
Janjgir	53.8	-	-	-	46.2	188
Narnaul	38.5	8.7	-	-	52.8	553
Mahendergarh	11.8	-	-	-	88.3	310
Sehore	18.6	1.6	-	-	79.8	516
Dharamshala	53.3	-	-	-	46.7	345

With regard to sewerage system, nearly 91 per cent households of Rajnandgaon were ready to pay additional money for the regular cleaning of sewers in their locality, followed by Janjgir and Dharamshala with nearly 69 per cent (Table 3.21). However, 90.3 per cent households in Karauli were not ready to pay extra money for this purpose. As high as 27 per cent households in Sehore could not say any thing about this service.

Table 3.21:Willingness to Pay More for Better Services:Sewerage System (%)

Name of Municipalities	Willingness to Pay – Sewerage System				
	Yes	No	Can't Say	No Response	Total
Karauli	-	90.3	-	9.7	485
Jhunjhunu	46.3	34.0	15.4	4.3	259
Rajnandgaon	90.7	9.3	-	-	701
Janjgir	69.7	30.3	-	-	188
Narnaul	41.6	40.5	17.7	0.2	553
Mahendergarh	47.2	40.1	12.5	0.2	310
Sehore	30.6	41.1	27.3	1.0	516
Dharamshala	69.6	13.3	6.4	10.7	345

Table 3.22 reveals that 92.4 per cent households in Karauli and 90.6 per cent in Rajnandgaon were ready to pay additional money below Rs.25 for the improvement of this service. Only 5 to 7 per cent households in Jhunjhunu were ready to pay additional money between Rs.50 to Rs.100 per month. On the other hand, nearly 80 per cent households in Sehore and 54 per cent in Jhunjhunu did not respond on this issue.

Table 3.22: Amount of Money Willing to Pay for Better Sewerage Services(%)

Name of Municipalities	Amount (Rs.) Willing to Pay – Sewerage					Total
	< 25	25-50	51-100	>100	No Response	
Karauli	92.4	-	-	-	7.6	485
Jhunjhunu	23.5	9.7	7.3	5.4	54.1	259
Rajnandgaon	90.6	-	-	-	9.4	701
Janjgir	69.7	-	-	-	30.3	188
Narnaul	38.5	8.7	-	-	52.8	553
Mahendergarh	-	-	-	-	-	-
Sehore	18.6	1.5	-	-	79.8	516
Dharamshala	65.8	3.8	-	-	30.4	345

In context of drainage system, it is found from Table 3.23 that large proportion of households (89.3 per cent) of Rajnandgaon were ready to pay additional money for the improvement of drainage system, followed by Janjgir (80.3 per cent) and Dharamshala (74.2 per cent). However, 75.3 per cent households in Karauli were not satisfied with this service and therefore they were not interested to pay extra money for the improved service.

Table 3.23: Willingness to Pay More for Better Drainage Services (%)

Name of Municipalities	Willingness to Pay – Drainage				Total
	Yes	No	Can't Say	No Response	
Karauli	23.3	75.3	-	1.4	485
Jhunjhunu	47.9	36.7	13.1	2.3	259
Rajnandgaon	89.3	10.7	-	-	701
Janjgir	80.3	19.7	-	-	188
Narnaul	41.6	40.5	17.7	0.2	553
Mahendergarh	66.1	24.5	9.0	-	310
Sehore	30.6	41.1	27.3	1.0	516
Dharamshala	74.2	10.7	3.2	12.2	345

Table 3.24 shows that nearly 90 per cent households of Rajnandgaon and 80 per cent of Janjgir were ready to pay additional money of below Rs.25 per month. A substantial proportion of households (35 per cent) of Mahendergarh were willing to pay between Rs.25 to Rs.50 per month for the improvement of this service. Between 3 to 5 per cent households of Jhunjhunu city were ready to pay between Rs.50 to Rs.100 per month. However, 75 per cent households in Sehore did not respond on this issue.

