

Report



Communal Toilets in Urban Poverty Pockets

Use and user satisfaction associated with seven communal toilet facilities in Bhopal, India



Acknowledgements

This study was made possible through the support and assistance provided by Ishaprasad Bhagwat (WaterAid India), Mamita Bora Thakkar (WaterAid India), Pramod Dabrase (WaterAid India), S C Jaiswal (WaterAid India), BP Mishra (WaterAid India), Anup Sahay and colleagues (Advocacy of Alternative Resources, Action, Mobilization and Brotherhood) and Jerry Adams (WaterAid UK)

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[A WaterAid report](#)

Published: April 2010

Front cover image: Therese Mahon/WaterAid

Summary

During November 2008 an exploratory study was carried out in seven poverty pockets in Bhopal to look at patterns of use of communal latrine facilities. Poverty pockets were selected so as to include three different models of communal latrine management (municipal, Sulabh pay-to-use and community managed pay-to-use) and to cover settlements of different size. Data were collected by enumerators from a local NGO, the Advocacy of Alternative Resources, Action, Mobilization and Brotherhood (AARAMBH), using structured interview schedules. Exit interviews were carried out on a sample of 1692 latrine facility users of whom approximately 50% were women. Data were also collected from respondents during 352 household interviews in order to collect data from non-users of facilities. Approximately 50 households were selected from each of the poverty pockets using a 'random walk' procedure. Tallies of the total number of users between 05.00 and 21.00 were recorded for one day at each facility. Locations of facilities and households were recorded using a handheld GPS and these data were used to calculate a proxy indicator of the straight line distance between houses and the nearest communal latrine facility.

The communal facilities were found to provide for the usual domestic needs of a sizeable minority of poverty pocket residents though the extent to which facilities were used varied between settlements. Almost all users lived in the near vicinity of the facilities and none of the facilities studied served a transient population. At all facilities the number of visits by males was more than double that by females. It is not known if this reflects differences in need or whether there are barriers that serve to discriminate against female use of facilities.

Most users interviewed at latrine facilities (65%) said they were satisfied with the condition of the latrine with 6% reporting they were very satisfied and 29% reporting that they were not satisfied. There were no gender differences in satisfaction with latrine facilities. The features that were most liked about the latrine facilities were convenience (38%), privacy (23%) and protection from animals (13%). The most disliked features were dirt and smell (64%), queue (19%) and lack of water (11%). Estimated prevalence (without adjusting for possible spatial clustering) of household latrine ownership in the poverty pockets ranged from 18% to 88% but was almost non-existent among users of communal facilities. There was some indication that latrine owning households were of higher socio-economic status than those with no latrine. Latrine owning households were less likely to hold a ration card and the heads of these households were less likely to be unskilled labourers. Eighty percent of communal facility users did not expect their home sanitation to change over the coming year and anticipated that they would continue to use the communal facilities in the same way.

Almost all users of communal latrines (95%) pay a fee to use them. Reported fees range from 2 to 90 INR with a median fee of 25 INR. Eighty five percent of users considered the fee to be 'about right' while 15% considered it too high. The study was not designed to assess the financial viability of communal latrines however, based on the reported experience in Tiruchirappalli the relatively low numbers of

communal facility users in Bhopal (mean 481, range 124 – 896 users) may mean that some facilities do not raise sufficient revenue to cover their running costs. Although the communal latrines were used by many households lacking their own latrines, for over half of these households open defecation continued to be their usual practice. There was some indication that increasing distance to the latrine facilities was associated with decreased use of the facilities and an increase in open defecation. The necessity of paying a fee and the dirty conditions of communal facilities were also likely deterrents. Other deterrents such as 'not liking' the facility or 'not needing' the facility require further study if they are to be understood fully.

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List of abbreviations

AARAMBH	Advocacy of Alternative Resources, Action, Mobilization and Brotherhood (an NGO and WaterAid partner)
APL	Above Poverty Line
BPL	Below Poverty Line
GPS	Global Positioning System
NGO	Non-Governmental Organisation
UN-HABITAT	United Nations Human Settlements Programme

1. Introduction

1.1 Background

Indian cities are experiencing rapid population growth and an expansion of urban poor living in slum areas. For a number of reasons including insecurity of tenure, lack of space and affordability, household sanitation options are limited, coverage is poor and open defecation remains a problem.

The provision of public, pay-per-use and community-owned sanitation blocks may offer an effective means to address this situation¹. Public toilets are usually sited in busy areas with high transient populations. Their contribution to improving domestic sanitation in slum areas is probably limited and attempts to use the income they generate to subsidise provision in slum areas seems to have been unsuccessful. In Mumbai the World Bank assisted Slum Sanitation Program constructed 330 toilet blocks in the decade leading up to 2005². These blocks were largely owned and operated by and for slum communities. The non-governmental organisation (NGO) Sulabh International has been responsible for building and operating more than 6,000 community toilet complexes incorporating toilets and bathing facilities. These provide 24 hour access on a low-charge, pay-per-use basis³. The southern Indian state of Andhra Pradesh is beginning a programme aimed at ending open defecation in its main cities and it is likely that community toilets will be assumed to play a key role in this.

Much has been invested in building communal and public toilets and more resources are likely to continue to support this form of sanitation in dense urban areas in India. Evidence is needed to quantify their potential contribution to reducing open defecation and faecal pollution in these environments, and identify those design features and management factors that encourage the highest usage rates by all household members. Particular attention needs to be given to the possibility of age and gender related differences in patterns of use.

