

## **Household Environment and Respiratory Infections among Children in three low Income Urban Communities of India.**

Providing basic health facilities especially to the socio-economically disadvantaged section of the society is a great challenge for large and populous country like India. The country's health care programme is more rural focused as about 70% of the population live in villages. But the country is urbanizing rapidly and a significant proportion of the urban dwellers are also poor who have no access to basic health care facilities. The total size of the urban population is about 377 million(census 2011) out of which a significant proportion of population live in slums. The data from 2001 census shows that there was a total of 42.6 million slum population in the country living in 8.2 million households which was enumerated in 640 cities/towns having population more than 50,000. It constitutes 4% of the total population and 15% of the urban population and 23.1 % of the population of the 640 cities/towns . About half of the population in Mumbai and about a third of the population in Kolkata live in slums. Increasing slum population is an indication of urban poverty and declining urban quality of life. Most of the slum dwellers do not have access to basic health and sanitation facilities resulting in poor health conditions. The present study makes an attempt in understanding the water and sanitation facilities among the slum and non-slum households in three cities(Pune, Jaipur and Bhubaneswar) of India and its implication for respiratory among the children .

The present study uses the data collected in Health of the Urban Poor (HUP, 2011) survey. HUP is a household survey covering approximately 2200 households in each of the three cities of India. For the household survey, the sampling design used in the baseline ensures that study findings are representative of the outcome indicators for each city. This study provides information about the household living environment of the sampled households conducted in Bhubaneswar, Pune and Jaipur. Information on household characteristics and household living conditions provides a context for understanding the demographic, health and level of hygiene of the population. The HUP study collected information about the usual residents of the household on selected health and hygiene practices. Access to basic amenities such as safe drinking water, sanitation and clean cooking fuel is not only an important measure of the socio-economic status of the household but also fundamental to the health of its members. The HUP Survey provides information on several household characteristics that affect household living conditions such as drinking water, toilet facilities, cooking infrastructure, crowding in households and hygienic practices.

The study finding shows that a significant proportion of households having low standard of living index use solid fuel both in Bhubaneswar( 26.0 %) and Jaipur(22.0%) .Over two third (70%) of the households in slum areas of Bhubaneswar reported that children have Acute Respiratory Infection(ARI) followed by Pune(64%) and Jaipur(24%). The odds of ARI is nine times higher in Bhubaneswar and nineteen times higher in Jaipur among those households who use solid fuel in comparison with those households who use non-solid fuels. Similarly the odds of ARI is four times higher in slum locality in comparison with non-slum locality in Bhubaneswar. The above findings suggest that the policies and programmes should reoriented to reduce the use of solid fuel especially in slum areas by replacing it with other eco-friendly and less hazardous fuels.

**Objective:** To make an attempt in understanding the household environments among the slum and non-slum households in three cities namely Bhubaneswar, Jaipur and Pune and its implication for respiratory disease among the children.

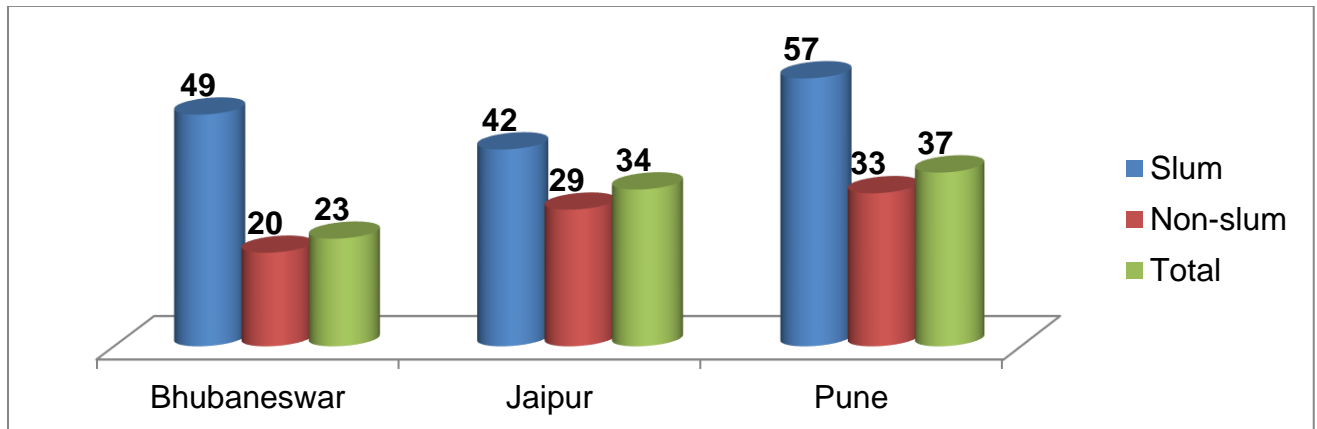
Table 1 Profile of the respondents			
Background Characteristics	Bhubaneswar	Jaipur	Pune
<b>Highest education attained by adult member of HH</b>			
< 5 years	0.9	2.9	1.6
5-9 years	11.7	27.4	11.1
10 years & above	87.4	69.7	87.3
<b>Standard of living index</b>			
Low	29.5	37.9	32.0
Medium	35.3	33.9	33.6
High	35.2	28.2	34.4
<b>Caste of household</b>			
SC/ST	10.5	32.4	14.7
OBC	24.0	23.2	24.5
Others	65.5	44.4	60.8
<b>Religion of head of HH</b>			
Hindu	96.2	85.5	84.0
Muslim	2.5	12.9	7.8
Christian	0.9	0.7	2.4
Others	0.4	0.9	5.8
<b>Type of locality</b>			
slum	7.8	33.9	18.2
Non-slum	92.2	66.1	81.8
<b>Total (N)</b>	<b>1839</b>	<b>1996</b>	<b>1884</b>

