



Why do women deliver at home? A situational analysis from urban slums of Delhi

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Why do women deliver at home? A situational analysis from urban slums of Delhi

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ABSTRACT

Background: Institutional delivery is an important strategy towards attaining MDG-5. Rapid growth of low-income and migrant populations in urban settings in India and other countries has placed additional demands on government programs to enhance utilization of institutional care. Better understanding of the barriers to institutional deliveries among urban poor is urgently needed to enhance program impact in India, and elsewhere.

Objectives: To measure prevalence of home deliveries in Delhi slums and identify the reasons for home delivery.

Study design: Cross-sectional survey using quantitative and qualitative methods

Methods: A house-to-house survey was conducted of all households in three slum-clusters in north-east Delhi (n=32,034 individuals). Data on deliveries and socio-demographic characteristics were collected using structured questionnaires (n=6092 households). Detailed information on pregnancy and postnatal care was obtained from women who had delivered in the last 3 months (n=160). Focus group discussions and in-depth interviews were conducted with stakeholders from the community and health-care facilities. Risk-factors for home delivery were examined using random effects logistic regression.

Results: Of 824 women who delivered in the previous year, 53%[95%CI 49.7-56.6] had delivered at home. In adjusted analyses, multiparity, low literacy and migrant status were independently predictive of home delivery. Fear of hospitals (36%), comfort of home (20.7%) and lack of social support for child-care (12.2%) emerged as reasons for home delivery.

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3 **Conclusion:** Home deliveries are frequent among the urban poor. In addition to current
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5 financial initiatives for institutional delivery, raising community awareness and improvements
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7 in client services and family support are key modifiable factors identified in this study. These
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9 findings should inform the design of strategies to promote institutional delivery.
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14 15 **Article Summary**

16 17 **Strengths and Limitations of the study**

- 18 • This survey covered a large number of households (n= 6092) households
19 living in 3 urban poor settlements of Delhi and both qualitative and
20 quantitative methods were used to capture reasons for home delivery.
21
- 22 • Though the slum cluster was not a random sample from all the slum
23 clusters in Delhi they were representative of the urban poor settlements.
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- 25 • Concurrent health facility assessment was not done which would have
26 helped to understand the supply side issues.
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BACKGROUND

Institutional delivery is currently a key global strategy to reduce maternal and newborn mortality. Many countries, including India, have established incentive programs and policies to enhance institutional deliveries. However, the rapid growth of low-income urban populations presents unique challenges to these programs, and more targeted efforts may be required to improve institutional delivery rates in low-income urban settings. India currently accounts for about a fifth of all maternal deaths worldwide.[1] The maternal mortality ratio (MMR) was 200 as of 2010.[2] With approximately one third of the population currently living in urban areas, and growing to nearly one half by 2030, a large proportion of maternal and newborn deaths occur amongst the urban poor. The MDG report has flagged the slow progress of India in reducing child mortality and improving maternal health.[3] Current trends suggest that India is unlikely to achieve MDG 4 and 5 by 2015.[4] At least four antenatal visits to hospital and deliveries conducted by skilled birth attendants are identified as key interventions to reduce maternal mortality. The latest WHO statistics show that in India only half of expectant mothers complete four Antenatal care (ANC) visits and deliver their baby in the presence of a skilled birth attendant.[5]

The choice of place of delivery has been driven by tradition, accessibility and economics. In India, MMR is high in states with high prevalence of home deliveries.[6] Janani Suraksha Yojana (JSY) a safe motherhood intervention under the National Rural Health Mission (NRHM) was implemented in India in 2005 with the objective of reducing maternal and neonatal mortality by promoting institutional delivery among poor pregnant women.[7] An evaluation of this

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3 conditional cash transfer scheme in 2007-08 showed an increase in ANC visits and institutional
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5 deliveries.[8] However, this increase in institutional deliveries has not translated to reduction in
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7 MMR probably due to unaddressed issues of non-financial access barriers and sub-optimal ANC
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9 and postnatal care.[9] Currently 50% of India population are living in cities. Delhi is one of the
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11 most densely populated cities in the world. Delhi attracts nearly 500,000 migrants every year
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13 most of who mostly settle down in urban poor habitations.
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17 According to the National Family Health Survey (NFHS 3) survey conducted in 2005-06, only 44
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19 % of deliveries were institutional among the urban poor of Delhi as compared to the urban
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21 average of 67.5%.[10] The District Level Household and Facility Survey (2007-08) survey showed
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23 that overall, 71% of pregnant women had at least 3 ANC visits. While 68% of deliveries were
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25 institutional in the city as a whole, only 38% institutional deliveries were reported in slum
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27 areas.[11] A governmental initiative aimed at correcting this inequity is the National Urban
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29 Health Mission (NUHM) which makes essential primary health care services available to the
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31 urban poor.^{[12],[13]} The success of this mission will depend on identifying and targeting
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33 interventions directed towards the most vulnerable. One of the aims of this study is to
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35 determine the prevalence of home delivery among women living in urban poor settlements in
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37 Delhi and identify reasons behind their choice to deliver at home.
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METHODS

This analysis is part of the formative phase and situational analysis for the ANCHUL (Ante Natal and Child Health care in Urban Slums, CTRI/2011/091/000095) study which is an implementation research project aimed to develop, implement and evaluate the effectiveness of an intervention package delivered through an urban community healthcare worker (UCHW). ANCHUL aims to increase access to institutional deliveries and improve maternal, neonatal, child healthcare (MNCH) practices in urban slums of Delhi. The objective of this formative study was to conduct an in-depth situational analysis on utilization and quality of MNCH care using quantitative and qualitative methods. The information obtained from this study will guide the development of the community based intervention package to be delivered by the UCHW as part of the ANCHUL trial.

Study Setting

Of the 16.7 million people living in Delhi, 52% reside in poor habitations.[14] The north-east district of Delhi contributes to 11% of the total population with 44 registered slums.[15] This district has the highest home delivery rates.[11] We conducted a rapid survey in 17 slum clusters to obtain information on number of households, water supply, sanitation, presence of schools, healthcare facility, and distance from nearest government hospital. The clusters were then stratified into two categories of vulnerability based on the above characteristics. We randomly chose three vulnerable slum clusters namely Buland Masjid (BM), CPJ and Chanderpuri (CP) for the purpose of this situational analysis. These slums had metalled roads within and had access to maternal child health care dispensaries within a distance of five kms.

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3 The study protocol was approved by Health Ministry Screening Committee of the Government
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5 of India, institutional ethics committees of the Public Health Foundation of India, All India
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7 Institute of Medical Sciences, and Harvard School of Public Health.
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10 11 **Data collection**

12 13 14 **Quantitative survey**

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17 After lane mapping the clusters, all households were included in the survey. We identified
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19 pregnant women (in their 2nd and 3rd trimesters), recently delivered women (RDW, i.e., those
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21 who had delivered in the last 3 months) and households with under-5 children. The purpose of
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23 the survey was explained to a household member above 18 years of age and all questionnaires
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25 were administered after obtaining informed consent by trained field interviewers. All survey
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27 tools were in local language and were piloted and modified for content and clarity. Information
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29 on family details, socio-demographic status, place of delivery (in women who had delivered in
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31 past 1 year), and information on any maternal and child deaths within households in past 1
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33 year, was obtained using paper forms. All refusals and non-responses were documented. We
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35 re-visited the households of 160 RDW and collected detailed information about ANC, delivery,
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37 immediate post-natal period, new born care practices and diet of the mother. Data were
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39 checked for completion before entering into a validated database (Microsoft access 2010) with
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41 inbuilt range and internal consistency checks. Information from RDW was validated by double
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43 data entry.
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50 51 52 **Qualitative data**

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55 The categories of respondents in *table 1* were identified as relevant for data collection in this
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57 study. Households were informed that focus group discussions (FGDs) would be held in the
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3 community and a general invitation was given. Permissions were sought from local community
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5 and religious leaders. Local public and private health care providers were approached and
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7 permissions were sought for in-depth interviews (IDI). The FGD and IDI guides were piloted to
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9 refine the topic guides to enable them to generate data that was relevant to the study
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11 objectives. The main topics that were explored in the FGDs and interviews are shown in *table 1*.
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13 The venue for data collection was agreed upon based on the respondent's convenience. One
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15 interviewer facilitated the discussions while a second took notes. Based on responses from the
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17 community, health care facilities and traditional birth attendants who served the locality were
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19 identified and approached. Written informed consent was obtained from all participants before
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21 the FGDs and IDIs, which were digitally voice-recorded.
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28 **Sample size justification**

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31 For estimating the number of households to be interviewed, institutional delivery was
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33 considered the key outcome variable. Assuming prevalence of institutional deliveries as 33% in
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35 urban slums of Delhi[13], we needed to interview 780 women who delivered in past one year to
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37 obtain current prevalence estimates with 10% relative precision. Assuming a crude birth rate of
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39 25/1000 (national average is 21/1000), a population of 30,000 was to be covered to identify at
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41 least 750 deliveries that happened in past one year.
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Table 1: Themes covered for qualitative data

Category of participants	Method of data collection	Key themes covered
Community <ul style="list-style-type: none"> Pregnant women (n= 5) Recently delivered women (n=6) Mother of under 5 children (n=6) Mother in laws (n=5) Husbands (n=4) 	Focus Group Discussions(FGDs) Venue: Schools, NGO, Madrassa(religious place) and anganwadi centres*	<ul style="list-style-type: none"> Health and nutritional status Cultural practices for nutrition during pregnancy Care seeking behaviour during pregnancy Barriers to accessing care during pregnancy Quality of care experienced in various health care settings (public and private)
Health Care Providers <ul style="list-style-type: none"> Public Health system (n=6) Private (n=5) Others (n=4) (AWW, TBAs) 	In depth interviews Venue: Clinics of health care providers or homes of key informants	<ul style="list-style-type: none"> Care seeking pattern among the community during pregnancy Challenges to improving maternal and child health among urban poor Feasibility of proposed intervention
ANC Clinic attendees (n=9)	Exit interviews (pre and post ANC check-ups) Venue: Clinics	<ul style="list-style-type: none"> Experience of care during ANC visit Satisfaction levels of the individual about care

AWW: Anganwadi workers, TBA: Traditional birth attendants

*The word Anganwadi means "courtyard shelter" in Hindi. They were started by the Indian government in 1975 as part of the Integrated Child Development Services program to combat child hunger and malnutrition.

Data analysis

Quantitative data

Data were analysed using Stata 11 (Stata Corporation, College Station, TX). Descriptive statistics were used to provide a cluster, household and individual level profiles of the study population.