The provision of effective sanitation to slum dwellers would contribute to the achievement of the millennium development goals. Community and public sanitation may play an important role in this because evidence on the coverage that can be achieved in this way as well as on patterns of use and maintenance, is largely anecdotal.

1.2 Communal and community sanitation in Bhopal

Excluding the recently constructed community sanitation facility at Police Lines there are 73 communal sanitation facilities in poverty pockets in Bhopal of which 16 have been classified as unusable, 15 poorly managed but used, 27 maintained but overcrowded and 13 maintained and not overcrowded. These 13 were all pay-to-use

¹ Hobson J (2000) Sustainable sanitation: experiences in Pune with a municipal-NGO-community partnership. *Environment and Urbanisation* 12 (2)

² Sarkar, Moulik and Sen (2006) The Mumbai Slum Sanitation Program. WSP. [online <http://www.wsp.org/filez/pubs/mumbai.pdf>]

³ Pathak B (1999) Sanitation is the key to healthy cities: a profile of Sulabh International. *Environment and Urbanisation* 11 (1)

facilities of which there are a total of 28 in Bhopal poverty pockets (excluding Police lines) ⁴. Estimates of access to household sanitation in Bhopal poverty pockets vary but are generally low. A UN-HABITAT (2006)⁴ survey estimates that 49% of households in poverty pockets in Bhopal have no access to household sanitation, 42% rely on open defecation and 6% of households use communal toilets. A UN-HABITAT / WaterAid (2007) survey⁵ estimates 20% have a private latrine and 78% use open defecation and 1% use communal facilities. The differences between the two surveys reflect the differences that exist between poverty pockets as well as the difficulties in obtaining accurate information on use of and access to sanitation in poverty pockets.

With the exception of the Police Lines facility communal latrines are either owned and run by the NGO Sulabh International on the basis of payment for use or are owned and run by the municipality. The municipality does not charge a user fee however, at some municipal latrines users pay a fee to a local resident who provides basic a cleaning service.

The Police Lines facility was constructed by WaterAid and their local NGO partner AARAMBH with funding from UN-HABITAT. It was opened in 2008 and is unique in Bhopal in being managed by a community group mobilised by AARAMBH from the users in the poverty pocket. A monthly fee entitles households to use the facility. The money raised in this way is used for operation and maintenance of the facility including payment for cleaners and a caretaker. The facility has separate male and female toilets and a child-friendly facility as well as provision for bathing and handwashing. At the time of the study the Police Lines facility was in a much better physical condition than the other facilities included in the study although it was suffering from a shortage of water for cleaning and bathing.

⁴ UN-HABITAT (2006) Poverty mapping: A situation analysis of poverty pockets in Bhopal

⁵ UN-HABITAT/WaterAid (2007) Baseline survey: Analysis of the baseline conditions in the poverty pockets, Bhopal

2. Methods

2.1 Data collection tools

Data collection tools used included latrine exit interviews, household interviews, latrine inspections and a tally of latrine users. These methods are described below.

2.1.1 Exit interview

Exit interviews were conducted at communal latrine facilities to collect data on the economic and demographic characteristics of facility users, the purpose for using the latrine, whether the facility was the usual household latrine facility and user satisfaction with the condition of the facility.

Exit interviews had a short or a long format. The long interview included questions on user satisfaction. The short interview was restricted to economic and demographic questions, purpose of visit and questions to ascertain whether the facility was used as usual household **sanitation**⁶.

2.1.2 Household interview

Household interviews were conducted in order to cover a sample of non-users as well as users from the poverty pocket in which each latrine was situated.

2.1.3 Latrine inspections

Visual inspections of latrines were used to collect data on the size and physical conditions of latrine facilities.

2.1.4 User tallies

Tallies of users were kept for one day at each facility. Over the course of this day the numbers of men, women and children (who appeared to be aged <12 years) who used the facility between 05.00 and 21.00 were recorded.

2.2 Sampling

2.2.1 Selection of latrine facilities

Selection was made from a list of all poverty pockets in Bhopal in which there are communal toilet facilities. Facilities were selected to include three different management models (Sulabh pay-to-use, community managed pay-to-use and municipal free-to-use) and to include different poverty pocket sizes (200-300 households, 500-600 households and 1000-1500 households). The community facility at Police Lines was the only example of a community managed facility in Bhopal.

2.2.2 Selection of respondents for exit interviews

At each facility four enumerators (two male and two female) from AARAMBH conducted exit interviews. Male enumerators interviewed men and female enumerators interviewed women. One enumerator of each gender carried out short

⁶ For details of survey forms used see.....

interviews and the other carried out long interviews. Data collection took place between 08.00 and 11.00 and between 16.00 and 20.00. During these time periods enumerators would approach the first user to exit the facility and ask if they were willing to participate in the survey. In the event of a refusal the next and then the next user would be asked until a volunteer was found. As soon as the interview was over the process was repeated. This continued until the end of the data collection period or until a quota of 100 short and 50 long interviews had been conducted with respondents of each gender. Latrine users were eligible to take part in the survey if they were over the age of 12 years.

2.2.3 Selection of households

Poverty pockets in Bhopal are reasonably clearly delineated. They are situated on pockets of poor land surrounded by arterial routes or good quality housing. Households for the household survey were selected by 'random walks' across the poverty pockets. A minimum of 50 households in each poverty pocket were selected by walking a minimum of two transects and visiting every fourth house. Transects were chosen to follow the longest axes across the settlement from the communal latrine facility to the edge of the settlement. In order to avoid restricting the sample to houses on the main thoroughfares enumerators tossed a coin on reaching a side alley in order to decide whether or not to sample houses along the side alley. If a house was empty or declined to take part in the survey the next house was chosen. This was repeated until a volunteer household was found. In practice this was not found to be necessary as all houses were occupied and none refused to participate.