**Household crowding**

Table 2 Percentage of household, where more than three persons using per room used for sleeping by background characteristics in three cities Bhubaneswar, Jaipur and Pune, 2011

	<b>Bhubaneswar</b>	<b>Jaipur</b>	<b>Pune</b>
<b>Highest education attained by adult member of HH</b>			
< 5 years	48.4	58.3	29.2
5-9 years	45.3	47.3	63.6
10 years & above	20.2	27.2	34.5
<b>Standard of living index</b>			
Low	37.1	47.6	52.4
Medium	24.2	34.0	41.5
High	9.8	14.2	18.0
<b>Caste of household</b>			
SC/ST	37.2	36.1	56.6
OBC	25.2	36.3	39.4
Others	19.6	30.1	31.4
<b>Religion of head of HH</b>			
Hindu	22.8	30.2	36.5
Muslim	34.5	57.4	41.2
Christian	12.9	40.0	48.1
Others	22.2	18.8	37.7
<b>Type of locality</b>			
Slum	49.4	42.0	57.1
Non-slum	20.0	29.2	32.7
<b>Total</b>	23.0(1839)	33.5(1996)	37.1(1884)

**Figure: 1** Percent of household, where more than three persons using per room used for sleeping by the type of locality in the three cities, 2011



**Figure: 2** Percentage of households using solid fuel by standard of living index in three cities Bhubaneswar, Jaipur and Pune, 2011

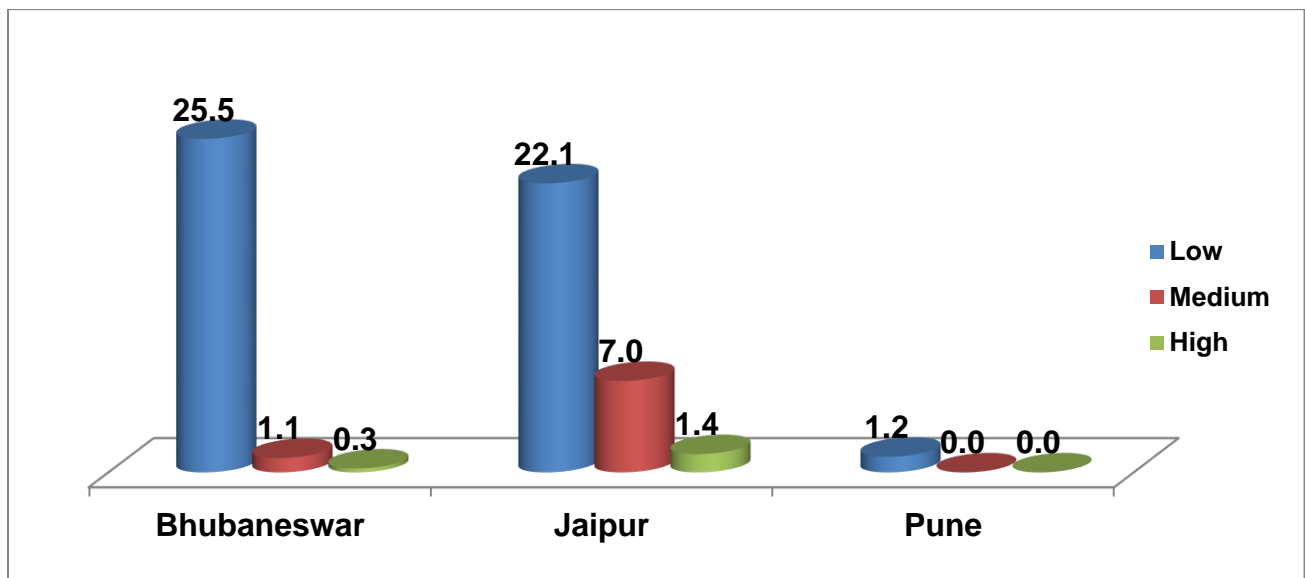


Table 3 Percentage of households using solid fuel by background characteristics in three cities  
Bhubaneswar, Jaipur and Pune, 2011