Table 3.24: Amount of Money Willing to Pay for Better Drainage Services(%)

Name of Municipalities	Amount (Rs.) Willing to Pay – Drainage					Total
	< 25	25-50	51-100	>100	No Response	
Karauli	16.7	-	-	-	83.3	485
Jhunjhunu	26.6	11.2	5.8	3.5	52.9	259
Rajnandgaon	89.6	-	-	-	10.4	701
Janjgir	80.3	-	-	-	19.7	188
Narnaul	39.1	2.9	-	-	58.1	553
Mahendergarh	64.5	35.1	-	-	0.3	310
Sehore	23.6	1.2	-	-	75.2	516
Dharamshala	73.1	0.9	-	-	26.1	345

Regarding solid waste collection and street sweeping, Table 3.25 shows that nearly 91 per cent households in Rajnandgaon were willing to pay additional money for the improved services, followed by Dharamshala (78.3 per cent) and Janjgir (71.3 per cent). However, highest percentage of households (60 per cent) in Karauli had shown no interest in paying the extra money for this service.

Table 3.25: Willingness to Pay More for Better Solid Waste Collection & Street Sweeping Services (%)

Name of Municipalities	Willingness to Pay – Solid Waste Collection & Street Sweeping				
	Yes	No	Can't Say	No Response	Total
Karauli	34.4	60.0	-	3.9	485
Jhunjhunu	48.3	35.1	13.5	3.1	259
Rajnandgaon	90.8	8.7	-	0.4	701
Janjgir	71.3	28.7	-	-	188
Narnaul	66.4	19.2	13.9	0.5	553
Mahendergarh	52.2	38.4	9.3	-	310
Sehore	26.0	42.8	27.7	3.5	516
Dharamshala	78.3	9.0	3.2	9.6	345

Table 3.26 reveals that substantial proportion of households in Rajnandgaon (91 per cent) and Dharamshala (77.4 per cent) were willing to pay additional money below Rs.25 per month for the improvement in solid waste collection and street sweeping. Highest percentage of households (48 per cent) of Mahendergarh were ready to pay between Rs.25 to Rs.50 per month. On the other hand, a large proportion of household (75.4 per cent) in Sehore and Karauli (67.2 per cent) did not respond on this issue.

Table 3.26: Amount of Money Willing to Pay for Better Solid Waste Collection & Street Sweeping Services(%)

Name of Municipalities	Amount (Rs.) Willing to Pay – Solid Waste Collection and Street Sweeping					
	< 25	25-50	51-100	>100	No Response	Total
Karauli	33.3	2.1	-	0.4	67.2	485
Jhunjhunu	27.0	11.2	6.2	3.1	52.5	259
Rajnandgaon	91.1	-	-	-	8.8	701
Janjgir	71.3	-	-	-	28.7	188
Narnaul	58.8	7.4	-	-	33.8	553
Mahendergarh	50.6	48.0	-	-	1.3	310
Sehore	20.5	2.5	1.2	0.4	75.4	516
Dharamshala	77.4	0.9			21.7	345

Chapter 4

SUMMARY OF FINDINGS

A. SOCIO-ECONOMIC AND DEMOGRAPHIC STATUS

It has emerged from the above discussion that Most of the surveyed households were residing in their own houses. The percentage of ownership of houses was quite high in case of Mahendergarh at 99 per cent and lowest in Janjgir at 66.5 per cent. Only 19 per cent households were tenants in Janjgir. Moreover, the household size varied from 2 members to 10 members, the average being 4 members per household. Most of the households belonged to the Hindus and Other Backward Classes. The percentage of Hindus was highest in Mahendergarh at 99.7 per cent and lowest in Karauli at 69.5 per cent. Muslims stood second with 30 per cent in Karauli. While, maximum proportion of households (60.6 per cent) in Jhunjhunu belonged to Other Backward Classes, followed by Sehore (58 per cent) and Narnaul (52 per cent).

The overall literacy status is quite appreciable for the population surveyed in the intervened cities. Data on literacy shows that Dharamshala had better literacy status across all the cities, as 77.8 per cent of its population had completed schooling and 14.6 per cent were graduates and post graduates. Only 7.6 per cent city population was found illiterate.

The occupational structure shows that highest percentage of workers (39.7 per cent) were wage labourers in Dharamshala, followed by Sehore at 19.4 per cent. It is interesting to note that majority of family members belonged to either minor or unspecified categories. More than 70 per cent of such members were non-workers in Karauli, Janjgir and Mahendergarh. However, the non-workers were lowest (0.9 per cent) in Dharamshala showing better occupational status in the city.

