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The Dynamics of Water and Sanitary Problem among Mumbai Slum Dwellers

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INTRODUCTION

ATTENTION TO slum dwellers' problems of the world has been largely a matter of inaction, inappropriate action or insufficient action. The most common government policies over the past 40 years have ignored slums or, to bulldoze them when they are on valuable land. Since late 1960s various programmes have been implemented. The most common were slum upgrading and housing finance schemes. Slum upgradation was usually limited in extent and seldom maintained over time. It was rarely implemented on a scale that helped more than a few slum dwellers. Housing financing systems often included inappropriate financial conditions for slum dwellers and forced evictions remained common.¹

At an Expert Group Meeting in November 2002, UN-HABITAT and its partner came up with a provisional definition of 'slum'; a settlement in an urban area in which more than half of the inhabitants live in inadequate housing and lack of basic services, such as

1. Durable housing
2. Sufficient living area
3. Access to improved water
4. Access to sanitation
5. Secure tenure

At the global level, 31.2 per cent of all urban dwellers lived in slums in 2005, a proportion that has not changed significantly since 1990. However, in last 15 years, the magnitude of the problem has increased substantially: 283 million more slum dwellers have joined the global urban population. Asia has the largest share of the world's slum population - in 2005, the region was home to more than half of the total slum population, or about 581 million. Most of the slum dwellers, i.e. Southern Asia's slum dwellers - 63 per cent, or almost 170 million people - reside in India. The share of Southern Asia's slum

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dwellers constitutes 27 per cent of the global total; India alone accounts for 1.7 per cent of the world slum dwellers.²

Population Growth in Mumbai -- 1901 to 2001

The city of Mumbai is located on the western coast of Maharashtra State in the North Konkan region at 18° 33' North latitude and 72° 45' East longitude. In addition to being the capital of Maharashtra State, the city is also the financial capital of India. Mumbai is a leading industrial and commercial centre with a concentration of major economic activities. Between 1951 and 1991 there was a three-fold increase in the city's population. In 1991 Mumbai had a population close to a million and in 2001 city's population was 1.50 million.

Housing Type

In the Mumbai slums quite a significant proportion of houses are predominantly pucca. The predominance of pucca structures demonstrates the readiness of slum dwellers to invest in housing and an attempt to improve their living conditions. The readiness to invest in housing was more pronounced in case of notified slum settlements. This trend clearly establishes the facts that slum communities want to improve their own living condition with security tenure.

Water Supply

The slums in the city largely depend upon community level source of water supply, which is of shared type and stand-posts are the most common. The level of satisfaction of slum communities highly depends on the type of water supply, with individual type of supply evoking a higher level of satisfaction than community level provisions. While the communities are generally satisfied with the water supply, the amount of water and the low pressure of supply to slum settlements emerged as a significant issue for slum community. Jaundice, dysentery and diarrhoea were reported by communities as frequent diseases. The quantity of water has direct bearing on environmental sanitation while the quality of water has a direct impact as a carrier of diseases.

Toilets

The slum population in the city shows a high level of dependence on the public toilet for their sanitation needs. Around 38.6 lakh people living in 1435 slums depend exclusively on public toilets. There are also a sizeable number of slums (209 slums) in the city, which are

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completely devoid of public toilet facilities.

Inadequate provision of toilets results in long waiting time especially during the morning hours, which may be as long as half an hour. That there is poor level of maintenance of the toilet blocks in communities seems to be universal complaint. The toilet doors are often broken, latches are pulled off, pans are damaged and clogging due to improper usage renders several of the toilets seats unusable. The houses near toilet blocks have to bear the brunt of the overflowing septic tanks.

The conditions inside the toilets are described to be very unhygienic and pathetic. The women's toilets are found to have sanitary cloth, empty medicine bottles, as well as mishi marks (a tobacco powder or paste used as a laxative) all over the floor and lower walls of the toilets. In the men's toilets alcohol bottles are often found on the floor or in the pans. Stuffed out cigarette butt leave their marks on the door and walls of the toilets and empty tobacco and cigarette pouches are left strewn on the floor of the toilet blocks. The children revealed that graffiti on the inside walls of the toilets as well as sticking of offensive posters adds to the overall unpleasantness of the toilet block.

In Mumbai there are 1,959 known slum colonies with 9,665 number of toilet blocks having 77526 number of toilet seats in all. Considering the present population of 62.47 lacs in Mumbai slums, this indicates that considering the targeted ratio of toilets per 50 people, there is deficit of 47,529 toilet seats. The average ratio of person per seat works out to be 1.81. There is provision of water in only 1389 toilet blocks and electricity in only 3776 toilet blocks out of a total of 9665 toilet blocks. The residents carry their buckets and lamps at night. In some cases residents have provided electricity on a small scale by mutual contribution in their toilet blocks.