	<b>Bhubaneswar</b>	<b>Jaipur</b>	<b>Pune</b>
<b>Highest education attained by adult member of HH</b>			
< 5 years	66.7	40.0	0.0
5-9 years	36.0	18.6	1.9
10 years & above	3.5	4.6	0.2
<b>Standard of living index</b>			
Low	25.5	22.1	1.2
Medium	1.1	7.0	0.0
High	0.3	1.4	0.0
<b>Caste of household</b>			
SC/ST	24.5	25.2	0.3
OBC	13.7	7.8	1.4
Others	3.1	2.9	0.0
<b>Religion of head of HH</b>			
Hindu	8.1	11.6	0.5
Muslim	8.3	9.9	0.0
Christian	3.2	0.0	0.0
Others	0.0	0.0	0.0
<b>Type of locality</b>			
slum	37.5	23.5	1.0
Non-slum	5.5	4.9	0.2
<b>Total</b>	8.0	11.2	0.2
<b>Number( N)</b>	<b>1839</b>	<b>1996</b>	<b>1884</b>

Table 4 Percentage of households where children have ARI by background characteristics in three cities Bhubaneswar, Jaipur and Pune, 2011

	Bhubaneswar	Jaipur	Pune
<b>Highest education attained by adult member of HH</b>			
< 5 years	0.0	66.7	100.0
5-9 years	50.0	37.5	60.0
10 years & above	43.7	44.9	41.9
<b>Standard of living index</b>			
Low	50.9	45.0	72.0
Medium	36.4	52.6	42.3
High	41.7	29.4	21.4
<b>Caste of household</b>			
SC/ST	43.5	40.7	57.9
OBC	43.8	45.0	7.1
Others	45.9	44.8	46.5
<b>Religion of head of HH</b>			
Hindu	42.3	43.4	37.5
Muslim	100.0	45.0	50.0
Christian	0.0	0.0	100.0
Others	0.0	0.0	60.0
<b>Type of locality</b>			
Slum	69.6	23.5	63.6
Non-slum	39.1	50.0	40.7
<b>Total</b>	<b>44.3(68)</b>	<b>43.4(56)</b>	<b>43.8(62)</b>

Figure: 3 Percentage of households where children have ARI by type of locality in three cities Bhubaneswar, Jaipur and Pune, 2011

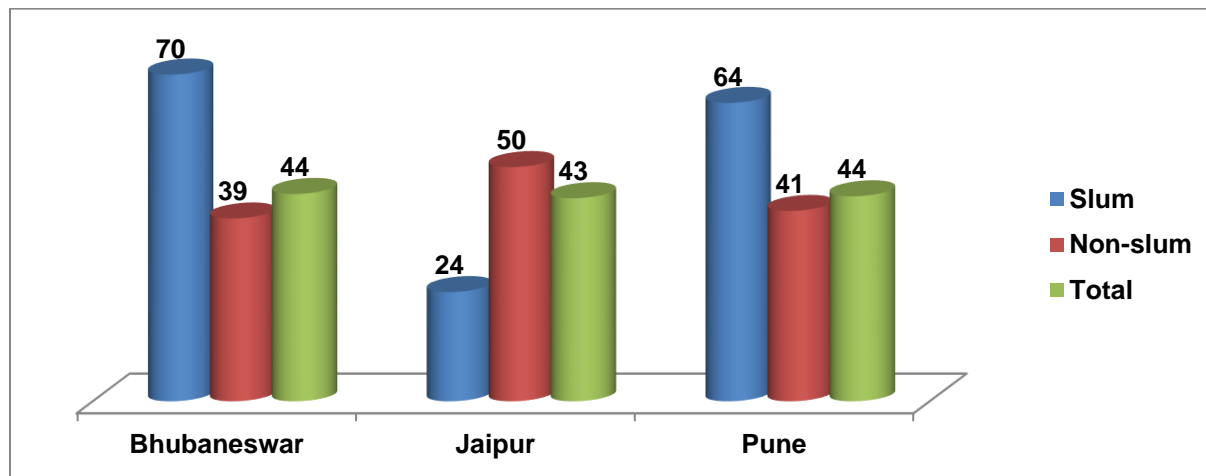


Figure: 3 Percentage of households where children have ARI by standard of living index in three cities Bhubaneswar, Jaipur and Pune, 2011