2.3 Estimating distance from houses to latrine facilities

GPS readings were taken at the latrine facility and at each household that took part in the household survey. These were used to calculate proxy indicators of the relative straight line distances between the houses and the nearest latrine facility.

3. Results

3.1 Sample size

In total 854 men and 838 women were interviewed on exiting latrine facilities. A total of 1062 short exit interviews, 632 long exit interviews and 352 household interviews were carried out. See Table 1 for details. Refusal rates for exit interviews varied between facilities from 8% to 18% (see table 2). The usual reason given for not participating was that the respondent was in a hurry to get to work.

Table 1. Number of interviews at each facility

Facility	Management	Short exit interviews		Long exit interviews		Total exit interviews	Household interviews
		male	female	male	female		
3.10	Municipal	4	8	13	22	47	51
3.20	Municipal	130	69	24	75	298	49
4.20	Sulabh	118	82	46	55	301	50
4.30	Sulabh	55	47	26	62	190	51
Police Line	Community managed	102	107	66	41	316	50
4.10	Sulabh	84	56	45	56	241	50
4.40	Sulabh	106	93	35	65	299	51
Totals		599	462	255	376	1692	352

Table 2. Number of interview refusals at each facility

Facility	Frequency (%) of male exit interview refusals	Frequency (%) of female exit interview refusals
3.10	0	0
3.20	0	0
4.20	15 (8)	12 (8)
4.30	18 (18)	17 (13)
Police Line	0	0
4.10	17 (12)	13 (10)
4.40	22 (13)	18 (10)

3.2 Number and gender of communal facility users

Table 3 shows the number and gender of latrine facility users at each facility over the course of one day between 05.00 and 21.00. Fifty one percent of users are children. This figure is in keeping with demographic data from the household survey suggesting that 57% of the population of the poverty pockets is comprised of school aged children. All facilities show a striking gender difference in use with male use of latrines being more than double female use. The household survey however, found

no difference in the proportions male and female respondents who reported using the communal facilities for defecation.

Table 3. Number of facility users over one day

Facility	Estimated population ¹	Men Use (% of total users)	Women Use (% of total users)	Boys use (% of total users)	Girls use (% of total users)	Total users	% of total pop using facility
3.10	8500	41 (33)	16 (13)	48 (39)	19 (15)	124	1
3.20	1400	178 (32)	83 (15)	208 (38)	85 (15)	554	40
4.20	6150	183 (33)	63 (11)	217 (39)	93 (17)	556	9
4.30	3010	125 (36)	45 (13)	119 (35)	54 (16)	343	11
Police Line	750	307 (34)	163 (18)	294 (33)	132 (15)	896	119 ²
4.10	9000	151 (32)	64 (14)	176 (39)	74 (16)	465	5
4.40	3000	160 (37)	60 (14)	137 (31)	78 (18)	435	14

1 Based on figures from WaterAid baseline survey - these data were collected from key informants and have not been verified.

2 This is assumed to represent multiple uses.

3.3 Physical conditions and operating characteristics of facilities

Table 4. Operating characteristics of facilities

Facility	Constructed by	Years in operation	Opening hours	Maintained by
3.10	Municipality	10-12	24 hours	None
3.20	Municipality	14-16	24 hours	Cleaned by local resident.
4.20	Sulabh	7-8	0500-2100	Cleaned by local resident.
4.30	Sulabh	10-12	0500-2100	
Police Line	AARAMBH / WaterAid	<2	0500-2300	Community group
4.10	Sulabh	4-5	0500 - 2200	Sulabh
4.40	Sulabh	12	0500 - 2200	Sulabh

Table 5. Physical conditions of facilities

Facility	Total seats	Men's seats	Women's seats	Condition
3.10	4	2	2	Poor condition
3.20	8	4	4	Cleaned but crowded
4.20	20	13	7	Cleaned but crowded
4.30	15	7	8	Maintained not crowded
Police Line	12	6	6	Cleaned and well maintained not crowded
4.10	14	7	7	Cleaned and Maintained not crowded
4.40	20	10	10	Cleaned and Maintained not crowded

3.4 Social and economic characteristics of communal latrine users

The majority of users (64% of men and 72% of women) were aged between 16 and 40 years. Unskilled labour was the most common employment of facility users (see tables 4 and 5). Heads of households of latrine facility users were mostly unskilled labourers (41%), skilled labourers (21%) or salaried employees (22%) (See Table 6). Ninety percent of users were from households with a ration card. Sixty eight percent of latrine facility users had a blue card (below poverty line) while 21% had a yellow card (above poverty line). Almost all (99%) were able bodied (no obvious, visible physical disability affecting arms, legs or eyes). The majority of users (84%) lived in houses that were owned by their households while 14% lived in rented accommodation.