Household survey data were analysed accounting for clustering at the slum level to control for both inter and intra-cluster variance. We used principal component analysis to compute household Socioeconomic Scales (SES). Dwelling characteristics, household income and household assets were included in this composite scale.[16] We used mutli-variable random

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2 effects logistic regression to estimate the association of demographic variables with home
3 delivery. Crude and adjusted odds ratios were calculated with 95% confidence intervals. For
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5 data from RDWs, Pearson chi-squared was used for categorical variables and t-tests for
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7 comparison of continuous variables.
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14 Qualitative data

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18 Verbatim transcripts were prepared in a standardized format that included basic demographic
19 information of the participants and the interviewer's own observations within one week of
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21 conduct of IDI/FGD. Transcripts were uploaded to a software Atlas ti 6.1 (Scientific
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23 Software Development, City West, Berlin) and coded line-by-line using detailed themes and
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25 sub-themes that emerged from the data. After an initial round of coding with a representative
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27 sample of transcripts, the list of codes that were generated was reviewed in order to develop a
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29 structured code list which was then applied to the remaining transcripts. Illustrative quotations
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31 from the transcripts have been included in the results.
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42 RESULTS

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45 Of the 6348 households in the three defined clusters, 6092 (96%) households were interviewed
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47 between December 2011 and March 2012, covering a total population of 32,034. Nine
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49 households refused to participate and 247 households did not respond (locked houses) (figure
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51 1). A total of 25 FGDs and 13 in-depth interviews were conducted in January and February
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53 2012. The number of respondents in each FGD ranged from 7-12 members.
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Population and cluster characteristics

The adult male to female ratio was 1000:825. Fifty eight percent of the population were migrants from Uttar Pradesh (73%) and Bihar (16%). Eighty percent of the population were living in the same locality for > 5 years. Of the total population, women in reproductive age (15-49 years) accounted for 25%, and 16.6% were under-5 children. The area was served by one referral hospital situated within a distance of 5kms, two outpatient dispensaries, 17 private clinics (registered and unregistered) and one laboratory within the clusters. The areas also have access to two referral hospitals situated at distance of about 10 kms.

Household characteristics

The median family size was 5 (IQR 4, 7) predominantly living as nuclear families (79.4%) and 63% of houses were self-owned. The head of the household (HOH) was the one considered as the decision maker but was not necessarily the primary wage earner of the family. Fifty nine percent of HOHs were illiterate and were unskilled labourers. Ration card, Below Poverty Line cards (BPL) and Rashtriya Swasthya Bima Yojna (RSBY) cards that are needed for claiming government run health schemes were possessed only by 50%, 31% and 24% of households respectively. Majority of the households lived in single-roomed concrete houses and with cemented or tiled flooring. A detailed socio-demographic profile of the study population is presented in *Table 2*. The household characteristics of the subsample of RDW and the overall population in the study area were similar indicating that our subsample households were representative of this area. Fifteen maternal deaths, 21 still-births and 41 under-5 child deaths were reported for the previous year. Of the total child deaths, 22 were in the neonatal period.

Figure 1: Quantitative survey sampling

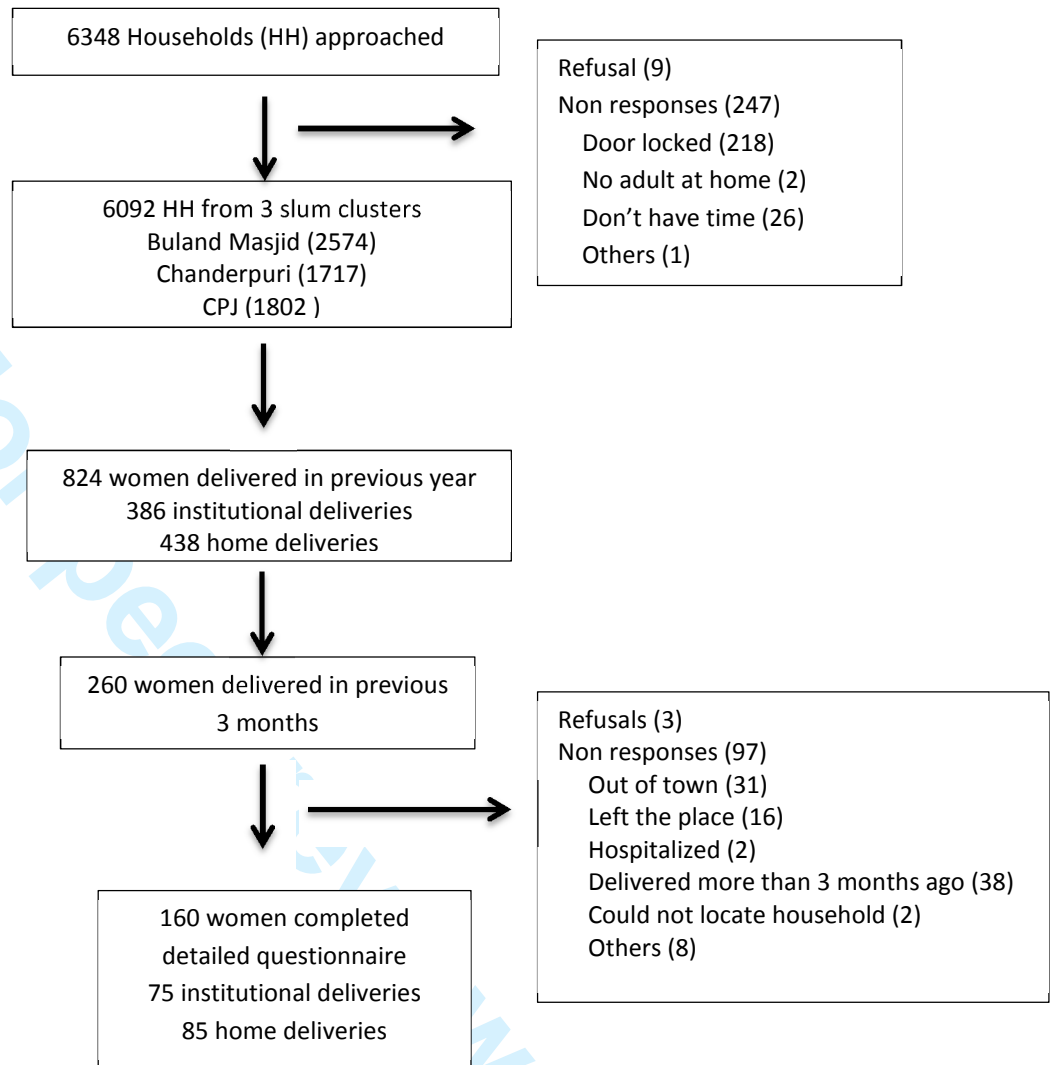


Table 2: Characteristics of households in the study area and households of women who delivered in previous 3 months

Demographic characteristics	House to House survey (n=6092 HH from 3 clusters)	Recently Delivered Women (n=160)
Median HH size (IQR)	5(4,7)	5 (4,7)
Family type (%)		
Nuclear	4834(79.4)	115 (71.9)
Joint	944(15.5)	43 (26.9)
Extended	313 (5.1)	2 (1.3)
Spoken language (%)		
Hindi	5328 (87.5)	145 (90.6)
Urdu	624(10.2)	15 (9.4)
Others	140(3.2)	-
Religion (%)		
Hindu	1822(29.9)	42 (26.3)
Muslim	2475 (69.6)	118 (73.8)
Others	33(0.5)	-
Caste category (%)		
General	2546 (41.8)	77 (48.1)
Other Backward Caste	2553 (41.9)	58 (36.3)
Scheduled caste/Scheduled Tribe	932 (15.3)	22 (13.8)
Do not want to answer	4 (0.1)	-
Do not know	57 (0.9)	3 (1.9)
Illiterate women in reproductive age group (%)	(n= 8056) 4122(51.2)	85 (53.1)
Literacy level of HOH (%)		
Illiterate	3561(58.5)	93 (58.1)
Literate but no formal education	196(3.2)	4 (2.5)
Schooling	2129(36.4)	62 (38.8)
College	115(1.89)	1 (0.6)
Occupation of HOH (%)		
Unskilled	2805 (46.3)	77 (48.4)
Skilled	1378 (22.7)	36 (22.6)
Office work	867 (14.3)	19 (12)
Professional	55 (0.91)	-
Not working	955 (15.76)	27 (17)
Median HH income in INR (IQR)	4000(3000-6500)	4000 (3000-7000)
Median HH income in USD (IQR)	76.2(57.1- 123.8)	76.2 (57.1-133.5)
Own house (%)	3829 (62.9)	101 (63.1)
Ration card (%)		
Don't have	2994 (49.2)	91 (56.9)
White	1173 (19.3)	22 (13.8)
Yellow	1196 (19.6)	28 (17.5)
Pink	686 (11.3)	18 (11.3)
Do not want to answer	43 (0.7)	1 (0.6)
BPL card (%)	1903 (31.2)	47 (29.4)

RSBY card (%)	1461 (24)	36 (22.5)
% of HH who are staying in the current locality in years		
< 1	660 (10.8)	13 (8.1)
1-2	238 (3.9)	11 (6.9)
3-5	330 (5.4)	12 (7.5)
>5	4864 (79.8)	124 (77.5)
% belonging to Delhi	3572(57.49)	93 (58.1)
% of HH who migrated but living in Delhi		
< 1 year	261 (7.5)	2 (2.2)
1-2	123 (3.5)	3 (3.2)
3-5 years	195 (5.6)	2 (2.2)
>5 years	2920 (83.5)	86 (92.5)
Living conditions		
Concrete houses (%)	4826 (79.2)	125 (78.1)
Cemented floor (%)	5829 (95.7)	153 (95.6)
Houses with only one room	4978 (81.7)	124 (77.5)
% of HH with separate kitchen	1168 (19.2)	33 (20.6)
Fuel used for cooking (%)		
Gas	3511 (57.6)	101 (63.1)
Kerosene	1831 (30.1)	44 (27.5)
Firewood	572 (9.4)	13 (8.1)
Electricity	92 (1.5)	2 (1.2)
Do not cook at home	86 (1.4)	-
Public source of drinking water (%) (handpump/ tanker/bore)	5102 (83.6)	132 (82.5)
Defecation facilities (%)		
Toilet within house	4571 (75.1)	125 (78.1)
Community/shared	1242 (20.4)	30 (18.8)
Defecate in open	278 (4.6)	5 (3.1)
Socioeconomic categories* (%)		
Lowest	1,976(32.45)	53 (33.1)
Middle	2,077 (34.11)	53 (33.1)
Highest	2,036 (33.44)	54 (33.8)
Assets (%) of HH in possession of		
Television	4350 (71.4)	112 (70)
Refrigerator	1557 (25.6)	46 (28.8)
Washing machine	1054 (17.3)	29 (18.1)
Mobile phone	4403 (72.3)	115 (71.9)
Distance of HH from nearest Maternal Child Health care centre		
<5 km	4882 (80.1)	125 (78.1)
5-10 km	1550 (18.9)	29 (18.1)
>10 km	60 (1)	6 (3.8)

HOH: Head of Houshold, BPL: Below Poverty Line card, RSBY: Rashtriya Swasthya Bhima Yojna(Health insurance scheme)*The scale is a composite of house type, floor, house ownership, separate kitchen, TV, Refrigerator, Mobile phone, washing machine, total HH income, Number of rooms by principal component analysis

Place of delivery

Of the 824 women who gave birth in the previous year, 438 delivered at home [53.1%, 95%CI (49.1 - 56.6)] and of the remaining 386, 340 (88%) chose to give birth at a public hospital.