With regard to economic profile of the households, it is observed from data that Sehore had a larger coverage of low-income group households in its distribution of income. Maximum percentage of households (80 per cent) in Sehore had income below Rs.5000/- per month, while 68.3 per cent households in Jhunjhunu had income between Rs.5001/- to Rs.15,000/- per month (middle income group). On the other hand, maximum proportion of households (69.4 per cent) in Narnaul had monthly income more than Rs.15000/- per month and was in high-income group category. Dharamshala stood second with 30 per cent.

B. WATER SUPPLY

The State Irrigation and Public Health (IPH) department is responsible for providing water supply to the residents in the selected states. Water supply from the IPH exists along with private arrangements in which piped water is supplied from private tube wells to a number of households. Data on water shows that most of the households were dependent on the pipe water supply. The number of houses with piped water connection ranged from 13 per cent (Dharamshala) to 96 per cent (Jhunjhunu), except Janjgir where the percentage of pipe connection is quite low (1.7 per cent). Most of the households (nearly 50 per cent) in Janjgir largely were dependent on public stand post and 39 per cent had private tube well for water, while 23.5 per cent households in Karauli used other sources of water supply.

Regarding payment for the public water supply, most of households (74.5 per cent) in Jhunjhunu paid a lump sum bill for water, followed by Rajnandgaon at 73.5 per cent. Whereas, a substantial proportion of households (34.5 per cent) in Sehore had been paying water bill as per the meter reading. Here it is important to note, that most of the households in the intervened cities had faulty meters or non-functional meters. As a result, they were paying lump sum bill for water. In case of Dharamshala, 26 per cent of households with meter connection did not have functional meters. A higher proportion of such houses belonged to the High Income Group (HIG).

Regarding monthly expenditure on water supply, a higher proportion of households paid up to Rs.50 for water supply across the selected cities. A higher proportion of such cases (87.3 per cent) were found in Jhunjhunu, while nearly 28 per cent households of Narnual paid between Rs.201 to Rs.500 per month as monthly expenditure on water supply.

With regard to accessibility to water sources, the study shows that accessibility to water is quite satisfactory across all cities. A large percentage of households (80 per cent) got access to water less than 50 meters including own household premises. It is quite surprising, that the accessibility was 100 per cent in Jhunjhunu. Nearly 10 per cent households in Sehore had to travel more than 250 meters. Time taken to fetch water in such cases was less than 30 minutes. A substantial percentage of households (25.5 per cent) in Narnual were spending more than 30 minutes to 1 hour to fetch water. The study shows that maximum percentage of households (69.2 per cent) in Rajnandgaon had 51-100 litres of water available for consumption per day, while highest percentage of households (67.6 per cent) in Janjgir, had water available for consumption per day which increased to 101-200 litres. Regarding frequency of water, majority of households (44 per cent) with a group connection in Mahendergarh received water daily, while nearly 11 per cent households had been receiving water on alternative day. Highest percentage of households in Sehore (70 per cent) had been receiving water on every third or fourth day, or even the fifth day. It reflects a poor frequency of water in Sehore. In case of individual connections as well, highest percentage of households (93.4 per cent) in Jhunjhunu had been receiving water daily, whereas 33.6 per cent households received water on alternative day. As a whole, frequency of water was good across all cities except Sehore. A large proportion of households (73 per cent) in Jhunjhunu were receiving water with medium pressure of water flow. On the other hand, about 34 per cent households had been received water with a low pressure of water flow.

As far as quality of water supply is concerned, it shows that majority of households were satisfied with quality of water supply. 94 per cent households reported that they had been receiving clean water, while one-fourth households (25 per cent) in Karauli were receiving muddy water. Nonetheless, very few households reported any occurrence of ailment due to impure water. High percentage of such cases found in Mahendergarh (98.7 per cent), Narnaul and Janjgir with 93 per cent. Only 7 per cent households in Janjgir had complained about ailment but the nature of ailment was however not specified.