Table 6. Ages and Occupations of Latrine Facility Users

	Male: Frequency (%)	Female: Frequency (%)
Age in years (n=852 men, n=837 women)		
<11	2 (0.2)	3 (0.4)
11-15	58 (7)	83 (10)
16-20	156 (18)	181 (22)
21-30	276 (32)	272 (33)
31-40	200 (24)	138 (17)
41-50	94 (11)	77 (9)
51-60	35 (4)	46 (6)
>60	31 (4)	37 (4)
Occupation (n=848 men, n=830 women)		
unskilled labour	395 (47)	311 (38)
skilled labour	102 (12)	91 (11)
professional salaried	168 (20)	48 (6)
store keeper / trader	43 (5)	6 (1)
housewife/househusband	15 (2)	203 (25)
retired	14 (2)	9 (1)
unemployed	23 (3)	10 (1)
university student	36 (4)	37 (5)
school age child	36 (4)	45 (5)
other	16 (2)	70 (8)

Male latrine users tended to be slightly older than female users. The reason for this is not clear. It may reflect demographic patterns in the poverty pockets as younger women move in to join their slightly older husbands.

3.5 Economic status of latrine owning households

There were some socioeconomic differences between latrine owning households and households with no latrine. Latrine owning households were less likely to hold a ration card and the heads of these households were more likely to be skilled or salaried workers (see figures 1 and 2).