Among the women who delivered in the previous 3 months (n=160), a similar proportion [53.1%, 95% CI (45.0- 61.0)] delivered at home. Only 16.2% (12) of these mothers' availed cash incentive through JSY scheme (*table 3*). Thirty six (48%) went to hospital due to initiation of labour pains, 32% due to development of complications, and 6.7% reported the reason that they had crossed expected date of delivery. The individual who was most influential in the decision for delivering at a hospital was most often (48%) the women herself, followed by the husband (18.7%) or mother-in-law (17.3%). Irrespective of the place of delivery only 15% of these households were visited by an UCHW within 48hrs of delivery and only 30% of women visited a health care facility after delivery. Most (92%) were satisfied with the services provided at the hospital during delivery. Compared to women who delivered at a hospital, women who delivered at home were more likely to be multiparous, likely to avail ANC in a public hospital and visit a facility during the post-partum period (*table 3*).

Predictors of home delivery

Among the 824 women who delivered in the previous year, the following demographic characteristics were significantly associated with delivering at home: Living in rented house, low SES, low literacy of HOH, HOH being an unskilled labourer, migrants and multi-parity. Multi-parity [OR 1.96, 95% CI (1.44, 2.69)], literacy status of HOH [OR 0.71, 95%CI (0.53 0.97)] and migrant status [1.46, 95% CI (1.08, 1.97)] remained strong independent predictors of home delivery in multivariable analysis (*Table 4*).

Table 3: Information of ANC and births obtained from recently delivered women

Characteristics*	Home deliveries (n=85)	Institutional deliveries (n=75)	p value
Mean age	24.7(4.31)	24.9(4.43)	0.79
>18yrs of age at marriage	72 (84.7)	64(85.3)	0.912
Mean family size	5.5(2.4)	5.5(2.3)	0.937
First child	15 (17.7)	26 (34.7)	0.014
Some ANC care	63 (74.1)	72 (96)	<0.0001
ANC at public hospital	41 (65)	61(84.7)	< 0.0001
ANC in first trimester	21 (33.33)	31 (43.1)	0.498
Some health problem during pregnancy	11 (17.5)	13 (18)	0.92
Satisfaction with ANC	46 (74.6)	65 (90.3)	0.046
Planned deliveries	73 (86)	66 (90.4)	0.38
Delivery conducted by Doctor/ Nurse	15 (17.7)	74 (98.7)	<0.0001
Home visitation by a community health worker	14 (16.5)	11 (14.7)	0.75
Post-delivery visit to hospital	3 (3.53)	16 (21.33)	0.001

*All continuous variables are expressed as mean and one standard deviation; all proportions are expressed as percentages

Table 4: Predictors of home delivery

Characteristics (n=824) 438: Home delivery 386: Institutional delivery	p value (ignoring clustering)	Crude OR (95% CI), p value (accounted for clustering)	Adjusted* OR (95% CI), p value (LR test)
Buland Masjid CPJ Chaderpuri	<0.001	1 0.42(0.30, 0.59) 0.69 (0.49, 96)	<0.001
Birth order second and above	<0.001	2.12 (1.57, 2.87)	<0.001 1.96 (1.44, 2.69) <0.001
Lower SES Middle SES Highest SES	0.033	1 0.90 (0.64, 1.26) 0.70 (0.50, 0.98)	0.011 0.96 (0.66, 1.406) 0.68 0.91 (0.60, 1.38)
Joint families	0.057	0.78 (0.57, 1.05)	0.102
Non-Muslims	0.004	0.77 (0.54, 1.1)	0.15 0.78 (0.54, 1.14) 0.21
Schooling of HOH	0.007	0.74 (0.55, 0.99)	0.04 0.71 (0.53, 0.97) 0.031
Not working Elementary job Skilled job	0.024	1 1.63(1.08, 2.45) 1.42 (0.92, 2.17)	0.063 1 1.54 (1, 2.38) 1.40 (0.89, 2.21)
Own the house	0.004	0.76 (0.56, 1.02)	0.07 0.94 (0.65, 1.34) 0.72
Ration card possession	0.037	0.80 (0.60, 1.07)	0.14
Not belonging to Delhi	<0.001	1.61(1.21, 2.15)	0.001 1.46 (1.08, 1.97) 0.013

*Adjusted for house ownership, SES, literacy of HOH, Occupation of HOH, belonging to Delhi and birth order

Reasons for delivering at home

The majority of home deliveries were pre-planned and 75% of these women had availed some ANC at a facility. Eighty two percent of the home deliveries were conducted by a traditional birth attendant (*Dai*). The results from the quantitative and qualitative data, showed a high level of concordance for the reasons for choosing to deliver at home. Four major themes emerged as barriers to institutional delivery. Illustrative quotations from the transcripts are presented in *table 5*.

Table 5: Illustrative quotations from the transcripts for reasons for delivering at home

Fear and Embarrassment

"They prefer home deliveries as in many cases the doctor does not behave well with them. As soon as they enter, they are separated from their families. The doctor does not communicate to the relative if there is any complication. They stay for 1-2 days in the labour room; the relatives are outside they do not know what is happening. It is very scary for them. Also because of all these reasons, they will come only if it is life threatening. Even then they might prefer to go to someone who is local, who is more patient friendly, private practitioner who are non-judgemental who behave properly. They give more one to one care. They might not be qualified but it is more natural and human." **Senior gynaecologist, Public health facility**

"I'd prefer to have the baby at home. If you're in hospital, they don't even attempt to try for a natural birth. What's the use of having an operation if you can have a child the normal way? We get the check-ups done there, but we end up having the delivery at home". **Pregnant woman**

"If you tell them to put you in a closed room to get a check - up, they tell you to just lie down and get it done right there. It's humiliating; you can't help but feel embarrassed. And if you don't feel embarrassed, other people around you will. They tell you that if you feel ashamed, go to a private hospital. It's a matter of dignity. There are men walking around as well, if a man catches a glimpse, it can create trouble at home". **Pregnant woman**

Prior experience with hospitals

"I had gone recently with my sister to a hospital.....when I went there to deliver my baby, they just kept telling me 'keep pushing, keep pushing...' I got so scared I just left. I've had three children at home; I can manage a fourth the same way". **Recently delivered woman**

Other children

"I have small children. If I have to go to the hospital, I have to lock the house and take the children along.

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*Then if she delivers in the hospital, she may be admitted for at least 2 or 3 days depending on the situation. Even if it is a normal delivery it is at least a 2 day stay. How do I manage in such situations? To avoid all this one hopes that if all is well it is better to deliver at home itself. We can all be at home and kids need not have to go anywhere. I can also go for work.” **Husband of pregnant woman***

Opportunity costs

*“Most of them earn daily wages, so they do not want to come to the hospital. They feel one day will go so they will lose their pay also...So the delivery can be at home if baby is okay. Male member does not want to involve himself in all these things, either if there is an elder woman in the house or neighbourhood who conducts the delivery...Even at the hospital they do not want to stay they say that they have to go to work, or how will they earn for tomorrow’s food because they are working on daily wages..” **Senior gynaecologist, public health facility***

Fear and embarrassment

Fear associated with hospitals was reported as the most important reason for delivering at home during FGDs and IDIs and was also reported as the key reason (35%) among the 85 RDW surveyed. Women feared interventions during delivery, particularly caesarean sections. Lack of privacy during deliveries and unfamiliar surroundings of hospitals as opposed to the ‘safe environment’ at their homes were also reasons for choosing to deliver at home.

Prior experience with hospitals

Prior experience of self, friend, neighbour or a family member played an important role in the choice to deliver at home or in hospital. Positive experiences reinforced the message that hospitals were a safe and welcoming place as opposed to negative experiences (such as, perceived improper care and rude behaviour of hospital staff). The health care providers interviewed indicated that high patient load at hospitals lead to lack of individual attention and inadequate care.

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3 Domestic responsibilities

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6 Being in an unfamiliar neighbourhood, the absence of extended family to help with childcare
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8 and traditional lack of involvement of men in childcare made women reluctant to leave children
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10 at home and get admitted to hospital. In the survey, 10% of those who delivered at home cited
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12 lack of help with childcare as a reason.
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17 Opportunity costs

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20 Though most services at the hospital were provided free of cost, opportunity costs in the form
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22 of lost wages for the earning member, cost of food for the family and travel, dissuaded some
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24 women from delivering in hospital. Although only 6% mentioned this as a reason in our survey,
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26 this emerged as an important factor in qualitative analysis.
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33 **DISCUSSION**

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37 Our study showed a high prevalence of home deliveries conducted by *dais* among the urban
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39 poor of north-east district of Delhi. Fear of surgical procedures, unfamiliarity with hospital
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41 surroundings, lack of help for childcare and loss of wages, were some of the reasons that drove
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43 women to choose home delivery. Other predictors of home delivery were low literacy, higher
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45 parity and migrant status. Concordance between results derived from qualitative and
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47 quantitative data lends greater credibility to these findings.
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53 The prevalence and reasons for home deliveries in our study was similar to that found in most
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55 other urban surveys[10 11 17-23] from India (*Table 6*). In the Mumbai slum study[22], the
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3 prevalence varied from 6-16% across 48 slum clusters. Tradition was the most important reason
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5 behind home delivery in this study. Apart from the predictors that we identified, poor housing,
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7 lack of water supply and hazardous location were associated with home deliveries in the
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9 Mumbai study, indicating that apart from individual and household level factors, the type of
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11 neighbourhoods also played a role. One of the limitations of our study is that we could not
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13 evaluate cluster level predictors of home delivery as we included only three clusters in this
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15 study.
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21 Migrant status was one of the important determinants of home delivery in our study. Analyses
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23 using NFHS data, Singh et al[24] reported that urban poor migrants were at highest risk of
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25 unsafe delivery practices in contrast to non-poor, non-migrants who were at least risk. In our
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27 study sample almost 60% of the households were migrants from neighbouring states and most
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29 had been living in Delhi for more than 5 years. In spite of this, these households were less likely
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31 to possess ration, BPL or RSBY cards which are required for availing entitlements to healthcare.
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37 The dissatisfaction among the care seekers that we observed could be attributed to the
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39 overburdening of referral hospitals. Antenatal care is provided at dispensaries, maternal and
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41 child care centres (MCH), secondary level and referral hospitals. However, MCH centres cater to
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43 deliveries of multigravida only, and all primigravida are referred to the secondary level or
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45 referral hospitals leading to increased patient load at these centres. Initiatives to decentralize
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47 care to reduce burden on referral hospitals by upgrading the MCH centres has been rather
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49 slow. It might be possible that other supply-side issues could have also contributed to this level
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51 of dissatisfaction, but due to delay in obtaining permissions, we were unable to conduct facility
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53 assessment to identify the potential causes.
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Table 6: Prevalence and reasons for home delivery from urban surveys in India since 2000

