

MATERNAL AND NEWBORN HEALTH: DYNAMICS OF SEEKING HEALTH CARE WITHIN MUMBAI SLUMS¹

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In Mumbai—one of India's largest metropolises, approximately 86 percent of births occur in health care institutions. However, this aggregate figure hides substantial variation and little is known about urban home births. Better understanding of and planning for these variations and vulnerabilities is essential for progress towards India's maternal and child health related Millennium Development Goal (MDG) targets.² Although the maternal and child health MDG targets are not out of India's reach, achieving them would depend—at least in part—on how and when the urban health strategy addresses maternal and child health issues within the urban slums that are expected to grow faster than the urban population, in general.

Based on the evidence generated from a community-based maternity surveillance system, we examined the prevalence of home births as well as the factors influencing the choice of home delivery, care practices and costs. We identified the characteristics of women, households and the environment which might increase the likelihood of home birth. This exploration led to some interesting findings that are highlighted in this policy note.

At more than 16.4 million inhabitants, Mumbai is India's most populous city with more than half of its residents living in slums. Some of the slum areas have a population density approaching one million per square kilometer.[1] Slum residents are characterized by tremendous diversity in religion, language, race, caste, class, place of origin, livelihood, income levels, and practices. Slum populations rank among the poorest, most under-served and most vulnerable groups in terms of health indicators. Their access to public services is often compromised by the unauthorized status of vulnerable localities, poor environmental conditions, and the disjointed care patterns that result from moving back and forth between city and natal home. It has been estimated that agencies are able to reach only about 30 percent of the urban poor, and these too in comparatively less poor slums (for some more insights on the social dimensions, please refer to **Policy Note #6** in this series).

Public service delivery infrastructure in Mumbai is probably the best of any metropolitan city in India. The Municipal Corporation of Greater Mumbai (MCGM), the primary local body responsible for civic administration, covering about 16 million people across 6 administrative zones and 24 Municipal Wards, has its own health infrastructure.³ Of an estimated 40,000+ hospital beds in the city, MCGM-run hospitals provide about 12,000. As many as 10 million patients are treated annually in the outpatient departments of MCGM hospitals. The services provided by these hospitals, are largely, at subsidized rates.

In addition, the Maharashtra state government operates one medical college, three general hospitals and two health units, with a total of 2,871 beds. Despite the concentration of public and private healthcare facilities, many women in Mumbai, choose to deliver their babies at home rather than in hospitals or maternity homes. The current estimate is 14 percent, increasing to 17 percent amongst slum dwellers.[2] This note reports on the levels and determinants of home delivery in Mumbai slums. We have described inequalities in maternal and newborn health in this population and the pathways followed in routine maternity care.[3,4]

SURVEILLANCE SYSTEM

A community-based maternity surveillance system covering a population of about 280,000 in 48 slum communities in six wards of Mumbai was set up as part of the City Initiative for Newborn Health, a multi-sectoral partnership to improve maternal outcomes.[5,6] Based on the evidence generated from this system, the total number of births identified between October 2005 and September 2007 was 13,467, of which, the outcomes of 11,209 were determined while 2,258 (17 percent) were lost to follow-up. The main reasons for loss were that either families moved out of the study area or that women who had come to the city for maternity went back to their marital homes elsewhere. Detailed information could be collected on 10,754 births (79 percent), which included 9,046 institutional deliveries (67 percent of those identified) and 1,708 home deliveries (13 percent).

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FINDINGS

The proportion of home deliveries observed over a two-year period from 2005 to 2007 was 16 percent, or 1,708 cases among 10,754 births.[7] The proportion varied from 6–24 percent, depending on area. Table 1 summarizes place of birth for deliveries within and outside Mumbai, and by six urban wards. The ward-based figures include both women who delivered in Mumbai and women who chose to deliver elsewhere. Although the overall proportion of home

Reasons for home delivery: The commonest reason given for home birth was custom and tradition (28 percent) (see Table 2 below). Other common explanations included lack of time to reach a facility due to rapid progress of labor (13 percent), difficulty in finding someone to accompany the woman in labor to the hospital (8 percent), and fear of hospital staff (7 percent). 56 percent of women had planned to deliver in an institution, but did not manage to get there because of rapid progress of labor (23 percent), or lack of a

Table 1. Frequency and Proportion of Institutional and Home Delivery in 48 Mumbai Slums