As far as rating of service is concerned, in aggregate, most of the households in the select cities had rated the water supply service as 'average' in terms of accessibility, quantity, quality, frequency, timings and expenditure on water. Majority of households in Jhunjhunu, Dharamshala, Mahendergarh and Karauli had rated this service as 'average', while the households of Sehore and Narnaul had rated it as 'poor'. However at the same time, a large number of households of Janjgir and Rajnandgaon rated it as 'good'. As a whole, the state of water supply services was not much satisfactory in the intervened cities as reflected by the rating given by the citizens. Hence, they felt the need to improve this service, and were ready to pay additional money for improved service. Except Karauli, all the households of the selected cities were ready to pay extra money up to Rs.50 per month for the improvement of water supply system in their localities.

C. SANITATION

(i) Latrine Facility

It was found that most of the households had private latrine with pour flush with septic tank in their houses. Number of households with such facility was highest in Jhunjhunu, Sehore, Narnaul and Dharamshala. Nearly 97 per cent households in Jhunjhunu had private latrine as compared to other cities. However, at the same time, there were some households who had been using open areas for the defecation including those who had private latrine, owing to shortage of water and non-availability of proper sewerage system. Maximum households of such cases were highest in Janjgir. Only 13.40 per cent households in Rajnandgaon were using other places for defecation such as pay and use latrine, community latrine etc. Majority of households with private latrine had been using piped individual water connection for sanitary purposes.

(ii) Sewerage System

Most of the households in the selected cities had no sewerage system except Jhunjhunu, Mahendergarh, and Sehore. However, most of the sewers were overflowed, they choked and were broken because of irregular cleaning and maintenance by the city municipality in their localities. The municipality took longer than a week times for cleaning of sewers in Rajnandgaon, Narnaul, Janjgir and Rajnandgaon. Moreover, it was not cleaned at all as complained by the households of Janjgir and Narnaul. As a whole, the present conditions of sewerage system are very alarming and acute across cities.

(iii) Drainage System

In most of the cities, the drainage system was absent. A large number of households in Mahendergarh (64 per cent) and Karauli (59 per cent) had no drainage system. On the

other hand, a large number of households in Jhunjhunu, Rajnandgaon, Sehore, Dharamshala and Narnual reported the availability of drainage system in their colonies but they also complained that the drains were not cleaned daily or even on alternative days causing problems like water logging. They said that the problem of water logging occurred more than 10 times a year. The municipality took lot of time to clear the water-logging problem.

D. SOLID WASTE MANAGEMENT

The overall situation of solid waste management in the cities was not satisfactory since the most of the households of all select cities had to dump their waste in the open areas like roadside, land, river, canal etc. The study shows that maximum percentage of such households who followed this practice was found in Mahendergarh, Jhunjhunu, and Sehore. Whereas, the majority of households of Rajnandgaon and Dharamshala threw their waste in the dustbins provided by the private operators and the municipality under door-to-door waste collection. These reflected some efforts of privatization of solid waste management in these cities. The task of waste collection was performed by the both municipal staff and private staff.

The important point here is that the local people had also adopted the practice of collecting waste. 26 per cent households reported that people in their locality had been collecting large quantity of wastes, which presented a good example of citizen participation in solid waste management. They also mentioned that the municipal staff took a lot of time (at duration of a week's time) to collect the waste from their colony. This scenario had emerged due to various reasons like the irresponsible attitude of the municipal staff, lack of motivation, shortage of conservancy staff etc.

Regarding the street cleaning activity, most of the respondents were of the opinion that the city streets were not swept daily. A large proportion of households with this opinion were found in Rajnandgaon, Janjgir, Jhunjhunu, and Sehore. About 52 per cent households in Mahendergarh reported that it took at least a week time to clean the streets, whereas about 31 per cent households received this service two-three times a week.

With regard to rating of these services, most of the households had rated these services within the range of 'average' to 'very poor'. Most of the households of Sehore and Mahendergarh had rated services related to sewerage system as 'poor', while 36 per cent households of Janjgir rated it as 'very poor'. A higher proportion of households in Mahendergarh, Sehore and Karauli rated the municipal rainwater drainage as 'poor', whereas, 57 per cent of households in Jhunjhunu and 48 per cent in Janjgir had rated the situation of water-logging problem ranging from 'average' to 'poor'.