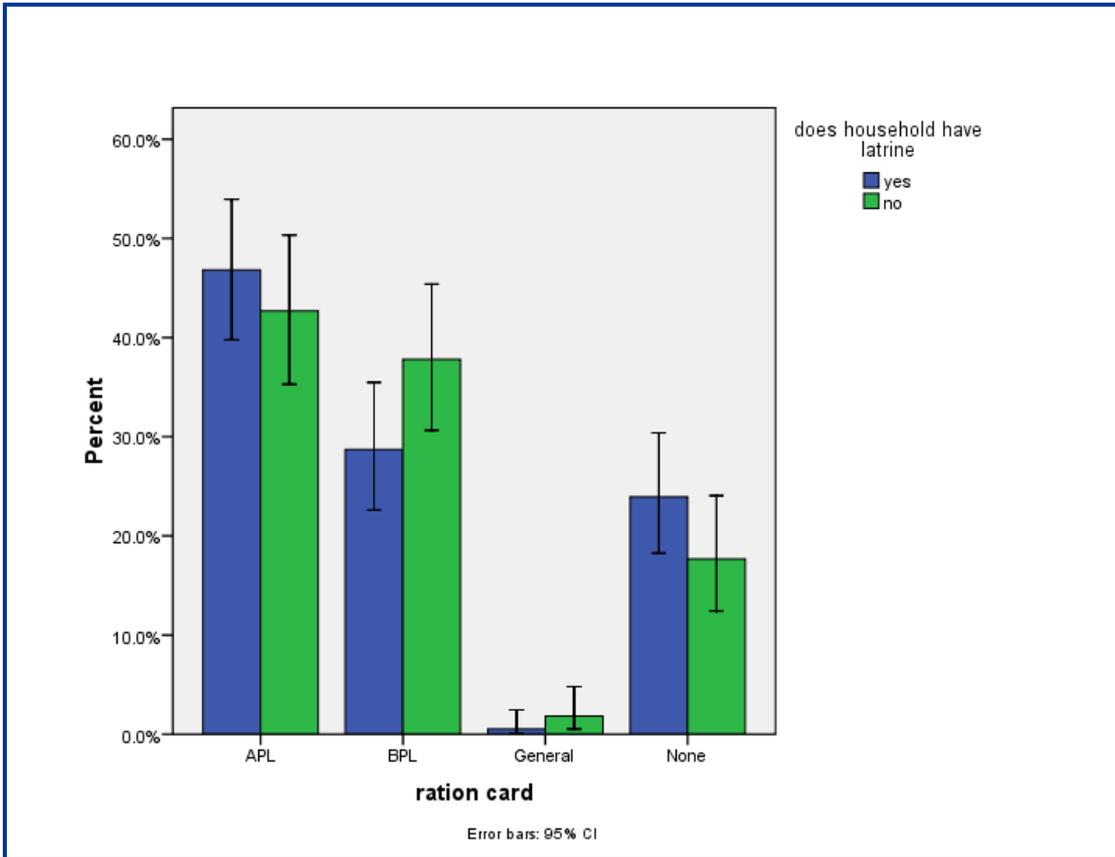


Figure 1. Percentage of ration card holding and latrine ownership

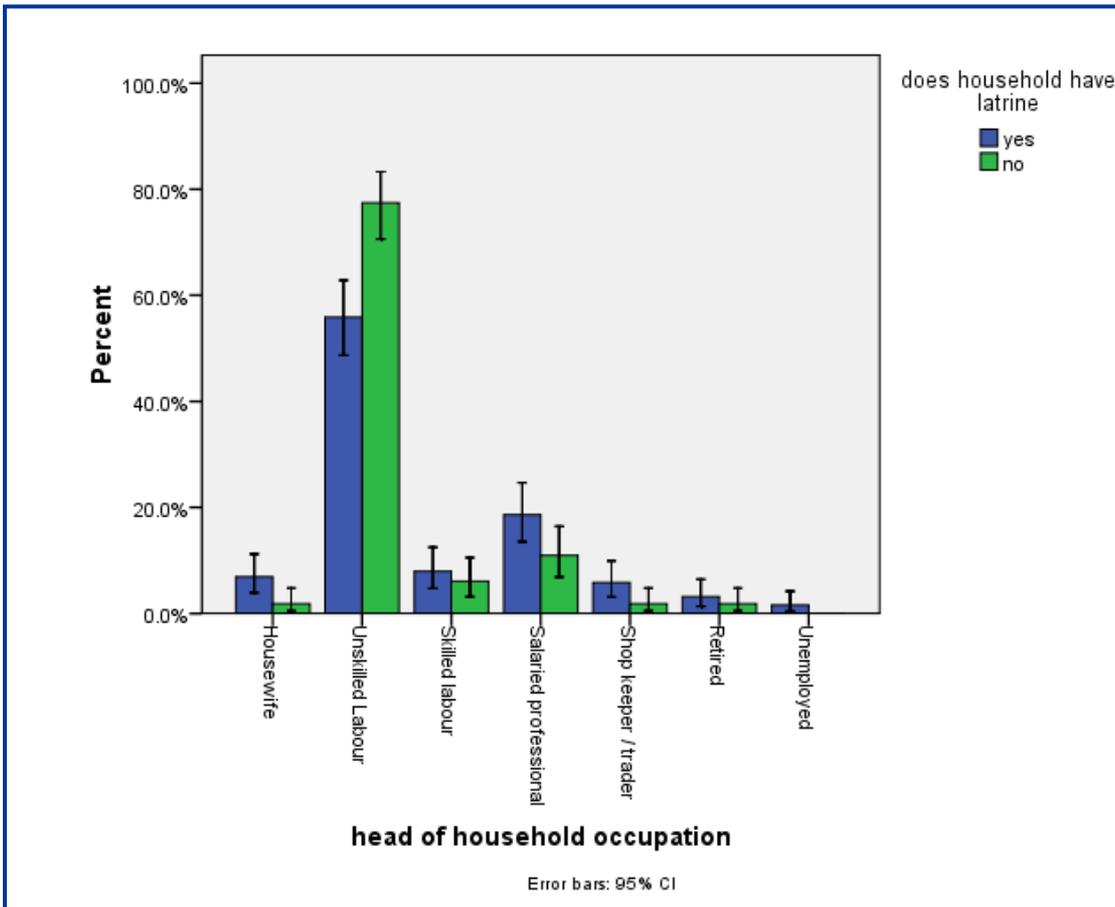


Figure 2. Head of household occupation and latrine ownership

3.6 Patterns of use reported by communal latrine users

The latrine facilities were used almost entirely by people who live close by and use the facility as their main household sanitation. Almost all users interviewed at facilities (98%) came to the facility from their homes and were returning to their homes (96%). For 97% of users the facility was reported as their usual place for defecation, 98% of users used the facility at least once per day and 97% had used it on the day before the survey. Almost all users (95%) had come to the facility for defecation. A further 3% had brought a child to defecate. There were no gender differences in reported purpose for visiting the latrine facilities except that 2% of men and 4% of women were bringing a child for defecation.

3.7 Distance and travel to communal latrines

Ninety six percent of users estimated they live within 500 metres of the facility they use and 99% had come to the facility on foot. The travel time for 94% of users was less than ten minutes.

3.8 Payment

Almost all users interviewed at exit (95%) pay a household subscription fee (usually monthly) to use the facility (see Table 7). Of the remainder, 1% were guests, 2% paid per use and 2% were exempt from payment. The mean fee reported by those paying a fee was 29 INR per month (see Table 8). The fee at Police Lines was higher than at other facilities. As a reference point these fees are shown as a percentage of the maximum income for APL and BPL ration card holders (Table 9). Eighty five percent of users believed that the fee was 'about right' while 14% believed that it was too high and 1% that it was too low. It is clear from these data that municipal facilities are not necessarily free to use. It also seems that satisfaction with the fee varies between facilities rather than being associated with a particular management model (see Table 10).

Thirty four percent of respondents reported that a member of their household had been unable to afford the fee at some point during the past year. This situation was usually resolved by the person being allowed to use the facility and pay later (52%) or by them borrowing money (38%).

Table 7. Numbers of facility users who pay for use of communal facility

Facility	Management	Frequency (%) who pay to use facility
3.10 (n=44)	Municipal	4 (9)
3.20 (n=297)	Municipal	296 (100)
4.20 (n=301)	Sulabh	294 (98)
4.30 (n=189)	Sulabh	189 (100)
Police Line (n=313)	Community managed	311 (99)
4.10 (n=238)	Sulabh	234 (98)
4.40 (n=297)	Sulabh	295 (99)

Table 8. Reported fees

Facility	Management	Reported Fees (INR)			
		Mean	Median	Mode	Range
3.10 (n=0)	Municipal	No data	No data -	No data -	No data -
3.20 (n=99)	Municipal	16	15	15	10-30
4.20 (n=97)	Sulabh	12	10	10	10-40
4.30 (n=86)	Sulabh	29	25	20	10-75
Police Line (n=108)	Community managed	51*	50	50	50-90
4.10 (n=95)	Sulabh	40	40	40	2-70
4.40 (n=98)	Sulabh	22	20	10	2-70
All paying users (n=583)	-	28	25	50	2-90

* The higher mean fee at Police Lines was an effort to improve the facility, mainly the capacity for water storage to address the problem of a lack of water that the facility was facing at the time of the survey.