Deliveries	Home delivery	(%)	Institutional delivery	(%)	Total	(%)	
All	1,708	(16)	9,046	(84)	10,754	(100)	
Outside Mumbai	829	(38)	1,360	(62)	2,189	(100)	
In Mumbai	879	(10)	7,686	(90)	8,565	(100)	
By urban ward in which the woman resided	Mean asset rank*						
M East	(1)	530	(24)	1,649	(76)	2,179	(100)
F North	(3)	423	(24)	1,365	(76)	1,788	(100)
P North	(6)	191	(14)	1,212	(86)	1,403	(100)
K West	(5)	221	(13)	1,463	(87)	1,684	(100)
G North	(2)	231	(13)	1,588	(87)	1,819	(100)
H East	(4)	112	(6)	1,769	(94)	1,881	(100)

Data presented for 10,754 deliveries for the period 2005–2007

*Mean asset score for households interviewed in each ward, ranked from lowest (1) to highest (6).

deliveries was 16 percent, there was a substantial difference in the proportions within (10 percent) and outside (38 percent) the city. Women who left the city for delivery tended to have been living in Mumbai for a shorter time (37 percent for less than one year; 306/829), compared with women who delivered in the city (13 percent; 113/879). Women having their first baby were also more likely to return to places outside the city (26 percent; 211/829) compared with multiparous women (11 percent; 95/879).

A comparison of the profiles of 1,708 women who gave birth at home with the 9,046 women who had institutional deliveries, suggests that women who gave birth at home were older, less likely to have gone to school, had been married younger, and had their first baby in their teens. They were also more likely to be Muslim and came disproportionately from lower socio-economic strata. Note: in our sample, the least poor women were not wealthy, representing simply the higher end of slum residents. One-third of women who had an institutional delivery were primiparous, compared with less than one-fifth who had home births. A random effects logistic regression model, with home delivery as a dependent variable and several demographic, socio-economic and environmental factors as independent variables, showed that the odds of home delivery increased with illiteracy, parity, socio-economic poverty, poorer housing, informal water supply, population transience, and hazardous location. Older women were more likely to have home deliveries.

Table 2. Reasons Given for Home Delivery in 48 Mumbai Slums

Reason	Frequency	(%)
Custom	480	(28)
Labour too quick to reach institution	230	(13)
Nobody to accompany woman to institution	136	(8)
Fear of institution staff	117	(7)
Convenience	104	(6)
Hospital far from home	101	(6)
Family constraints (permission, nobody to look after children)	93	(5)
Not registered for institutional delivery	57	(3)
Financial barriers	49	(3)
Lack of transport	48	(3)
Asked to return to institution later, but delivery ensued	38	(2)
Poor perception of institutional care	25	(2)
Not admitted to institution because of insufficient documents	8	(<1)
Other	92	(5)
Missing data	130	(8)
Total	1,708	(100)

companion (12 percent). Surprisingly, 128 women (13 percent) registered for institutional delivery, but said that they had delivered at home because it was customary. Lack of family support was a more common reason given by Muslim (17 percent; 154/900) than by Hindu women (10 percent; 69/678). This was also true for multiparous (18 percent; 151/884), than for primiparous women (10 percent; 72/734).

Although giving birth at home does not preclude domiciliary skilled care, the principal birth attendant at 1,194 (70 percent) home deliveries was actually an informal provider (the Dai, or traditional attendant). Only 110 (6 percent) home deliveries were attended by skilled personnel such as a doctor or nurse. Perhaps, for this reason, institutional delivery is considered important for improvement in maternal and newborn health and survival.

Costs of maternity care: Data were collected from 1,204 women as an adjunct to the routine post-natal interview from January 2007 to March 2007. Table 3 shows direct and indirect expenditure on normal deliveries, both within and outside Mumbai. Direct expenditure includes doctors' fees, hospital charges and medications. Indirect expenditure mainly describes loss of income, transport and food costs for the woman and her companion during her stay at the hospital. The median cost of a home delivery in Mumbai was about INR 1,000 (US\$ 21), the largest proportion of which accounted for the birth attendant's fee. Public sector delivery cost a similar amount, although it rose to about INR 1,500 (US\$ 32), if indirect costs were included. The same indirect costs applied to private sector delivery, which was substantially more costly, with a median of INR 5,500 (US\$ 118). Costs of home delivery were lower outside Mumbai by about half. This also applied to private institutional delivery. Reassuringly, public sector delivery costs were similar within and outside the city.