As a whole, the households of the selected cities were not satisfied with the provision and maintenance of sanitation services. Hence, they felt the need to pay additional money for improved services. A large proportion of households in Rajnandgaon, Janjgir, Dharamshala, Jhunjhunu, and Mahendergarh were ready to pay up to Rs.25 per month for improved services. On the other hand, the households of Karauli and Sehore were not ready to pay more for the improvement of service. They thought that provision of the basic services to the citizens is the prime responsibility of the city municipality, and they charge for it. Thus, they felt no need to pay additional money for the improvement. A large proportion of such households in Karauli, Rajnandgaon, and Mahendergarh did not feel the need to pay more for improved services. Thus, on the

whole, there was not much willingness among the people to pay extra for improved sanitation services.

E. OUTCOME OF THE SURVEY

The city level reports were shared with the municipality and other stakeholders of the selected cities to discuss the summary findings of the reports and to come up with action plans to improve the quality of services. These sharing meetings were organized in Dharamshala, Karauli, Jhunjhunu, Narnaul and Mahendergarh. In most cases the Presidents and Vice Presidents of the municipalities, former Chairperson of the municipality, Municipal Commissioner, wards councillors, local citizen, and media persons attended the sharing workshops. Most participants including municipal officials agreed with the existing problems of water supply and sanitations such as inadequate water supply, non-availability of sewerage and drainage facility and mismanagement of solid waste system.

Regarding water supply, most of the Municipal Commissioners and elected representatives of the wards agreed on (i) non-functional meters (Dharamshala and Karauli), high charges of meter connections (Rs.800 for commercial use and Rs.500 for residential use in Dharamshala), non-availability of water treatment plant in Dharamshala, low frequency of water, poor quality of water (dirty and impure water), poor maintenance of water pipe lines and poor quality of water pipes specially in Karauli as most of the water pipe lines were leaked and were broken resulting wastage of water. The municipal elected members and Commissioners also agreed with the findings on the issue of transparency and accountability of the parastatal agencies. Lack of coordination with the Public Health department which is responsible for the water supply and sewerage was observed by the municipal elected members like Vice Presidents, former Chairperson and Municipal Commissioners of the intervened cities.

With regard to sanitation, Municipal Commissioners agreed on (i) non-availability of sewerage and drainage system, (ii) irregular collection of solid waste, and (iii) low frequency of street sweeping. Local citizen and media persons were very much annoyed with municipality on the issue of irregular cleaning and poor maintenance of community latrines, irregular cleaning of sewers and drains, poor maintenance of roads and less attention on the public complaints specially in Karauli and Jhunjhunu. They fully agreed with the problem of broken, leaked and overflowing sewers in the cities.

On the acceptance of these findings, many Municipal Commissioners agreed to take steps to solve these problems. Important of them are mentioned below:

- Detailed Project Report on sewerage system of Jhunjhunu and Karauli had been prepared and submitted to the State Government
- Municipal Commissioner of Dharamshala had also submitted the Detailed Project Report on water supply and demanded Rs.65 crore for the providing the sewerage system in the city. The project has sanctioned by the State Government and Rs.39 crore has been sanctioned as a first instalment to initiate the work in the city

- Executive Officer of Jhunjhunu municipality would privatize the solid waste management system in the city.
- Commissioner of Dharamshala will invite the private operators for the sewerage system specially connectivity of household sewerage connection to the main sewerage lane in the city.
- Water treatment plant will be set up in Dharamshala.
- 14 Ward Samitis will be formed to monitor the municipal services in Karauli.

F. SUGGESTIONS AND THE WAY FORWARD

The survey proves to be an appropriate public accountability mechanism based on citizen survey of the performance and quality of government services. They allow citizens to monitor state performance.

- The selected surveyed cities are still in the process of growing rapidly, and mostly what they face is the crisis owing to the haphazard and unplanned urban development. The utmost requirement of these cities is a well laid out development plan and accountability of the service providers. Further, there is a need to accommodate the opinion of the community and the policymakers collectively in order to promote a systematic planning.
- Innovative models like the public private partnerships and community involvement for better service delivery mechanisms could be introduced. This promotes responsibility sharing and creates a sense of ownership and accountability among different players in the community. The public private partnerships would help the public sector realize its full potential and ensure all stakeholders receive services in an equitable manner.
- The local citizens should be helped to form 'Area Sabhas and Ward Sabhas in line with the proposed Community Participation Law for monitoring and supervision of municipal services. Such Area Sabhas and Ward Sabhas should contribute in the preparation of local level plans and adopt the practice of maintaining a 'report card' or a personal register which would keep the track of the service delivery situation and would aid in monitoring purposes.
- Efforts should be made to minimize the gaps and lack of coordination between the authorities, which hampers the service delivery, like between IPH and State Government Departments.