Author, year of publication (ref)	Study area and target population/ Study design	Sample size and prevalence of home deliveries	Reasons for home deliveries
Rahi et al, 2006 ¹⁷	One Urban slum in Delhi, Births recorded during April-June 2005, cross sectional survey	n= 82 births Home deliveries= 56.1%	Not reported
Agarwal ¹⁸ et al, 2007	One urban slum in Delhi, Women who delivered last 1 year, Cross sectional survey	n= 82 Home deliveries = 31.8%	Lack of awareness for need for check-up (27%) Lack of knowledge about service availability (17%) Long waiting time (22%) None to accompany (15%) Finance (12%) Fear of hospitals (7%) Family objections (2%)
DLHS Fact sheet (2007-8) ⁹	Delhi state in 2008 using multistage stratified probability sampling	n= 9689 households Rural = 42.6% Urban = 29.9% Total = 30.8%	Not reported
Thind et al, 2008 ¹⁵	NFHS survey data from Maharashtra , cross sectional survey	n=1510 recent births Home deliveries(overall) = 37% Only Urban = 15.3%	Predisposing factors Religion(Hindu), multiple births and caste
Agarwal S et al , 2010 ¹⁹	11 slums of Indore, MP, Cross sectional survey of mothers of infants(2004-06)	n= 312 Home deliveries = 56.4%	Not reported
Das S, 2011 ²⁰	Mumbai slums from 6 municipal wards, surveillance study (2005-2007)	n= 10,754 births Home deliveries =10%	Customary(28%) , No time to reach hospital(13%), no body to go along(8%), Fear(7%)
Dasgupta et al, 2006 ¹⁶	Rural and urban clusters in West Bengal from Birbhum district. Cross sectional survey, women who delivered in the last one year	n= 320 Home deliveries (rural and urban combined) =51.88%	Not reported
Khan Z et al, 2009 ²¹	Periurban area of Aligarh, Uttar Pradesh	n=92 mother of infants Home deliveries = 60%	Tradition (42%) Related to economics(31%)
Hazarika, 2009 ⁸	NFHS- 3 Delhi data, Cross sectional survey, women who delivered 6 months ago	n= 2420 (slum dwellers) Home deliveries= 22.62%	Not reported

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3 Qualitative data from our study suggest that there was a lack of perceived risk among women
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5 and their family members, and priority was given to other domestic responsibilities over safe
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7 delivery. This may have been particularly relevant among multiparous women. A low literacy
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9 level of the HOH was another important predictor indicating the need to raise awareness of
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11 safe birthing practices. The role of CHWs in improving maternal and neonatal health indicators
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13 by increasing awareness is well known.[25] Though the Delhi State Health Mission has deployed
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15 Accredited Social Health Activists (ASHA) in the urban areas replicating the rural model, a
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17 recent evaluation has shown several implementation gaps.[26]
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22 Women in our study were deterred from delivering in hospital out of fear and embarrassment.

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25 Traditionally, Indian women have delivered at homes surrounded by close family members.

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28 There is evidence to show that the support of a female relative during the birth process is
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30 beneficial and leads to better birth outcomes.[27] The state of Tamil Nadu has implemented a
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32 successful birth companion scheme through its public health system which addresses the issues
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34 of social support, fear and embarrassment.[28] This model provides a prototype that may be
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36 replicated, with suitable context-specific modifications, to address this important barrier to
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38 institutional deliveries.
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45 Koblinsky et al[29] analysed national level data from several countries which reduced the MMR
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47 drastically since 1950 and showed that maternal deaths could be reduced by providing training
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49 to *dais* or professionals developing a partnership with *dais*, however it required effective
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51 outreach and referral mechanisms that support traditional system of birthing. Experiences from
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53 Malaysia and Sri Lanka show that, women are willing to move from home based to facility-
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3 based delivery if transport and services are made free for all, improve awareness and also
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5 ensured quality of services at facilities.[29]
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9 Current initiatives by the government aimed at improving MCH indicators of the urban poor do
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11 not directly address some of the key elements identified in our study. Identification and
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13 mapping of the most vulnerable populations within the city, sensitization of health
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15 professionals to the needs and fears of women, improving reach of UCHW to the marginalized,
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17 empowering women with information regarding their healthcare entitlements, provision of
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19 BPL, ration and RSBY cards to the neediest are some of the key issues that need focused and
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21 aggressive implementation.
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27 It is important for health departments to; strengthen the supply side, be more accessible to
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29 those who need them the most and establish faith among the community. India needs to
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31 explore innovative ways at all levels of care to make delivery practices safer. There is hope that
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33 the urban health situation will improve in the coming years with the NUHM, if we intervene at
34
35 the individual, community, system and policy level. The ANCHUL project and similar such
36
37 endeavours all over the country will feed to provide innovative scalable strategies for the
38
39 betterment of our urban community.
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53
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55
56 inputs from AHS and SZ. ND analysed the quantitative data and prepared the first draft of the
57
58 manuscript. SMG analysed the qualitative data and wrote the first draft of the qualitative
59
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1
2
3 findings. GA and AS supervised data collection and commented on drafts of the manuscript. HN
4
5 and AHS commented on drafts of the manuscript. SZ is the Principal Investigator of ANCHUL,
6
7 had overall responsibility for ANCHUL, and commented on drafts of the manuscript. All authors
8
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10
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12
13 decision to submit for publication.
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29
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32
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44 the authors.
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STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	2
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	7
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	7
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	8
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	8
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	NA
Bias	9	Describe any efforts to address potential sources of bias	8
Study size	10	Explain how the study size was arrived at	9
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	10
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	10
		(b) Describe any methods used to examine subgroups and interactions	NA
		(c) Explain how missing data were addressed	NA
		(d) If applicable, describe analytical methods taking account of sampling strategy	10
		(e) Describe any sensitivity analyses	NA
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	11
		(b) Give reasons for non-participation at each stage	13
		(c) Consider use of a flow diagram	13
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	14
		(b) Indicate number of participants with missing data for each variable of interest	14
Outcome data	15*	Report numbers of outcome events or summary measures	16

1 2 3 4 5 6 7 8 9 10 11 12 13	Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	16
14 15 16 17 18 19 20 21 22			(b) Report category boundaries when continuous variables were categorized	16
23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60			(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
	Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	NA
	Discussion			
	Key results	18	Summarise key results with reference to study objectives	20
	Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	21
	Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	21
	Generalisability	21	Discuss the generalisability (external validity) of the study results	22
	Other information			
	Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	24

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.

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Why women choose to give birth at home: A situational analysis from urban slums of Delhi

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Why women choose to give birth at home: A situational analysis from urban slums of Delhi

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ABSTRACT

Objectives: Increasing institutional births is an important strategy for attaining MDG-5.

However, rapid growth of low-income and migrant populations in urban settings in low and middle income countries, including India, presents unique challenges for programs to improve utilization of institutional care. Better understanding of the factors influencing home or institutional birth among the urban poor is urgently needed to enhance program impact. To measure prevalence of home and institutional births in an urban slum population and identify factors influencing these events.

Design: Cross-sectional survey using quantitative and qualitative methods

Setting: Urban poor settlements in Delhi, India

Participants: A house-to-house survey was conducted of all households in three slum-clusters in north-east Delhi (n=32,034 individuals). Data on birthing place and socio-demographic characteristics were collected using structured questionnaires (n=6092 households). Detailed information on pregnancy and postnatal care was obtained from women who gave birth in the last 3 months (n=160). Focus group discussions and in-depth interviews were conducted with stakeholders from the community and health-care facilities.

Results: Of 824 women who gave birth in the previous year, 53% [95%CI 49.7-56.6] had given birth at home. In adjusted analyses, multiparity, low literacy and migrant status were independently predictive of home births. Fear of hospitals (36%), comfort of home (20.7%) and lack of social support for child-care (12.2%) emerged as the primary reasons for home births.

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3 **Conclusions:** Home births are frequent among the urban poor. This study highlights the urgent
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5 need for improvements in the quality and hospitality of client services, needs for family support
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7 as key modifiable factors affecting over two thirds of this population. These findings should
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9 inform the design of strategies to promote institutional births.
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14 15 **Article Summary**

16 17 **Strengths and Limitations of the study**

- 18 • This survey covered a large number of households (n= 6092) households
19 living in 3 urban poor settlements of Delhi
- 20 • Both qualitative and quantitative methods were used to capture reasons
21 for home births.
- 22 • Though the slum cluster was not a random sample from all the slum
23 clusters in Delhi they were representative of the urban poor settlements.
- 24 • Concurrent health facility assessment was not done which would have
25 helped to understand additional supply-side factors.
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INTRODUCTION

Increasing institutional births is a key global strategy to reduce maternal and new-born mortality. Many countries, including India, have established incentive programs and policies to enhance institutional births. However, the rapid growth of low-income urban populations presents unique challenges to these programs such as lower knowledge of local services and registration processes, lack of support from an extended family and transient residence. With around 40% of urban population in low and middle income countries residing in low-income urban settlements, more focused efforts are required to improve institutional birth rates in these settings.

Most maternal deaths are centred around the intra-partum and immediate postpartum period [1 2] and for countries with high burden of maternal mortality and morbidity, facility based birthing is found to be efficient and sustainable compared to scaling up community based safe birthing programs.[3 4] An evaluation study of the safe motherhood program in Indonesia showed that irrespective of level of socioeconomic status and place of residence (urban vs. rural) increasing the number of deliveries by Skilled Birth Attendant (SBA) did not reduce maternal mortality if most births took place at home. [5] In contrast, programs that enhanced facility-based births in Malaysia and Sri Lanka resulted in marked reduction in maternal and neonatal deaths.[6] With the overwhelming evidence for scaling up quality health centre based intra-partum care in improving maternal and neonatal survival, it is important for each country and local administration to understand barriers at community and facility level that affect the access to facilities and provision of quality services.

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5 India currently accounts for about a fifth of all maternal and new-born deaths worldwide [7],
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7 and approximately one third of the population currently lives in urban areas, and growing to
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9 nearly one half by 2030. The MDG report has flagged the slow progress of India in reducing child
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11 mortality and improving maternal health [8], with the latest WHO statistics showing that only
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13 half of expectant mothers in India complete four antenatal care (ANC) visits and give birth in the
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15 presence of a SBA. [9] Overcoming barriers to institutional births among the urban poor is
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17 therefore crucial.
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25 The National Rural Health Mission (NRHM) of India therefore launched the Janani Suraksha
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27 Yojana (JSY) program in 2005 with the goal of reducing maternal and neonatal mortality by
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29 promoting institutional births among poor pregnant women.[10] An evaluation of this
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31 conditional cash transfer scheme in 2007-08 showed an increase in ANC visits and institutional
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33 births.[11] However, this has not translated to reduction in MMR possibly due to unaddressed
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35 issues of non-financial access barriers and sub-optimal ANC, delivery and postnatal care.[12] In
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37 addition, unique issues faced by urban poor were not specifically addressed by the JSY program.
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41 As mentioned above, currently 30% of India population are living in cities. Delhi is one of the
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43 most densely populated cities in the world, and attracts nearly 500,000 migrants every year
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45 with most settling in urban poor habitations.
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50 According to the National Family Health Survey (NFHS 3) survey conducted in 2005-06, only 44
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52 % of births were institutional among the urban poor of Delhi as compared to the urban average
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54 of 67.5%.[13] The District Level Household and Facility Survey (2007-08) survey showed that
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56 overall, 71% of pregnant women had at least 3 ANC visits. While 68% of births were
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3 institutional in the city as a whole, only 38% institutional deliveries were reported in slum
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5 areas.[14] A governmental initiative aimed at correcting this inequity is the National Urban
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7 Health Mission (NUHM) which makes primary health care services available to the urban
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9 poor.[15],[16] The success of this mission will depend on identifying and targeting interventions
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11 directed towards the most vulnerable. One of the aims of this study is to determine the
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13 prevalence of home and institutional births among women living in urban poor settlements in
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15 Delhi and identify reasons influencing their choice.
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20 21 **METHODS**