Table 9. Reported fees as a % of APL and BPL income

Facility	Modal Reported Fee	Fee as % of max monthly income for APL ration card holder	Fee as % of max monthly income for BPL ration card holder
3.10 (n=0)	- No data	No data	No data
3.20 (n=99)	15	0.5%	0.75%
4.20 (n=97)	10	0.33%	0.5%
4.30 (n=86)	20	0.7%	1%
Police Line (n=108)	50	1.7%	2.5%
4.10 (n=95)	40	1.3%	2%
4.40 (n=98)	10	0.33%	0.5%
All paying users (n=583)	50	1.7%	2.5%

Table 10. Percentage of users who consider fee rate to be 'right'

Facility	Management	No. think fee 'right' (%)
3.10 (n=0)	Municipal	No data
3.20 (n=99)	Municipal	91 (92)
4.20 (n=95)	Sulabh	91 (96)
4.30 (n=85)	Sulabh	61 (72)
Police Line (n=108)	Community managed	94 (87)
4.10 (n=96)	Sulabh	60 (63)
4.40 (n=99)	Sulabh	90 (91)

3.9 Latrine facilities at home and plans for continued use of communal facility

The majority of communal facility users (93%) have no latrine at their home. The most common reasons cited for this are lack of space (52%) and lack of money (37%). Most do not expect their home sanitation to change within the next year. Sixty three percent said there is no chance they would construct a latrine at home in the coming year and 17% said it is unlikely. Fifteen percent of users said it was possible that they would construct a latrine at home in the coming year and one percent thought it very likely. Eighty eight percent of users expected to still be using the communal facility in the same way in a year's time while 12% did not expect to be doing so.

There was some variation between poverty pockets with respect to the number of facility users who did not expect to be using the facility in a year's time. Notably, 3.10 where a high percentage of communal latrine users did not expect to be using the facility in a year's time and a higher percentage thought it possible that they would construct their own latrine (see tables 11 and 12). There were no obvious socio-economic differences between those who thought it possible they would construct their own latrine and those who did not.

Table 11. Percentage of users who expect to be using the facility in a year's time

Facility	Frequency (%) of users who do not expect to be using the facility in a year's time
3.10 (n=35)	14 (40)
3.20 (n=99)	8 (8)
4.20 (n=100)	12 (12)
4.30 (n=88)	15 (17)
Police Line (n=107)	8 (8)
4.10 (n=97)	7 (7)
4.40 (n=99)	13 (13)

Table 12. Percentage of users who think it possible or likely they will construct a latrine in a year's time

Facility	Frequency (%) of users who think it possible or likely that they will construct their own latrine in a year's time
3.10 (n=33)	11 (33)
3.20 (n=98)	0 (0)
4.20 (n=85)	13 (15)
4.30 (n=79)	12 (15)
Police Line (n=99)	29 (29)
4.10 (n=93)	4 (4)
4.40 (n=93)	21 (22)

The household survey covered both users and non-users of latrine facilities and is therefore expected to give a more representative picture of the prevalence of latrine ownership in the different communities. Unsurprisingly, reported latrine ownership is

higher in the household survey than in the exit interviews. Only 47% of householders interviewed in the household survey had no latrine at home. There are considerable differences between slums in the prevalence of latrine ownership ranging from 88% at 4.20 to 18% at 3.20 (see Table 13). These figures have not been adjusted for possible spatial clustering.

Table 13. Prevalence of latrine ownership (unadjusted data)

Location	Number (%) households with latrine at home
4.20 (n=50)	44 (88%)
3.10 (n=51)	32 (63%)
4.30 (n=51)	32 (63%)
4.40 (n=51)	29 (57%)
4.10 (n=50)	28 (56%)
Police Lines (n=50)	14 (28%)
3.20 (n=49)	9 (18%)

3.10 Satisfaction with facility

Most users interviewed at latrine facilities (65%) said they were satisfied with the condition of the latrine with 6% reporting they were very satisfied and 29% reporting that they were not satisfied. There were differences between facilities as shown in Table 14. There was no difference between men and women in terms of satisfaction with facilities. Of male users (n=253) 74% were either satisfied or very satisfied with latrine conditions while for female users (n=374) the figure was 71%.

Table 14. Satisfaction with latrine facility conditions among users interviewed at exit

Facility	Management	Satisfied/very satisfied (%)
3.10 (n=35)	Municipal	14 (40)
3.20 (n=98)	Municipal	59 (60)
4.20 (n=101)	Sulabh	83 (82)
4.30 (n=87)	Sulabh	32 (37)
Police Line (n=108)	Community managed	108 (100)
4.10 (n=99)	Sulabh	68 (69)
4.40 (n=100)	Sulabh	81 (81)

All users of the Police Lines facility reported being either satisfied or very satisfied with the condition of the facility. At 4.30 63% and at 3.10 60% reported being unsatisfied with the condition while at 4.20 and 4.10 the figures were 18% and 31%.

The features that were most liked about the latrine facilities were convenience (38%), privacy (23%) and protection from animals (13%). The most disliked features were dirt and smell (64%), queue (19%) and lack of water (11%). This pattern was similar for Police Lines as for other facilities.

3.11 Contribution to ending open defecation

Of 327 householders interviewed at home 69% report open defecation as their usual practice and 25% report using a community latrine. Taking only those households with no latrine of their own (n=152) 43% report using an open defecation site and 49% report using a communal latrine. The figures are too small to break down meaningfully by facility sites. However, it is worth noting that even at Police Lines, with the best facility, out of 36 households with no latrine interviewed, 21 (58%) reported open defecation as being their usual practice (see table 15).

It was very rare for latrine facility users to use the facility for children. Of 325 latrine facility users from households with young children 70% reported disposing of young children's faeces in a drain or in the garbage. Thus, although disposal of children's faeces in communal latrines is possible it is not commonly practiced and children's faeces continue to pose a health risk.