(a) Water

- Access to piped water is a big need. Innovative methods and approaches should be explored to provide it (e.g. community participation model can be used). Differential rates could be worked out based on consumption. Findings on willingness to pay clearly show that majority of residents are willing to pay for piped water connections. For those families that cannot afford to pay for connections or monthly charges, public taps can continue to be sources but with increased frequency of supply. Further assessments can be carried out to get the exact need for individual connections and public taps.

- Supply of water need not be equal, but it must be equitable. Inability to pay should not deprive very poor consumers of this essential resource. At the same time, prohibitive or deterrent charges may be applied to rich consumers who consume more than their fair share of this limited resource.
- Public participation (with appropriate levels of representation of women and youth) must be ensured in decision-making, implementation and monitoring of basic amenities related projects.
- Differential tariffs could be introduced which could be pro-poor and at the same time also help the municipalities to recover their costs to some extent.

(b) Sanitation

- With regard to sanitation, people prefer individual toilets since there is a pervasive perception that public toilets are not looked after properly, are not hygienic and can cause health problems. Various toilet-building schemes can look into evolving creative and cost-effective solutions to ensure that families/ households have individual toilets to the greatest extent possible.
- The community / locality must maintain the public toilets. It has been observed that when government departments are responsible for the maintenance, the quality of the toilet quickly deteriorates.
- There is a need to develop a well-equipped underground drainage system wherever there is the existence of the pit systems in the individual toilets. As otherwise it can lead to environmental and health hazards.
- Separate planning is required for laying out the water and the sewer pipes, as care has to be taken that water should not get contaminated.

(c) Solid Waste Management

- Providing an efficient garbage disposal system should be the priority. The municipality / local authority must help to identify spaces in the community where garbage can be disposed and provide appropriate garbage bins.
- The community must be educated on the importance of segregating garbage into food waste, easily biodegradable materials like paper products, and plastics and other difficult-to-dispose materials.
- A door-to-door collection system for solid waste may be instituted with the participation of the community.
- The municipality should have a planning unit to improve the level of service delivery by putting efforts on the right directions with appropriate planning.

About PRIA

An internationally acclaimed pioneer in Participatory Research, and a champion for strong voices and contributions of civil society in promoting inclusive development, PRIA is a non-profit voluntary organization rooted in practice in India since 1982.

PRIA's professional expertise and practical insights in the following areas are being utilized by other civil society groups, NGOs, governments, donors, trade unions, private business and academic institutions around the world:

- Participatory development methodologies
- Institutional & Human capacity building for social sector
- Women's leadership & political empowerment
- Citizen monitoring & social accountability of services
- Participatory governance in panchayats
- Municipal reforms & participatory planning
- Environmental & occupational health and CSR
- Adult education & lifelong learning
- Gender mainstreaming in institutions (including sexual harassment at work)

PRIA adopts three broad approaches in its ongoing programmes.

First, it intervenes directly in the field primarily in the northern & eastern poorer regions of India, in order to promote 'citizen's collective voices' to make demands on governance institutions to claim their rights, access services and ensure accountable utilization of public resources in development programmes. In recent years, PRIA's interventions have specially targeted Right To Information (RTI) and Rural Employment Guarantee Schemes (NREGS).

Second, **PRIA** provides on-demand advisory and consultancy services to a wide variety of clients internationally. It utilizes its practical knowledge and professional expertise in various areas to offer 'participatory and sustainable solutions' to improve supply sides of development and democracy.

Third, **PRIA** offers educational programmes in numerous human and social development themes, drawing from its field experiences, advisory services and extensive research projects. Within the framework of 'learning for social change', these educational courses are offered in face-to-face and distance modes, sometimes specially designed for a client, and many times in partnership with such premier educational institutions as Indira Gandhi National Open University (IGNOU), India, University of Victoria, Canada and Institute of Development Studies (IDS), UK.

Through its campaigns, research, education and policy advocacy interventions, **PRIA's** overarching mission is to '**make democracy work for all citizens**'.



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