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23 This study is part of the formative phase and situational analysis for the ANCHUL (Ante Natal
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25 and Child Health care in Urban Slums, CTRI/2011/091/000095) trial, an implementation
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27 research project aimed to develop, implement and evaluate the impact of an intervention
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29 package delivered through an urban community healthcare worker (UCHW). ANCHUL aims to
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31 increase access to health care facilities for birthing and improve maternal, neonatal, child
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33 healthcare (MNCH) practices in urban slums of Delhi. This study aimed to conduct an in-depth
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35 situational analysis on utilization and quality of MNCH care using quantitative and qualitative
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37 methods. The information obtained will guide the development of the community based
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39 intervention package to be delivered by the UCHW as part of the ANCHUL trial.
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45 46 **Study Setting**

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48 Of the 16.7 million people living in Delhi, 52% reside in poor habitations.[17] The north-east
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50 district of Delhi contributes 11%, about one fifth, to this population with 44 registered
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52 slums.[18] This district has the highest home birth rate.[14] We conducted a rapid survey in 17
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3 presence of schools, healthcare facility, and distance from nearest government hospital. The
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5 clusters were then stratified into two categories of vulnerability based on the above
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7 characteristics. We then randomly selected three vulnerable slum clusters namely Buland
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9 Masjid (BM), CPJ and Chanderpuri (CP). These slums had tarred roads within and had access to
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11 maternal child health care dispensaries within a distance of five kms. The study protocol was
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13 approved by Health Ministry Screening Committee of the Government of India, institutional
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15 ethics committees of the Public Health Foundation of India, All India Institute of Medical
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17 Sciences, WHO Geneva, and Harvard School of Public Health.
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24 **Data collection**

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29 After lane mapping the clusters, all households were included in the survey. We identified
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31 pregnant women (in their 2nd and 3rd trimesters), recently delivered women (RDW, i.e., those
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33 who had delivered in the last 3 months) and households with under-5 children. The purpose of
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35 the survey was explained to a household member above 18 years of age and all questionnaires
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37 were administered after obtaining informed consent by trained field interviewers. All survey
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39 tools were in local language and were piloted and modified for content and clarity. Information
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41 on family details, socio-demographic status, place of childbirth (in women who had given birth
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43 in past 1 year), and information on any maternal and child deaths within households in past 1
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45 year, was obtained using paper forms. All refusals and non-responses were documented. We
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47 re-visited the households of 160 RDW and collected detailed information about ANC, delivery,
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49 immediate post-natal period, new born care practices and diet of the mother. Data were
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51 checked for completion before entering into a structured database management system
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3 (Microsoft Access 2010) with inbuilt range and internal consistency checks. Information from
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5 RDW was edited and validated by double data entry.
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7 8 Qualitative data 9

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11 The categories of respondents in *table 1* were identified as relevant for data collection in this
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13 study. Households were informed that focus group discussions (FGDs) would be held in the
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15 community and a general invitation was given. Permissions were sought from local community
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17 and religious leaders. Local public and private health care providers were approached and
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19 permissions were sought for in-depth interviews (IDI). The FGD and IDI guides were piloted to
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21 refine the topic guides to enable them to generate data that was relevant to the study
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23 objectives. The main topics that were explored in the FGDs and interviews are shown in *table 1*.
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26 The venue for data collection was agreed upon based on the respondent's convenience. One
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28 interviewer facilitated the discussions while a second took notes. Based on responses from the
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30 community, health care facilities and traditional birth attendants who served the locality were
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32 identified and approached. Written informed consent was obtained from all participants before
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34 the FGDs and IDIs, which were digitally voice-recorded.
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42 **Sample size justification** 43 44

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46 For estimating the number of households to be interviewed, institutional birth was considered
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48 the key outcome variable. Assuming prevalence of institutional births as 33% in urban slums of
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50 Delhi[16], we needed to interview 780 women who gave birth in the past year to obtain
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52 prevalence estimates with 10% relative precision. Assuming a crude birth rate of 25/1000
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54 (national average is 21/1000), a population of 30,000 was to be covered to identify at least 750
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56 childbirths in the past year.
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Table 1: Themes covered for qualitative data

Category of participants	Method of data collection	Key themes covered
Community <ul style="list-style-type: none"> Pregnant women (n= 5) Recently delivered women (n=6) Mother of under 5 children (n=6) Mother in laws (n=5) Husbands (n=4) 	Focus Group Discussions(FGDs) Venue: Schools, NGO, Madrassa(religious place) and anganwadi centres*	<ul style="list-style-type: none"> Health and nutritional status Cultural practices for nutrition during pregnancy Care seeking behaviour during pregnancy Barriers to accessing care during pregnancy Quality of care experienced in various health care settings (public and private)
Health Care Providers <ul style="list-style-type: none"> Public Health system (n=6) Private (n=5) Others (n=4) (AWW, TBAs) 	In depth interviews Venue: Clinics of health care providers or homes of key informants	<ul style="list-style-type: none"> Care seeking pattern among the community during pregnancy Challenges to improving maternal and child health among urban poor Feasibility of proposed intervention
ANC Clinic attendees (n=9)	Exit interviews (pre and post ANC check-ups) Venue: Clinics	<ul style="list-style-type: none"> Experience of care during ANC visit Satisfaction levels of the individual about care

AWW: Anganwadi workers, TBA: Traditional birth attendants (*Dai*)

*The word Anganwadi means "courtyard shelter" in Hindi. They were started by the Indian government in 1975 as part of the Integrated Child Development Services program to combat child hunger and malnutrition.

Data analysis

Quantitative data

Data were analysed using Stata 11 (Stata Corporation, College Station, TX). Descriptive statistics were used to provide a cluster, household and individual level profiles of the study population. Household survey data were analysed accounting for clustering at the slum level to control for both inter and intra-cluster variance. We used principal component analysis to compute household Socioeconomic Scales (SES). Dwelling characteristics, household income and household assets were included in this composite scale.[19] We used multivariate random

1
2 effects logistic regression to estimate the association of demographic variables with home
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4 births. Crude and adjusted odds ratios were calculated with 95% confidence intervals. For data
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6 from RDWs, Pearson chi-squared was used for categorical variables and t-tests for comparison
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8 of continuous variables.
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11 Qualitative data

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18 Verbatim transcripts were prepared in a standardized format that included basic demographic
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20 information of the participants and the interviewer's own observations within one week of
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22 conduct of IDI/FGD. Transcripts were uploaded to a software Atlas ti 6.1 (Scientific
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24 Software Development, City West, Berlin) and coded line-by-line using detailed themes and
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26 sub-themes that emerged from the data. After an initial round of coding with a representative
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28 sample of transcripts, the list of codes that were generated was reviewed in order to develop a
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30 structured code list which was then applied to the remaining transcripts. Illustrative quotations
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32 that captured the key issues reported by the participants have been included in the results.
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39 RESULTS

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43 Of the 6348 households in the three defined clusters, 6092 (96%) were interviewed between
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45 December 2011 and March 2012, covering a total population of 32,034. Nine households
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47 refused to participate and 247 did not respond (locked houses) (figure 1). A total of 25 FGDs
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49 and 13 in-depth interviews were conducted in January and February 2012. The number of
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51 respondents in each FGD ranged from 7-12 members.
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Population and cluster characteristics

The adult male to female ratio was 1000:825. Fifty eight percent of the population were migrants from Uttar Pradesh (73%) and Bihar (16%). Eighty percent were living in the same locality for > 5 years. Of the total population, women of reproductive age (15-49 years) accounted for 25%, and 16.6% were under-5 children. The area was served by one referral hospital situated within a distance of 5kms, two outpatient dispensaries, 17 private clinics (registered and unregistered with the Medical Council) and one laboratory within the clusters.

The areas also have access to two referral hospitals situated at distance of about 10 kms.

Household characteristics

The median family size was 5 (IQR 4, 7) predominantly living as nuclear families (79.4%) and 63% of houses were self-owned. The head of the household (HOH) was the one considered as the decision-maker but was not necessarily the primary wage earner. Fifty nine percent of HOHs were illiterate and were unskilled labourers. Ration cards, Below Poverty Line cards (BPL) and Rashtriya Swasthya Bima Yojna (RSBY) cards that are needed for claiming government run health schemes were possessed by only 50%, 31% and 24% of households respectively. The majority of the households (82%) lived in single-roomed concrete houses with cemented or tiled flooring. Most houses (95%) had access to toilets within the household or community. A detailed socio-demographic profile of the study population is presented in *Table 2*. The household characteristics of the RDW and the overall population in the study area were similar indicating that our subsample households were representative of this area. Fifteen maternal deaths, 21 still-births and 41 under-5 child deaths were reported for the previous year. Of the total child deaths, 22 were in the neonatal period.

Table 2: Characteristics of households in the study area and households of women who gave birth in previous 3 months

Demographic characteristics	House to House survey (n=6092 HH from 3 clusters)	Mothers who recently gave birth (n=160)
Median HH size (IQR)	5(4,7)	5 (4,7)
Family type (%)		
Nuclear	4834(79.4)	115 (71.9)
Joint	944(15.5)	43 (26.9)
Extended	313 (5.1)	2 (1.3)
Spoken language (%)		
Hindi	5328 (87.5)	145 (90.6)
Urdu	624(10.2)	15 (9.4)
Others	140(3.2)	-
Religion (%)		
Hindu	1822(29.9)	42 (26.3)
Muslim	2475 (69.6)	118 (73.8)
Others	33(0.5)	-
Caste category (%)		
General	2546 (41.8)	77 (48.1)
Other Backward Caste	2553 (41.9)	58 (36.3)
Scheduled caste/Scheduled Tribe	932 (15.3)	22 (13.8)
Do not want to answer	4 (0.1)	-
Do not know	57 (0.9)	3 (1.9)
Illiterate women in reproductive age group (%)	(n= 8056) 4122(51.2)	85 (53.1)
Literacy level of HOH (%)		
Illiterate	3561(58.5)	93 (58.1)
Literate but no formal education	196(3.2)	4 (2.5)
Schooling	2129(36.4)	62 (38.8)
College	115(1.89)	1 (0.6)
Occupation of HOH (%)		
Unskilled	2805 (46.3)	77 (48.4)
Skilled	1378 (22.7)	36 (22.6)
Office work	867 (14.3)	19 (12)
Professional	55 (0.91)	-
Not working	955 (15.76)	27 (17)
Median HH income in INR (IQR)	4000(3000-6500)	4000 (3000-7000)
Median HH income in USD (IQR)	76.2(57.1- 123.8)	76.2 (57.1-133.5)
Own house (%)	3829 (62.9)	101 (63.1)
Ration card (%)		
Don't have	2994 (49.2)	91 (56.9)
White	1173 (19.3)	22 (13.8)
Yellow	1196 (19.6)	28 (17.5)
Pink	686 (11.3)	18 (11.3)