Table 15. Usual place for defecation among householders with no latrine (household survey data)

Facility	Frequency (%) open defecation	Frequency (%) communal latrine
3.10 (n=15)	11 (73)	4 (27)
3.20 (n=39)	0 (0)	27 (69)
4.20 (n=5)	0 (0)	5 (100)
4.30 (n=16)	6(38)	10 (63)
Police Lines (n=36)	21 (58)	15 (42)
4.10 (n=20)	10 (50)	10 (50)
4.40 (n=21)	18 (86)	3 (14)

3.12 Barriers to use of communal facilities

Distance to the facility may be a barrier to use. A proxy indicator of the straight line distance between latrine facilities and houses in the household survey was calculated in the following way. The difference between the GPS north readings for the facility and the house was calculated. The same was done for the GPS east readings. These differences were squared and summed. The square root of the sum of differences was used as a proxy for the straight line distance. When looking at the effect of distance no adjustment has been made for spatial clustering of households and it has been assumed that poverty pockets are approximately linear or rectangular in shape with the communal facility situated close to one edge. Large deviations from this pattern, such as a wedge shaped poverty pocket or a circular poverty pocket with a centrally situated communal facility might invalidate these analyses.

Because these data were not normally distributed a non-parametric test (the Mann-Whitney U test) was used to compare the proxy distance scores for non-latrine owners who reported open defecation as their usual practice and those who did not report open defecation as their usual practice. This analysis was done separately for each poverty pocket. In two poverty pockets no comparison was possible since no open defecation was reported. In each of the remaining poverty pockets the mean relative distance to the communal facility was greater among those reporting open

defecation. For three of these poverty pockets the difference was statistically significant (see Table 16). Surprisingly however, convenience of the facility was almost never mentioned as a reason for not using it (see table 17). It may be that distance interacts with other variables such as cleanliness, cost and convenience of the open defecation site. More detailed multivariable analysis would be needed to explore this further.

The most common reason given by 58 non-facility users with no household latrine for not using the communal facility was having to pay (24%) followed by not liking the facility (22%) (See Table 17).

Table 16. Difference between open defecators and non-open defecators in terms of proxy distance to communal latrine facility

Facility	Mean rank of proxy distance indicator: open defecator households	Mean rank of proxy distance indicator: no open defecator households	P value	Mann-Whitney U	Z
3.10	9.09	5	.138	10	-1.567
3.20	-	-	-	-	-
4.20	-	-	-	-	-
4.30	9.33	8	.635	25	-.542
Police Lines	22.52	12.87	.006	73	-2.711
4.10	13.5	7.5	.023	20	-2.268
4.40	12.11	4.33	.047	7	-2.01

Table 17. Reasons for not using the communal latrine facility among non-users with no household latrine

Reason for not using the communal facility (n=58)	Frequency (%)
No need	6 (10)
Don't like it	13 (22)
Have to pay	14 (24)
Don't like way it is managed	8 (14)
Not clean	1 (2)
Not safe	2 (3)
Not convenient	1 (1)

4. Discussion

The small sample sizes in this exploratory study preclude the drawing of general conclusions based on the comparison between facilities. Nevertheless some points clearly emerge from the study. Based on the fact that almost all facility users were coming from and going to their places of residence, that their places of residence were close to the facilities, that they travelled there on foot, used the facility most days and that the facilities were being used mainly for defecation it is apparent that the facilities studied are used to fulfil regular, domestic sanitation needs rather than to serve the needs of transitory populations.

On average 481 people use each communal facility daily although there is great variation between facilities (range 124 – 896 users). The figure is lower than but not dissimilar to the average rates of use of 590 people per day reported from the Tiruchirappalli study⁷. In Tiruchirappalli, charging fees from 15Rs per household per month, it was estimated that facilities with fewer than 200 paying users would likely be unable to cover their operating costs while facilities with fewer than 500 paying users would break even but would produce no surplus to cover infrequent, larger costs. Differences in operating costs and fee rates that probably exist between the Tiruchirappalli facilities and those included in the Bhopal study make direct comparisons difficult. Nevertheless it seems likely that with the exception of the Police Lines complex, the pay to use facilities studied in Bhopal poverty pockets would struggle to cover their expenses from the revenue generated by user fees alone. The present study was not set up to address this issue and additional information would be needed to make a proper assessment of the financial viability of latrine facilities. Satisfaction with user fees varied across facilities but in general the majority of those who used the facilities thought the fees to be fair.

The mean prevalence of latrine ownership in the poverty pockets studied, estimated from the household surveys, was 53%. This figure is higher than the 2006 figure of 20%⁴ but similar to the 2007 figure of 49%⁵. This may reflect the small number of poverty pockets visited in the current study or it may be due to bias if for some reason houses with a latrine were more likely to be included in the household survey. It is also possible that the random walks used in the present study resulted in a spatial sampling bias for which the data have not been adjusted. Although the prevalence of latrine ownership may be higher than expected the majority of households with no latrine of their own did not expect this situation to change in the near future. Thus dependence on communal latrine facilities is expected to continue among households currently using these facilities.

Among communal facility users the majority were satisfied with the conditions of the latrines they used. However, this masks considerable variation between facilities. For two facilities (one municipal and one Sulabh) the percentage of satisfied users were 40 and 32 respectively while at Police Lines 100% of users claimed to be satisfied or very satisfied with conditions. Dirt and smell were the things that were most often reported as being the worst features of communal facilities. This was the same for

⁷ WaterAid (2007) Tiruchirappalli shows the way; community-municipality-NGO partnership for city wide pro poor slums infrastructure improvement: Policy recommendation for community managed toilets, bathing and washing complexes in urban slums.

men and women. Queuing and lack of water were also identified as problems. Privacy and security did not come out as frequent concerns for men or women.