Indian Context

In legislation, slums are defined as areas that are "*environmentally and structurally deficient*".³ The 1981 Census of India in the light of Slum Area Act 1956 defined slums as areas where buildings are unfit for human habitation for reasons such as dilapidation, overcrowding, faulty arrangement of streets, and lack of ventilation, light or sanitary facilities. In other words slums are groups of buildings, or areas characterized by over-crowding, deterioration, unsanitary condition or absence of facilities or amenities which because of these conditions or any of them endanger the health, safety or morals of its inhabitants

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or the community.⁴ According to Ford Foundation, slum is a residential area in which the housing is deteriorated and substandard or as unwholesome as to be a menace to the health, safety, morality or welfare of the occupants.⁵

The nationwide first survey on the socio-economic condition of the slum dwellers in class I cities was conducted by the National Sample Survey Organization (NSSO) in its 31st round (July 1976 - June 1977) for each city with a population of 100,000 and above as per the 1971 census. The second survey conducted by the National Sample Survey Organization (NSSO) in 49th round (1993) covered rural as well as areas having collection of poorly built tenements, mostly of temporary nature overcrowded by inhabitants and with inadequate sanitary and drinking water facilities. The third survey carried out in the 58th round (2002) focused only on slums in urban areas.⁶

A silent humanitarian crisis kills some 3900 children every day and thwarts progress towards the entire millennium development goals (MDGs), especially in Africa and Asia. The root of this unrelenting catastrophe lies in these plain, grim facts: four of every ten people in the world do not have access to even a simple pit latrine; and nearly ten have no source of safe drinking water (*Bartram, 2005*). The MDGs include a specific target (number 10) to cut in half, by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation.

Review of Literature

Gandhi,⁷ observed that there have been several attempts since 1971 to make Mumbai slum free, but the result has been an increase in their number. The conditions in which slum dwellers live are dehumanizing and these in turn become big source of support for crime and corruption. Slum Redevelopment Authority (SRA) has been headed by Chief Minister and is usually initiated by a builder if he somehow showed the concurrence of 70 per cent of the slum dwellers. The concept was that all slum dwellers who were staying in Mumbai before 1995, would be given free housing of 225 square feet (equal 21 sq m) and an equal area could be built and sold by the builder to offset the construction of the free houses to be given to slum dwellers.

Kapadia-Kundu and Kanitkar⁸ studied that Maharashtra has the highest number of slum dwellers in India. Yet primary healthcare for urban slums remains in state of neglect. The health status in urban slums is studied in three sections--women's health and emerging issues like HIV/AIDS and TB.

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The state of child health in urban slums is comparable to that in rural areas and in some cases even worse. This is especially so in immunization. The urban poor are spending substantially on childhood illness such as diarrhoea and acute respiratory infection (ARI). The increasing incidence of, TB and HIV/AIDS in urban areas represents another major concern for urban health. The interrelationship between TB, HIV and general morbidities indicates the need for an integrated healthcare system to address these problems.

Buttenheim,⁹ studied that research evaluated how improved sanitation effects child nutritional status by limiting exposure to diarrhoeal diseases and investigate a neglected issue in the literature on sanitation improvement: how do parents dispose off children's feces, and does this behaviour change when sanitation infrastructure is installed?

The study tells us that the incidence of diarrhoea among children in neighbourhoods with drainage was less than two thirds. After controlling for potential confounders, the proportion of children with 'frequent diarrhoea' showed the a significant trend.¹⁰

This study tells us that hygiene promotion should focus on the elimination of human stools from the domestic environment and effective hand washing after stool contact.¹¹

Objective

To know the water and sanitary problem among Mumbai slum dwellers.

Data Source

Data has been collected from 690 (3x230) households located in three slums of Mumbai. After house listing in all the households of a particular locality, households are selected by adopting systematic random sampling procedure. Information has been collected from the head of the household or a responsible member. The households have been listed clockwise starting from the N-E corner. If the slum has more than 300 households it will be segmented.

Data Analysis

The data has been entered in C. S. Pro 2.6 version and the analyses were conducted using SPSS, 15 version and STATA 10.