A high proportion of families spent catastrophically on maternity care, largely due to out-of-pocket payments. Informal payments for delivery care constituted 10 percent of total delivery care expenditure, and lower socio-economic status was associated with a higher proportion of informal payments. The lowest socio-economic quintile was significantly more likely to use wage income to meet health expenses, while the less poor were more likely to use savings. This suggests that

poorer families may have been reducing consumption of food and other essentials to finance maternal care.

Table 3. Expenditure on Care for Normal Delivery in 48 Mumbai Slums

Values are Indian Rupee	N	Median	IQR	Range
Delivery in Mumbai				
<i>Home delivery*</i>				
TBA fee	73	500	500–600	50–1,550
Fluids	3	300	150–500	150–500
Doctor's fee	48	200	100–250	50–700
Medications	22	200	100–300	10–500
Injections	18	175	50–300	50–700
Delivery kit	26	10	6–60	6–500
Other	35	300	150–500	20–876
Total	90	930	550–1,260	0–3,500
<i>Institutional delivery</i>				
<i>Public sector</i>				
Direct	473	1,000	500–2,000	0–45,000
Indirect	473	500	300–860	0–23,450
Total	473	1,550	950–2,641	290–45,000
<i>Private sector</i>				
Direct	258	5,000	3,500–7,225	60–35,000
Indirect	258	500	200–950	0–10,000
Total	258	5,510	3,950–8,100	360–35,700
Values are Indian Rupee	N	Median	IQR	Range
Outside Mumbai				
<i>Home delivery*</i>				
TBA fee	60	300	200–500	100–3,000
Fluids	7	300	200–1,300	150–3,000
Doctor fee	25	200	100–400	30–2,000
Injections	11	200	80–250	50–400
Medications	16	175	100–400	20–3,500
Delivery kit	10	50	6–300	6–800
Other	32	200	115–350	12–5,100
Total	84	550	300–1,075	0–7,290
<i>Institutional delivery</i>				
<i>Public sector</i>				
Direct	69	1,000	500–1,500	0–7,000
Indirect	69	400	150–700	0–3,000
Total	69	1,300	930–2,000	50–8,000
<i>Private sector</i>				
Direct	62	2,780	1,500–5,000	500–14,000
Indirect	62	425	150–650	0–5,400
Total	62	3,580	1,900–5,220	550–15,400

Data presented for 1,204 women for the period January–March 2007.

*Some respondents were unable to break down the costs of delivery into items. Total figures are therefore based on larger samples.

TBA: traditional birth attendant, dai: IQR: interquartile range.

CONCLUSION AND POLICY RECOMMENDATIONS

Although urban India has a relatively strong health and nutrition infrastructure—with public sector investments coming from central, state and local bodies as well as a vast private sector, its utilization for maternal and child health services is sub-optimal. This is due to a range of inter-related socio-economic and cultural determinants of health. It is also due to the design, distribution and management of health care systems in urban areas, with poor referral systems and inadequate inter-sectoral and private sector linkages.

Our findings imply that home deliveries are not evenly distributed and that they cluster with other markers of vulnerability, including poverty, lack of education, poor housing and water supply, hazardous location, and insecurity of tenure. Assuming that the overall trend is towards institutional care, it might be productive to focus inputs on more vulnerable areas. It is unclear if financial incentives for institutional delivery alone will be sufficient in ensuring the uptake of maternity services by the women.

The following complementary set of strategies need to be pursued simultaneously:

- Within slums there is a need to pay greater attention to households with poor socio-economic indices. The socio-economic differentials in age of conception reinforce the value of education of the girl child and rigorous implementation of the legal age of marriage.
- Improved availability and quality of care at health posts and maternity homes may lead to a shift in the uptake of services away from the unregulated private sector and in favor of the public system, to the advantage of the socio-economically vulnerable slum populations.
- Involvement of community-based health workers. Findings on inequalities and home births suggests greater focus on intensive outreach in vulnerable areas by community-based health workers, who could play a greater part in helping women plan their deliveries.
- Efforts need to be made to improve the client experience at public sector institutions.

¹ This note is a truncated version of the paper: Das et al. BMC Pregnancy and Childbirth 2010, 10:38.

² MDG 4 aims for improvements in child survival (a reduction in under-five mortality by two-thirds) and MDG 5 in maternal survival (a reduction in maternal mortality ratio by three-quarters) between 1990 and 2015.

³ Four major (tertiary) hospitals, 3 medical colleges, 16 peripheral hospitals, 5 specialist hospitals, 168 dispensaries, 167 health posts, and 24 maternity homes, with a staff of over 17,000. Each of the peripheral hospitals is linked to one of the four tertiary hospitals.

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