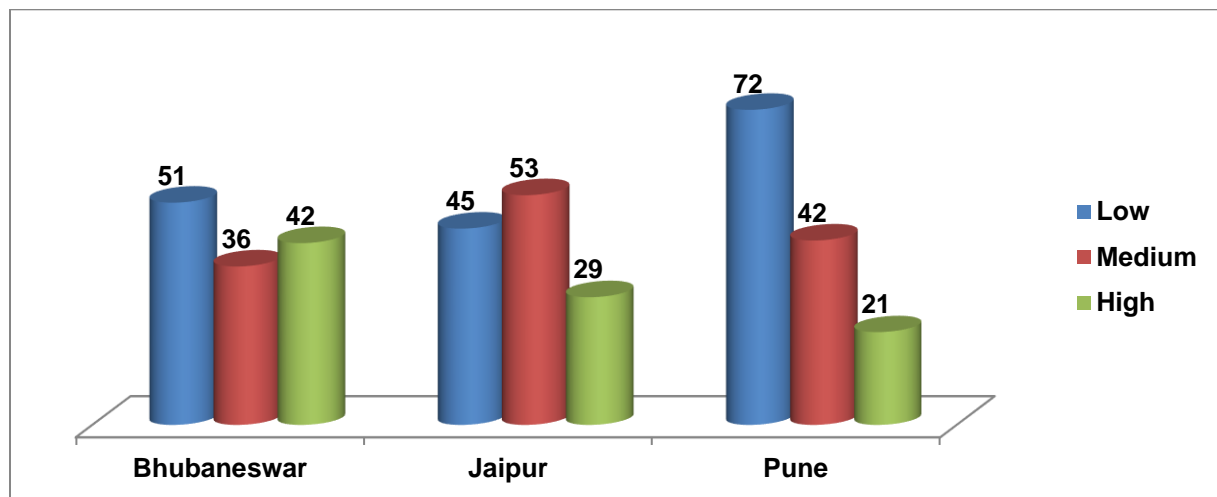


Table : 5 Percentage of households where children have acute respiratory infection (ARI) by background characteristics in three cities Bhubaneswar, Jaipur and Pune, 2011

	<b>Bhubaneswar</b>		<b>Jaipur</b>		<b>Pune</b>	
	Slum	Non-slum	Slum	Non-slum	Slum	Non-slum
<b>Highest education attained by adult member of HH</b>						
< 5 years	0.0	0.0	50.0	100.0	0.0	100.0
5-9 years	83.3	40.0	0.0	72.7	66.7	50.0
10 years & above	73.3	38.9	16.7	49.1	66.7	39.3
<b>Standard of living index</b>						
Low	73.7	42.9	26.7	56.7	57.1	75.0
Medium	50.0	33.3	0.0	58.3	75.0	36.8
High	0.0	45.5	0.0	30.0	0.0	20.8
<b>Caste of household</b>						
SC/ST	81.8	16.7	33.3	50.0	85.7	45.5
OBC	71.4	38.5	33.3	47.8	50.0	0.0
Others	40.0	46.4	0.0	52.9	33.3	47.1
<b>Religion of head of HH</b>						
Hindu	69.6	36.4	25.0	48.3	50.0	37.8
Muslim	0.0	100.0	22.2	69.2	50.0	57.1
Christian	0.0	0.0	0.0	0.0	0.0	100.0
Others	0.0	0.0	0.0	0.0	80.0	40.0
<b>Fuel used for cooking</b>						
Non-solid fuel	66.7	35.7	7.1	44.6	63.6	41.4
Solid fuel	72.7	75.0	100.0	88.9	0.0	0.0
<b>Household crowding</b>						
<2	0.0	75.0	0.0	63.6	63.6	40.0
2-3'	66.7	41.4	66.7	52.5	0.0	50.0



4+	75.0	26.7	14.3	39.1	0.0	0.0
Total	<b>68.4(21)</b>	<b>39.6(48)</b>	<b>25.0(12)</b>	<b>50.0(47)</b>	<b>63.6(13)</b>	<b>40.6(52)</b>

Table :6 Odds ratio from logistic regression for assessing the association between selected background characteristics and acute respiratory infection (ARI) in three cities Bhubaneswar, Jaipur and Pune, 2011

	<b>Bhubaneswar</b>	<b>Jaipur</b>	<b>Pune</b>
<b>Highest education attained by adult member of HH</b>			
< 5 years			
5-9 years	15.198*	.068	.000
10 years & above	16.384*	.049	.000
<b>Standard of living index</b>			
Low			
Medium	.848	0.431	.608
High	.809	.097**	.174**
<b>Caste of household</b>			
SC/ST			
OBC	1.586	1.492	.047**
Others	1.417	1.240	0.481
<b>Fuel used for cooking</b>			
Non-solid			
Solid	6.299**	3.634	0.000
<b>Household crowding</b>			
<2			
2-3	.454	1.616	1.179
4+	.267	.369	0.000
<b>Type of locality</b>			
Non-slum			
slum	2.627	.060**	1.008