Table 1, represents the characteristics of the households in Mumbai slums. There is no differential in the sex wise distribution of slum population in K-East. In G-North and M-East the ratio of

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TABLE 1: PERCENTAGE DISTRIBUTION OF THE CHARACTERISTICS OF MUMBAI SLUMS DWELLERS, 2009

Characteristics	G-North slums	K-East slums	M-East slums	Mumbai slums
<i>Sex</i>				
Male	72.3	51.0	74.4	53.3
Female	27.7	49.0	25.6	46.7
<i>Religion</i>				
Hindu	75.1	79.3	27.3	58.4
Muslim	18.2	17.1	72.7	38.6
Christian	5.1	2.2	0.0	2.1
Other	1.6	1.5	0.0	1.0
<i>Caste /Tribe</i>				
Scheduled Caste	38.3	12.9	8.7	18.1
Scheduled Tribe	6.1	10.1	0.7	5.5
Other Backward Class	45.5	40.8	40.3	41.9
Others	10.1	36.2	50.2	34.6
<i>Level of education</i>				
Illiterate	27.9	15.3	29.6	24.1
Up to fifth standard	43.8	30.1	43.2	38.7
Up to eight standard	15.6	13.3	16.0	15.0
High school & above	12.7	41.3	11.2	22.2
<i>Current work status</i>				
Not working	15.9	13.3	21.5	17.1
Working	31.3	41.0	26.1	32.7
HH activity	16.1	19.9	18.3	18.2
Student	36.7	25.8	34.2	31.9
<i>Monthly income (Rs.)</i>				
Up to 3000	19.6	34.7	46.8	13.7
3001-5000	52.8	36.7	30.0	47.4
5001-10000	22.5	10.8	1.3	29.9
1 0000 & above	18.3	17.8	21.9	9.0

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female to male slum population is around 1:3. Hindus are dominating in K-East slum (79 per cent) followed by G-North slum (75%). M-East slum has highest percentage of Muslim population (72%). No Christians are found in our sample from M-East slum. The percentages of Scheduled Caste population are highest (38.3%) in G-North slum followed by K-East and M-East slum. Scheduled Tribe population is found to be highest (10%) in K-East slum. Other backward class population is more than 40 per cent in each of the three slums, highest in G-North followed by K-East and M-East.

Less than one fourth of the slum dwellers are illiterate while another more than one third have level of education up to standard fifth, it can be observed that more than one fourth slum dwellers living in G-North and M-East are illiterate. K-East slum has the highest percentage of people with high school and above education followed by G-North slum (12%) and M-East slum (11%). One third of the Mumbai slum dwellers are workers and the average monthly income of Mumbai slum dwellers is Rs. 2650 PM, it varies from Rs. 1650. PM in M-East slum to around Rs. 2320 in G-North slum. It is evident from Table 1 that larger proportions of G-North and K-East slums dwellers have monthly income of Rs. 3000 and above while 47 per cent slum dwellers of M-East have monthly income up to Rs. 3000. Similarly only nine per cent of Mumbai slum dwellers have monthly income of Rs. 10000 PM and above. The corresponding figure for G-North, K-East and M-East are 18.3, 17.8 and 21.9 per cent respectively. The people working for more than 12 hours is found to be highest in (27%) in M-East slum.

The details of different amenities available in the households in Mumbai slum are presented in Table 2. Among Mumbai slum dwellers, as high as 84 per cent own their house. A significant number of them (40%) live in semi pucca houses followed by 36 per cent living in Kaccha house and 14 per cent living in pucca house. In 96 per cent houses the main source of lighting is electricity and the rest use kerosene. Regarding water facility, around 65 per cent houses are using public tap followed by 34 per cent who have access to water piped into residence. The pathetic situation appears in case of availability of toilet facility in Mumbai slums which is obvious from the fact that around 23 per cent people in slums of Mumbai have no toilet facility and 76 per cent use common toilet facility under unhygienic condition.

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TABLE 2: PERCENTAGE DISTRIBUTION OF HOUSEHOLD AMENITIES OF MUMBAI SLUM DWELLERS, 2009

<i>Housing Characteristics</i>	<i>Percentage</i>
<i>Ownership of house</i>	
Owned	84.0
Rented	16.0
<i>Type of house</i>	
Kaccha Pucca Semi-pucca	36.5
Pucca	23.5
Semi-pucca	39.9
<i>Source of light</i>	
Electricity	95.9
Kerosene	4.1
<i>Source of drinking water</i>	
Piped into residence	33.9
Public tap	64.6
Public hand pump	0.1
BMC vehicle/ Tanker	1.3
<i>Toilet facility</i>	
Toilet within house	0.6
Common house	75.9
No toilet facility	22.6
Others	0.9

The slum dwellers in Mumbai face the different kind of problems as tabulated in Table 3. As high as 62 per cent of the slum dwellers face any kind of problem related to water and toilet use. Nearly half of the residents of Mumbai slums are facing problem in fetching water. On having a look at the different types of problems faced by them related to water we find that highest percentage (62%) of the slum dwellers face problems such as it is time taking affair and requires standing in queues. Less/limited quantity of water is a problem faced by nearly 60 per cent of the slum dwellers. Distance of the source of water is another important aspect which is evident from the fact that quite a high percentage (53%) of the slum dwellers face problem because they have to travel long distance to fetch water. Nearly two fifths of the slum dwellers face problems due to unclear water. Comparatively very less percentage (10%) of the slum dwellers in Mumbai are facing problem due to the irregular water supply.