Do not want to answer	43 (0.7)	1 (0.6)
BPL card (%)	1903 (31.2)	47 (29.4)
RSBY card (%)	1461 (24)	36 (22.5)
% of HH who are staying in the current locality in years		
< 1	660 (10.8)	13 (8.1)
1-2	238 (3.9)	11 (6.9)
3-5	330 (5.4)	12 (7.5)
>5	4864 (79.8)	124 (77.5)
% belonging to Delhi	3572(57.49)	93 (58.1)
% of HH who migrated but living in Delhi		
< 1 year	261 (7.5)	2 (2.2)
1-2	123 (3.5)	3 (3.2)
3-5 years	195 (5.6)	2 (2.2)
>5 years	2920 (83.5)	86 (92.5)
Socioeconomic categories* (%)		
Lowest	1,976(32.45)	53 (33.1)
Middle	2,077 (34.11)	53 (33.1)
Highest	2,036 (33.44)	54 (33.8)
Distance of HH from nearest Maternal Child Health care centre		
<5 km	4882 (80.1)	125 (78.1)
5-10 km	1550 (18.9)	29 (18.1)
>10 km	60 (1)	6 (3.8)

HOH: Head of Houshold, BPL: Below Poverty Line card, RSBY: Rashtriya Swasthya Bhima Yojna(Health insurance scheme)*The scale is a composite of house type, floor, house ownership, separate kitchen, TV, Refrigerator, Mobile phone, washing machine, total HH income, Number of rooms by principal component analysis

Place of childbirth

Of the 824 women who gave birth in the previous year, 438 were home births [53.1%, 95%CI (49.1 - 56.6)] and of the remaining 386, 340 (88%) chose to give birth at a public hospital.

Among the women who gave birth in the previous 3 months (n=160), a similar proportion [53.1%, 95% CI (45.0- 61.0)] gave birth at home. Only 16.2% (12) of these mothers' availed cash incentive through JSY scheme (table 3). Thirty six (48%) went to hospital due to initiation of labour pains, 32% due to development of complications, and 6.7% reported the reason that they had crossed expected date of delivery. The individual who was most influential in the decision for delivering at a hospital was most often (48%) the women herself, followed by the

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3 husband (18.7%) or mother-in-law (17.3%). Irrespective of the place of delivery only 15% of
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5 these households were visited by a health worker within 48hrs of delivery and only 30% of
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7 women visited a health care facility after giving birth. Among those who gave birth in a facility
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9 92% were satisfied with the services provided at the hospital. Women who gave birth at home
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11 were more likely to be multiparous, less likely to avail ANC in a public hospital and visit a facility
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13 during the post-partum period (*table 3*).

14 15 16 17 18 19 **Predictors of home births**

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22 Among the 824 women who gave birth in the previous year, the following demographic
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24 characteristics were significantly associated with home births: Living in a rented house, low SES,
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26 low literacy of HOH, HOH being an unskilled labourer, migrants and multi-parity. Multi-parity
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28 [OR 1.96, 95% CI (1.44, 2.69)], literacy status of HOH [OR 0.71, 95%CI (0.53 0.97)] and migrant
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30 status [1.46, 95% CI (1.08, 1.97)] remained strong independent predictors of home births in
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32 multivariate analysis (*Table 4*).

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38 **Table 3: Information on ANC and births obtained from recently delivered women**

Characteristics*	Home births (n=85)	Institutional births (n=75)	p value
Mean age	24.7(4.31)	24.9(4.43)	0.79
>18yrs of age at marriage	72 (84.7)	64(85.3)	0.912
Mean family size	5.5(2.4)	5.5(2.3)	0.937
First child	15 (17.7)	26 (34.7)	0.014
Some ANC care	63 (74.1)	72 (96)	<0.0001
ANC at public hospital	41 (65)	61(84.7)	< 0.0001
ANC in first trimester	21 (33.33)	31 (43.1)	0.498
Some health problem during pregnancy	11 (17.5)	13 (18)	0.92
Satisfaction with ANC	46 (74.6)	65 (90.3)	0.046
Planned place of birth	73 (86)	66 (90.4)	0.38
Birth conducted by Doctor/ Nurse	15 (17.7)	74 (98.7)	<0.0001
Home visitation by	14 (16.5)	11 (14.7)	0.75

community health worker			
Post-partum visit to hospital	3 (3.53)	16 (21.33)	0.001

*All continuous variables are expressed as mean and one standard deviation; all proportions are expressed as percentages

Table 4: Predictors of home births

Characteristics (n=824) 438: Home births 386: Institutional delivery	p value (ignoring clustering)	Crude OR (95% CI), p value (accounted for clustering)	Adjusted* OR (95% CI), p value (LR test)
Buland Masjid CPJ Chaderpuri	<0.001	1 0.42(0.30, 0.59) 0.69 (0.49, 96)	< 0.001
Birth order second and above	<0.001	2.12 (1.57, 2.87)	< 0.001 1.96 (1.44, 2.69)
Lower SES		1	
Middle SES	0.033	0.90 (0.64, 1.26)	0.011 0.96 (0.66, 1.406) 0.68
Highest SES		0.70 (0.50, 0.98)	0.91 (0.60, 1.38)
Joint families	0.057	0.78 (0.57, 1.05)	0.102
Non-Muslims	0.004	0.77 (0.54, 1.1)	0.15 0.78 (0.54, 1.14) 0.21
Schooling of HOH	0.007	0.74 (0.55, 0.99)	0.04 0.71 (0.53, 0.97) 0.031
Not working		1	0.063 1 0.2
Elementary job	0.024	1.63(1.08, 2.45)	1.54 (1, 2.38)
Skilled job		1.42 (0.92, 2.17)	1.40 (0.89, 2.21)
Own the house	0.004	0.76 (0.56, 1.02)	0.07 0.94 (0.65, 1.34) 0.72
Ration card possession	0.037	0.80 (0.60, 1.07)	0.14
Not belonging to Delhi	<0.001	1.61(1.21, 2.15)	0.001 1.46 (1.08, 1.97) 0.013

*Adjusted for house ownership, SES, literacy of HOH, Occupation of HOH, belonging to Delhi and birth order

Reasons for choosing home birth

The majority of home births were pre-planned and 75% of these women had availed some ANC at a facility. Eighty two percent of the home births were conducted by a traditional birth attendant (*Dai*). The results from the quantitative and qualitative data, showed a high level of concordance for the reasons for choosing home births. Four major themes emerged as barriers to institutional births. Illustrative quotations from the transcripts are presented in *table 5*.

Table 5: Illustrative quotations for reasons for home birth

Fear and Embarrassment

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"They prefer home deliveries as in many cases the doctor does not behave well with them. As soon as they enter, they are separated from their families. The doctor does not communicate to the relative if there is any complication. They stay for 1-2 days in the labour room; the relatives are outside they do not know what is happening. It is very scary for them. Also because of all these reasons, they will come only if it is life threatening. Even then they might prefer to go to someone who is local, who is more patient friendly, private practitioner who are non-judgemental who behave properly. They give more one to one care. They might not be qualified but it is more natural and human." **Senior gynaecologist, Public health facility**

"I'd prefer to have the baby at home. If you're in hospital, they don't even attempt to try for a natural birth. What's the use of having an operation if you can have a child the normal way? We get the check-ups done there, but we end up having the delivery at home". **Pregnant woman**

"If you tell them to put you in a closed room to get a check - up, they tell you to just lie down and get it done right there. It's humiliating; you can't help but feel embarrassed. And if you don't feel embarrassed, other people around you will. They tell you that if you feel ashamed, go to a private hospital. It's a matter of dignity. There are men walking around as well, if a man catches a glimpse, it can create trouble at home". **-Pregnant woman**

Prior experience with hospitals

"I had gone recently with my sister to a hospital.....when I went there to deliver my baby, they just kept telling me 'keep pushing, keep pushing..." I got so scared I just left. I've had three children at home; I can manage a fourth the same way". **Recently delivered woman**

Other children

"I have small children. If I have to go to the hospital, I have to lock the house and take the children along. Then if she delivers in the hospital, she may be admitted for at least 2 or 3 days depending on the situation. Even if it is a normal delivery it is at least a 2 day stay. How do I manage in such situations? To avoid all this one hopes that if all is well it is better to deliver at home itself. We can all be at home and kids need not have to go anywhere. I can also go for work." **Husband of pregnant woman**

Opportunity costs

"Most of them earn daily wages, so they do not want to come to the hospital. They feel one day will go so they will lose their pay also...So the delivery can be at home if baby is okay. Male member does not want to involve himself in all these things, either if there is an elder woman in the house or neighbourhood who conducts the delivery...Even at the hospital they do not want to stay they say that they have to go to work, or how will they earn for tomorrow's food because they are working on daily wages.." **Senior gynaecologist, public health facility**

Fear and embarrassment

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3 Fear and embarrassment associated with giving birth in hospitals were reported as the most
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5 important reasons for giving birth at home during FGDs and IDIs and was also reported as the
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7 key reason (35%) among the 85 RDW surveyed. Fear was due to being alone in unfamiliar
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9 surroundings and fear of surgical intervention. In addition to fear, women felt it was
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11 embarrassing and uncomfortable for them to be in the presence of 'strangers' during a very
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13 vulnerable time. The lack of privacy coupled with the absence of any family member by their
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15 side was in stark contrast to the 'safe and reassuring environment' at their homes during the
16
17 birthing process.
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23 24 Prior experience with hospitals

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27 Prior experience of self, friends, neighbours or a family member played an important role in
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29 choosing home or hospital birth. Positive experiences reinforced the message that hospitals
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31 were a safe and welcoming place as opposed to negative experiences (such as, perceived
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33 improper care and rude behaviour of hospital staff). The health care providers interviewed
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35 indicated that high patient load at hospitals lead to lack of individual attention and inadequate
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37 care.
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43 44 Domestic responsibilities

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46 Being in an unfamiliar neighbourhood, the absence of extended family to help with childcare
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48 and traditional lack of involvement of men in childcare made women reluctant to leave children
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50 at home and get admitted to hospital. In the survey, 10% of those who had home births cited
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52 lack of help with childcare as a reason.
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56 57 Opportunity costs

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Though most services at the hospital were provided free of cost, opportunity costs in the form of lost wages for the earning member, cost of food for the family and travel, dissuaded some women from delivering in hospital. Although only 6% mentioned this as a reason in our survey, this emerged as a factor in the qualitative analysis. However, direct costs were not one of the reasons cited for not opting for hospital births.

DISCUSSION

Our study showed a high prevalence of home births conducted by *TBA* among the urban poor of north-east district of Delhi. Fear of surgical procedures, unfamiliarity with hospital surroundings, lack of help for childcare and loss of wages, were some of the reasons that drove women to choose home births. Other predictors of home births were low literacy, higher parity and migrant status. Concordance between results derived from qualitative and quantitative data lends greater credibility to these findings. *Figure 2* presents a conceptual framework based on the study findings which could help us to design strategies for some of the modifiable factors.