There was a striking gender difference in rates of communal facility use. At each facility daily use by males was more than double that by females. The reasons for this are not clear, particularly as there were no gender differences in reported purpose of visiting the facilities (defecation in 95% of cases for males and females). Nor were there any gender differences in reported use of communal facilities among respondents in the household survey. The pattern was remarkably consistent across facilities. The possibility that there are some barriers to female use of facilities deserves further investigation.

The communal latrine facilities go some way towards reducing open defecation and afford a certain amount of convenience, privacy and dignity to those who use them. However, open defecation continues to be a common practice in all poverty pockets studied. The most common reason provided for not using the communal latrine facilities by householders with no latrines of their own was the cost of the facilities (although this was only cited by a minority of total respondents). Other common responses, not liking the facility and not needing to use the facility are not very informative and more work is needed to fully understand these barriers to use. Physical conditions of facilities may be a disincentive to use communal latrines, however, even at Police Lines, where conditions of the communal latrine were generally very good open defecation continued to be reported by more than half of respondents from households with no latrine.

Distance to the facilities from the house may constitute a barrier to their use. Our data have not been adjusted for possible spatial clustering however they suggest that non-users tend to live at greater distances from the communal latrines than users. It is likely that distance interacts with other variables relating to latrine condition and operating characteristics as well as convenience of open defecation sites. Additional data and multivariable analysis would be needed to explore this possibility further.

Open defecation by young children also continues to be common as evidenced by the fact that only 44 (3%) of latrine users were bringing a young child to defecate. Although some communal facilities are equipped with child-friendly toilets the role of these in ending open defecation by children is not clear. For a young child to use a latrine facility, whether communal or private, requires supervision that may often not be possible. Thus even at Police Lines small children could be seen defecating on garbage heaps within sight of the child friendly latrines. Child friendly facilities may however be useful for toilet training children. The observed proportion of communal latrine facility users who were children (51%) was in line with the estimated proportion (from the household survey) of the poverty pocket populations comprising school age children (57%). The difference between the two figures is probably due to the fact that observed latrine users were only classified as children if they appeared to be below 12 years of age.

4.1 Conclusions

The findings presented in this report are based on a small number of facilities in a single city. Further work would be needed to assess the extent to which these findings generalise to other settings. However, the possibility that these may represent general patterns of use at communal facilities should give food for thought with respect to sanitation policy for urban poverty pockets.

The first thing to note is that communal latrines do provide for the daily sanitation needs of many households living in poverty pockets. Those households that use them are prepared to sacrifice a certain amount of money and time in order to use the communal facilities and must perceive that the benefits in using them are sufficient to justify this cost. Communal facilities therefore can make a potentially important contribution to reducing open defecation so long as their conditions are good enough to encourage use.

However, provision of communal latrine facilities in the manner and on the scale of those studied is not sufficient to end open defecation. The majority of households with no private latrine continued to choose open defecation as their preferred sanitation option. This was the case even where the condition of the communal facilities was very good. The reasons for this are not known however, distance to the facility appeared to play a role in discouraging use. Furthermore, communal facilities were rarely used as places for young children to defecate, even when child-friendly facilities were available. Thus open defecation by young children and the unsafe disposal of young children's faeces may continue to be a public health problem. Also striking was the high ratio of male to female users of communal facilities implying that many women and girls continue to prefer open defecation sites over communal facilities.

Further qualitative and quantitative work is needed to understand and verify the patterns of use observed. A policy implication arising from these findings is that it may not be possible to provide for the needs of all poverty pocket residents through the provision of single, centralised sanitation blocks and it may be necessary to consider options for more decentralised service provision for adult sanitation and for the disposal of young children's faeces.

The study was not set up in such a way as to allow the sustainability of communal facilities to be assessed. However, continued use of facilities by a population that is prepared to pay a user fee is clearly an important factor with respect to sustainability. Pay to use communal latrines constituted the domestic sanitation option for a sizeable minority of households living in urban poverty pockets. No major changes in this situation were anticipated in the near future. A slight decrease in users may occur as households construct latrines. On the other hand, there may be increases in the population of the poverty pockets and possible gains from the current non-user population. There was considerable variation in users' satisfaction with the condition of the facilities and assessment of the fee between facilities in different poverty pockets. Nevertheless the majority of users were satisfied with the condition of the facility they use and considered the fee to be 'about right'. The total numbers of users of many of the facilities are relatively low. This may impact on the extent to which facilities are able to recover their running costs through user fees. However a more detailed study would be needed to confirm the extent to which this is the case.

The long-term viability of community management structures is also an important issue that deserves additional attention.

4.1.1 Future work

It would be useful to conduct further in-depth qualitative work to better understand the environmental factors, attitudes and beliefs that determine choice of defecation place and to explore i) what would make the communal facility attractive as a defecation place and ii) what would make open defecation intolerable.

Physical conditions and operating characteristics varied considerably between communal facilities. Detailed information on these variables was not collected in this study. Future work could usefully collect these data allowing multivariable modelling to identify the features most important in influencing use rates and user satisfaction.

Given the apparent continued issue of open defecation by young children and the unsafe disposal of young children's faeces it would be useful to conduct qualitative work on the attitudes and practices. The results could be used to design an intervention to improve faeces disposal practices which could then be tested in the field.

The sustainability of community management of facilities remains unproven. Community management of water supply systems has often proved difficult to sustain. A case study of selected community managed facilities in India could help assess the long-term viability of this management approach and highlight factors contributing to success or failure.

The reasons underlying the apparently high ratio of male to female users are not explained by the current study and deserve further exploration.

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