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TABLE 3: PERCENTAGE DISTRIBUTION OF SLUM DWELLERS BY TYPE OF PROBLEMS FACED RELATED TO WATER AND TOILET USE IN MUMBAI, 2009

<i>Problems faced</i>	<i>Percentage</i>
Proportion problem faced	61.5
<i>Fetching water</i>	49.6
Less/limited quantity	59.7
Problem with queue	62.0
Far away	53.0
Unclean water	42.0
Irregular water supply	10.0
Time taking	62.0
<i>Type of problem while toilet use</i>	
Unhygienic	97.5
Long queue	93.0
Far away	84.0
Mismanaged	17.0
Ashamed	0.6

Unhygienic toilet facility is the most common problem faced by the slum dwellers of Mumbai. This is evident from the fact that nearly 98 per cent of them are facing problem while using toilet due to unhygienic condition. Again a high percentage (93%) of the slum dwellers face problem because they have to stand in long queue to use toilet facility. Distance of the location of toilet is another important problem faced by the slum dwellers. Eighty four per cent of them face problem because the toilet is located far away from their residence. Only 17 per cent face problem in the toilet use due to the mismanagement of toilet facility.

Table 4 presents the percentage distribution of the slum dwellers according to the extent of their awareness about purification of water, cleaning of floor with insecticide, cleaning of drainage in front of house, cleaning of road in front of house by BMC and garbage disposal which are all parts of sanitary condition.

Only 13 per cent of the slum dwellers in Mumbai are purifying water by alum/straining by cloth and nearly nine per cent are boiling water to purify it before drinking. Less than one per cent of the slum dwellers are using electronic purifier for purifying water. Forty five per cent of the slum dwellers in Mumbai clean their floor with insecticide.

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TABLE 4: PERCENTAGE DISTRIBUTION OF SLUM DWELLERS BY SANITARY AWARENESS IN MUMBAI, 2009

<i>Awareness about</i>	<i>Percentage</i>
<i>Purification of water</i>	
Strain by cloth/alum	13.0
Boiling	8.5
Electronic purifier	0.5
Cleaning of floor with Insecticide	45.0
<i>Cleaning of drainage in front of house by BMC</i>	
Daily	6.4
Weekly	16.3
Monthly	12.4
Occasionally	64.9
<i>Cleaning of road in front of house by BMC</i>	
Daily	3.8
Weekly	13.1
Monthly	15.4
Occasionally	67.7
<i>Garbage disposal</i>	
Road	7.2
Field	17.1
BMC Pot	51.1
Others	24.5

As far as cleaning of drainage in front of the house by BMC is concerned, nearly 65 per cent of the slum residents report that it is done only occasionally. One in eight reports that drainage in front of their house is cleaned by BMC once in a month, weekly or daily cleaning is reported by 12-16 per cent households. Only six per cent of the slum dwellers report that the drainage in front of their house is cleaned by BMC daily. Cleaning of road in front of house by BMC also follows the similar pattern as in case of cleaning of drainage in front of the house. A fairly high percentage (68%) of slum dwellers report that the cleaning of road in front of their house is done occasionally by the BMC. Again the percentage of slum dwellers reporting that the road in front of their house is cleaned by BMC monthly, weekly or daily is 15.4, 13.8 and 3.8 per cent respectively. Fifty one per cent of the slum dwellers in Mumbai dispose garbage in the BMC pot and nearly 25 per cent use other method of garbage disposal. Very less per cent (7%) of the slum dwellers are disposing garbage on roads.

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CONCLUSION

Overwhelming evidence shows that the urban poor are seriously affected by inadequacy of safe water and sanitation, perhaps even more than their rural counterparts. Consequently, communicable diseases like cholera and dysentery are always common among these communities. The adverse effects include; ill health culminating into loss of lives. The government and municipalities cannot combat this unbecoming situation alone. There is need for concerted efforts by all stakeholders to play a key and leading role. This partnership needs to be encouraged and greatly strengthened. Such partnerships have shown effectiveness in pro-poor urban sanitation projects and initiatives. The involvement of government, development partners, NGOs and the private sector is vital; pooling resources together is equally essential as well as making strategic alliances with other agencies with similar objectives.

Recommendations

The government needs to increase its funding for sanitation. Government and stakeholders need to place the urban poor at the centre of their interventions in urban areas. Their needs need to be priorities and their voices heard. Programme needs to be specifically designed and implemented aimed at addressing sanitation needs of the urban poor. The urban poor need to be involved in all the projects aimed at addressing water, hygiene and sanitation. This will create a sense of ownership. There is need to promote cheaper technologies like ECOSAN Toilets which require a small space and human waste could be used in farming, kitchen gardens or sold as manure.

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