The prevalence and reasons for home births in our study was similar to that found in most other urban surveys [13 14 20-26] from India (*Table 6*). In the Mumbai slum study[25], the prevalence varied from 6-16% across 48 slum clusters. Tradition was the most important reason behind home births in this study. Apart from the predictors that we identified, poor housing, lack of water supply and hazardous location were associated with home births in the Mumbai study, indicating that apart from individual and household level factors, the type of

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3 neighbourhoods also played a role. One of the limitations of our study is that we could not
4
5 evaluate cluster level predictors of home births as we included only three clusters in this study.
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9 Migrant status was one of the important determinants of home births in our study. In an
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11 analyses using NFHS data, Singh et al[27] reported that urban poor migrants were at highest
12
13 risk of unsafe birthing practices in contrast to non-poor, non-migrants who were at least risk. In
14
15 our study sample almost 60% of the households were migrants from neighbouring states, but
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17 most living in Delhi for more than 5 years. In spite of this, these households were less likely to
18
19 possess ration, BPL or RSBY cards which are required for availing entitlements to healthcare.
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24 Quality of care did not figure in the discussions as a factor for choosing home births. The
25
26 quantitative data also confirm that majority of women who visited hospital for ANC and for
27
28 birthing were quite satisfied with the services offered. We hypothesize that since the focus on
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30 facility based birthing and offering free services to enable the same is comparatively new to the
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32 urban poor community, the community has not reached the stage of assessing the quality of
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34 care and using that as a factor in making a decision on where to deliver. Based on our
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36 observation of the facilities there is lot of scope for improvement in the services being offered
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38 suggesting a gap between what level of services women perceive they are entitled to, and what
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40 they actually receive.
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48 The discomfort of hospitals expressed by those who gave birth at home could be attributed to
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50 the overburdening of referral hospitals leading to lack of personalized care. Antenatal care is
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52 provided at dispensaries, maternal and child care centres (MCH), secondary level and referral
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54 hospitals. However, MCH centres cater to deliveries of multigravida only, and all primigravida
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56 are referred to the secondary level or referral hospitals leading to increased patient load at
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these centres. Initiatives to decentralize care to reduce burden on referral hospitals by upgrading the MCH centres has been rather slow. It might be possible that other supply-side issues could have also contributed to this level of dissatisfaction, but due to delay in obtaining permissions, we were unable to conduct facility assessment to identify the potential causes.

Table 6: Prevalence and reasons for home births from urban surveys in India since 2000

Author, year of publication (ref)	Study area and target population/ Study design	Sample size and prevalence of home births	Reasons for home home births
Rahi et al, 2006 ¹⁷	One Urban slum in Delhi, Births recorded during April-June 2005, cross sectional survey	n= 82 births Home births= 56.1%	Not reported
Agarwal ¹⁸ et al, 2007	One urban slum in Delhi, Women who delivered last 1 year, Cross sectional survey	n= 82 Home births = 31.8%	Lack of awareness for need for check-up (27%) Lack of knowledge about service availability (17%) Long waiting time (22%) None to accompany (15%) Finance (12%) Fear of hospitals (7%) Family objections (2%)
DLHS Fact sheet (2007-8) ⁹	Delhi state in 2008 using multistage stratified probability sampling	n= 9689 households Home births Rural = 42.6% Urban = 29.9% Total = 30.8%	Not reported
Thind et al, 2008 ¹⁵	NFHS survey data from Maharashtra , cross sectional survey	n=1510 recent births Home births(overall) = 37% Only Urban = 15.3%	Predisposing factors Religion(Hindu), multiple births and caste
Agarwal S et al , 2010 ¹⁹	11 slums of Indore, MP, Cross sectional survey of mothers of infants(2004-06)	n= 312 Home births= 56.4%	Not reported
Das S, 2011 ²⁰	Mumbai slums from 6 municipal wards, surveillance study (2005-2007)	n= 10,754 births Home births =10%	Customary(28%) , No time to reach hospital(13%), no body to go along(8%), Fear(7%)
Dasgupta et al, 2006 ¹⁶	Rural and urban clusters in West Bengal from Birbhum district. Cross sectional survey, women	n= 320 Home births (rural and urban combined) =51.88%	Not reported

	who delivered in the last one year		
Khan Z et al, 2009 ²¹	Periurban area of Aligarh, Uttar Pradesh	n=92 mother of infants Home births = 60%	Tradition (42%) Related to economics(31%)
Hazarika, 2009 ⁸	NFHS- 3 Delhi data, Cross sectional survey, women who delivered 6 months ago	n= 2420 (slum dwellers) Home births= 22.62%	Not reported

Qualitative data from our study suggest that there was a lack of perceived risk among women and their family members. According to the mothers and the family members who played an important role in decision making, the practice of giving birth at home was common and that they had witnessed their relatives doing well after doing the same. Priority was given to other domestic responsibilities and tradition over safe births. This may have been particularly relevant among multiparous women.

A low literacy level of the HOH was another important predictor indicating the need to raise awareness of safe birthing practices. The role of CHWs in improving maternal and neonatal health indicators by increasing awareness is well known.[28] Though the Delhi State Health Mission has deployed Accredited Social Health Activists (ASHA) in the urban areas replicating the rural model, a recent evaluation has shown several implementation gaps.[29]

Afsana et al from Bangladesh report that cost, fear of hospitals due to lack of privacy, unfamiliar surroundings and stigma attached to hospital delivery were key reasons for women to choose home births.[30] While women in our study spoke about fear and embarrassment as deterrents, direct costs associated with delivery and stigma attached to a hospital delivery were not mentioned as factors affecting their choice. Traditionally, Indian women gave birth at home surrounded by close family members. There is evidence to show that the support of a female

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3 relative during the birth process is beneficial and leads to better birth outcomes.[31] The state
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5 of Tamil Nadu has implemented a successful birth companion scheme through its public health
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7 system which addresses the issues of social support, fear and embarrassment.[32] This model
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9 provides a prototype that may be replicated, with suitable context-specific modifications, to
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11 address this important barrier to institutional deliveries.
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16 In our study most births at home were conducted by Dai who lacked professional training in
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18 safe birthing practices. An extensive review by Bergstrom and Goodburn has shown that
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20 traditional birth attendants had no impact on any reduction in maternal mortality[33]. A meta-
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22 analysis of training birth attendants improved survival but the studies included in the review
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24 were from high mortality burden rural population and not urban population. [34]Koblinsky et
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26 al[6] analysed national level data from several countries which reduced the MMR drastically
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28 since 1950 and showed that maternal deaths could be reduced by providing training to *dais or*
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30 professionals developing a partnership with *dais*, however it required apart from political will,
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32 effective outreach and referral mechanisms that support traditional system of birthing.
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34 Experiences from Malaysia and Sri Lanka show that, women are willing to move from home
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36 based to facility-based care if transport and services are made free for all, improved awareness
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38 and also ensured quality of services at facilities.[6] In India, currently there is no program at
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40 national scale for promoting or scaling up community based SBA. The National Rural Health
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42 Mission of Government of India has its main strategy for reduction in maternal mortality focused on
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44 facility based intra-partum care and provision of Emergency Obstetrics Care .
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54 Current initiatives by the government aimed at improving MCH indicators of the urban poor do
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56 not directly address some of the key elements identified in our study. Identification and
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2 mapping of the most vulnerable populations within the city, sensitization of health
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4 professionals to the needs and fears of women, improving reach of CHW to the marginalized,
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6 empowering women with information regarding their healthcare entitlements, provision of
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8 BPL, ration and RSBY cards to the neediest are some of the key issues that need focused and
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10 aggressive implementation.
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16 It is important for health departments to strengthen the supply side, be more accessible to
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18 those who need them the most and establish faith among the community. India needs to
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20 explore innovative ways at all levels of care to make birthing practices safer. There is hope that
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22 the urban health situation will improve in the coming years with the NUHM, if we intervene at
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24 the individual, community, system and policy level. The ANCHUL project and similar such
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26 endeavours all over the country will feed to provide innovative scalable strategies for the
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28 betterment of our urban community.
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27
28 and SZ. ND analysed the quantitative data and prepared the first draft of the manuscript. SMG
29
30 analysed the qualitative data and wrote the first draft of the qualitative findings. GA, and AHS
31
32 supervised data collection and commented on drafts of the manuscript. HN and AHS
33
34 commented on drafts of the manuscript. SZ is the Principal Investigator of ANCHUL, had overall
35
36 responsibility for ANCHUL, and commented on drafts of the manuscript. All authors contributed
37
38 to critique and modification of the manuscript, read and approved the final version. ND had full
39
40 access to all the data in the study and had final responsibility for the decision to submit for
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42 publication.
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53 **Data sharing statement:** All unpublished data related to this research project is available with
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55 the authors and can be requested by emailing to niveditha@iiphd.org.
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3 **Ethics Approval:** The study protocol was approved by Health Ministry Screening Committee of
4
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6
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14 **Legends:**

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17 Figure 1: Quantitative survey sampling

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19 Figure 2: Conceptual framework of factors leading to home births among urban poor
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3 | **Why ~~do~~ women ~~deliver at~~ choose to give birth at home:? A situational analysis**
4 **from urban slums of Delhi**
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ABSTRACT

Background: ~~Increasing~~ institutional births delivery is an important strategy for ~~towards~~ attaining MDG-5. ~~However, R~~ rapid growth of low-income and migrant populations in urban settings in low and middle income countries, including India, India and other countries has placed presents unique additional demands on government challenges for programs ~~to~~ enhance to improve utilization of institutional care. Better understanding of the factors influencing home or institutional birth barriers to institutional deliveries among the urban poor is urgently needed to enhance program impact. ~~to enhance program impact in India, and elsewhere.~~

Objectives: To measure prevalence of home and institutional deliveries births in an urban slum population in Delhi, India, slums and identify factors influencing these events. ~~the reasons for home delivery births.~~

Study Design: Cross-sectional survey using quantitative and qualitative methods

Setting: Urban poor settlements in Delhi, India

Methods/Participants: A house-to-house survey was conducted of all households in three slum-clusters in north-east Delhi (n=32,034 individuals). Data on deliveries birthing place and socio-demographic characteristics were collected using structured questionnaires (n=6092 households). Detailed information on pregnancy and postnatal care was obtained from women who had delivered gave birth in the last 3 months (n=160). Focus group discussions and in-depth interviews were conducted with stakeholders from the community and health-care facilities.

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3 Risk factors for place of birth home delivery were examined using random effects logistic
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5 regression.
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8 **Results:** Of 824 women who gave birth ~~delivered~~ in the previous year, 53% [95%CI 49.7-56.6]
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10 had given ~~ave~~ birth at home ~~delivered at home~~. In adjusted analyses, multiparity, low literacy
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12 and migrant status were independently predictive of home delivery ~~births~~. Fear of hospitals
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14 (36%), comfort of home (20.7%) and lack of social support for child-care (12.2%) emerged as
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16 the primary reasons for home delivery ~~births~~.
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21 **Conclusions:** Home deliveries ~~births~~ are frequent among the urban poor. ~~In addition to current~~
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23 ~~financial initiatives for institutional delivery, This study highlights the urgent need for raising~~
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25 ~~community awareness and~~ improvements in the quality and hospitality of client services, ~~and~~
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27 needs for family support ~~are as~~ key modifiable factors affecting over two thirds of this
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29 population ~~identified in this study~~. These findings should inform the design of strategies to
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31 promote institutional births ~~delivery~~.
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Article Summary

Strengths and Limitations of the study

- This survey covered a large number of households (n= 6092) households living in 3 urban poor settlements of Delhi
- ~~and b~~ both qualitative and quantitative methods were used to capture reasons for home delivery ~~births~~.
- Though the slum cluster was not a random sample from all the slum clusters in Delhi they were representative of the urban poor settlements.
- Concurrent health facility assessment was not done which would have helped to understand additional ~~the~~ supply-side factors ~~issues~~.

BACKGROUND-INTRODUCTION

Increasing institutional births delivery is currently a key global strategy to reduce maternal and newborn mortality. Many countries, including India, have established incentive programs and policies to enhance institutional birthsdeliveries. However, the rapid growth of low-income urban populations presents unique challenges to these programs such as lower knowledge of local services and registration processes, lack of support from an extended family and transient residence. With around 40% of personsurban population in low and middle income countries residing in low-income urban settlements[1], and more focused targeted efforts are may be required to improve institutional birth delivery rates in these low-income urban settings.

Most maternal deaths are centred around the intra-partum and immediate postpartum period [1 2] and for countries with high burden of maternal mortality and morbidity, facility based birthing is found to be efficient and sustainable compared to scaling up community based safe birthing programs.[3 4].[6]An evaluation study of the safe motherhood program in Indonesia showed that irrespective of level of socioeconomic status and place of residence (urban vs. rural) increasing the number of deliveries by Skilled Birth Attendant (SBA) did not reduce maternal mortality if most births took place at home. [5] In contrast, programs that enhanced facility-based births in Malaysia and Sri Lanka resulted in marked reduction in maternal and neonatal deaths.[6] With the overwhelming evidence for scaling up quality health centre based intra-partum care in improving maternal and neonatal survival, it is important for each country and local administration to understand barriers at community and facility level that affect the access to facilities and provision of quality services.

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5 -India currently accounts for about a fifth of all maternal ~~and newborn~~new-born deaths
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7 worldwide ~~.[7], and approximately one third of the population currently lives in urban areas,~~
8 and growing to nearly one half by 2030. The MDG report has flagged the slow progress of India
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10 in reducing child mortality and improving maternal health ~~.[8], with the latest WHO statistics~~
11 showing that only half of expectant mothers in India complete four antenatal care (ANC) visits
12 and give birth in the presence of a ~~skilled birth attendant (SBASBA.)~~[9], Overcoming barriers to
13 institutional births among the urban poor is therefore crucial.
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25 ~~The choice of place of delivery for birthing has been driven by tradition, accessibility and~~
26 ~~economics. In India, MMR is high in states with high prevalence of home deliveries~~births.~~The~~
27 National Rural Health Mission (NRHM) of India therefore launched the Janani Suraksha Yojana
28 (JSY) program in 2005 a safe motherhood intervention under the National Rural Health Mission
29 (NRHM) was implemented in India in 2005 with the goal objective of reducing maternal and
30 neonatal mortality by promoting institutional births ~~delivery~~ among poor pregnant
31 women.[10] An evaluation of this conditional cash transfer scheme in 2007-08 showed an
32 increase in ANC visits and institutional births~~deliveries~~. [11] However, this ~~increase in~~
33 ~~institutional deliveries~~ has not translated to reduction in MMR possibly probably due to
34 unaddressed issues of non-financial access barriers and sub-optimal ANC, delivery and
35 postnatal care.[12] In addition, unique issues faced by urban poor were not specifically
36 addressed by the JSY program.
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3 As mentioned above, currently 350% of India population are living in cities. Delhi is one of the
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5 most densely populated cities in the world, and ~~Delhi~~ attracts nearly 500,000 migrants every
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7 year with most ~~of who mostly~~ settling down in urban poor habitations.

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10 According to the National Family Health Survey (NFHS 3) survey conducted in 2005-06, only 44
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12 % of deliveries births were institutional among the urban poor of Delhi as compared to the
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14 urban average of 67.5%. [13] The District Level Household and Facility Survey (2007-08) survey
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16 showed that overall, 71% of pregnant women had at least 3 ANC visits. While 68% of deliveries
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18 births were institutional in the city as a whole, only 38% institutional deliveries were reported
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20 in slum areas. [14] A governmental initiative aimed at correcting this inequity is the National
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22 Urban Health Mission (NUHM) which makes ~~essential~~ primary health care services available to
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24 the urban poor. [15], [16] The success of this mission will depend on identifying and targeting
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26 interventions directed towards the most vulnerable. One of the aims of this study is to
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28 determine the prevalence of home and institutional delivery births among women living in
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30 urban poor settlements in Delhi and identify reasons influencing ~~behind~~ their choice ~~to deliver~~
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32 at for home births.

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METHODS

This study analysis is part of the formative phase and situational analysis for the ANCHUL (Ante
Natal and Child Health care in Urban Slums, CTRI/2011/091/000095) trial study, ~~which is~~ an
implementation research project aimed to develop, implement and evaluate the impact
effectiveness of an intervention package delivered through an urban community healthcare
worker (UCHW). ANCHUL aims to increase access to institutional deliveries health care facilities
for birthing and improve maternal, neonatal, child healthcare (MNCH) practices in urban slums
of Delhi. ~~The objective of t~~ This formative study aimed was to conduct an in-depth situational

analysis on utilization and quality of MNCH care using quantitative and qualitative methods.

The information obtained ~~from this study~~ will guide the development of the community based intervention package to be delivered by the UCHW as part of the ANCHUL trial.

Study Setting

Of the 16.7 million people living in Delhi, 52% reside in poor habitations.[17] The north-east district of Delhi contributes ~~to~~ 11%, ~~about one fifth, to of this total~~ population with 44 registered slums.[18] This district has the highest home ~~delivery births~~ rates.[14] We conducted a rapid survey in 17 slum clusters to obtain information on number of households, water supply, sanitation, presence of schools, healthcare facility, and distance from nearest government hospital. The clusters were then stratified into two categories of vulnerability based on the above characteristics. We ~~then~~ randomly ~~selected these~~ three vulnerable slum clusters namely Buland Masjid (BM), CPJ and Chanderpuri (CP). ~~for the purpose of this situational analysis.~~ These slums had ~~metalled tarred~~ roads within and had access to maternal child health care dispensaries within a distance of five kms. The study protocol was approved by Health Ministry Screening Committee of the Government of India, institutional ethics committees of the Public Health Foundation of India, All India Institute of Medical Sciences, [WHO Geneva](#), and Harvard School of Public Health.

Data collection

Quantitative survey

After lane mapping the clusters, all households were included in the survey. We identified pregnant women (in their 2nd and 3rd trimesters), recently delivered women (RDW, i.e., those who had delivered in the last 3 months) and households with under-5 children. The purpose of

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3 the survey was explained to a household member above 18 years of age and all questionnaires
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5 were administered after obtaining informed consent by trained field interviewers. All survey
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7 tools were in local language and were piloted and modified for content and clarity. Information
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10 on family details, socio-demographic status, place of [delivery childbirth](#) (in women who had
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12 [delivered given birth](#) in past 1 year), and information on any maternal and child deaths within
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14 households in past 1 year, was obtained using paper forms. All refusals and non-responses were
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16 documented. We re-visited the households of 160 RDW and collected detailed information
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18 about ANC, delivery, immediate post-natal period, new born care practices and diet of the
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20 mother. Data were checked for completion before entering into a ~~validated~~ [structured](#)
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22 database [management system](#) (Microsoft ~~a~~Access 2010) with inbuilt range and internal
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24 consistency checks. Information from RDW was [edited and](#) validated by double data entry.
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30 Qualitative data

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33 The categories of respondents in *table 1* were identified as relevant for data collection in this
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35 study. Households were informed that focus group discussions (FGDs) would be held in the
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37 community and a general invitation was given. Permissions were sought from local community
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39 and religious leaders. Local public and private health care providers were approached and
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41 permissions were sought for in-depth interviews (IDI). The FGD and IDI guides were piloted to
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43 refine the topic guides to enable them to generate data that was relevant to the study
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45 objectives. The main topics that were explored in the FGDs and interviews are shown in *table 1*.
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48 The venue for data collection was agreed upon based on the respondent's convenience. One
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50 interviewer facilitated the discussions while a second took notes. Based on responses from the
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52 community, health care facilities and traditional birth attendants who served the locality were
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identified and approached. Written informed consent was obtained from all participants before the FGDs and IDIs, which were digitally voice-recorded.

Sample size justification

For estimating the number of households to be interviewed, institutional birth delivery was considered the key outcome variable. Assuming prevalence of institutional deliveries-births as 33% in urban slums of Delhi[16], we needed to interview 780 women who gave birth delivered in the past ~~one~~ year to obtain ~~current~~ prevalence estimates with 10% relative precision.

Assuming a crude birth rate of 25/1000 (national average is 21/1000), a population of 30,000 was to be covered to identify at least 750 deliveries-childbirths ~~that happened~~ in the past ~~one~~ year.

Table 1: Themes covered for qualitative data

Category of participants	Method of data collection	Key themes covered
Community <ul style="list-style-type: none"> Pregnant women (n= 5) Recently delivered women (n=6) Mother of under 5 children (n=6) Mother in laws (n=5) Husbands (n=4) 	Focus Group Discussions(FGDs) Venue: Schools, NGO, Madrassa(religious place) and anganwadi centres*	<ul style="list-style-type: none"> Health and nutritional status Cultural practices for nutrition during pregnancy Care seeking behaviour during pregnancy Barriers to accessing care during pregnancy Quality of care experienced in various health care settings (public and private)
Health Care Providers <ul style="list-style-type: none"> Public Health system (n=6) Private (n=5) Others (n=4) (AWW, TBAs) 	In depth interviews Venue: Clinics of health care providers or homes of key informants	<ul style="list-style-type: none"> Care seeking pattern among the community during pregnancy Challenges to improving maternal and child health among urban poor Feasibility of proposed intervention
ANC Clinic attendees (n=9)	Exit interviews (pre and post ANC check-ups) Venue: Clinics	<ul style="list-style-type: none"> Experience of care during ANC visit Satisfaction levels of the individual about care

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3 | AWW: Anganwadi workers, TBA: Traditional birth attendants ([Dai](#))

4 *The word Anganwadi means "courtyard shelter" in Hindi. They were started by the Indian government
5 in 1975 as part of the Integrated Child Development Services program to combat child hunger and
6 malnutrition.
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10 11 **Data analysis**

12 13 **Quantitative data**

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16 Data were analysed using Stata 11 (Stata Corporation, College Station, TX). Descriptive statistics
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18 were used to provide a cluster, household and individual level profiles of the study population.

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20 Household survey data were analysed accounting for clustering at the slum level to control for
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22 both inter and intra-cluster variance. We used principal component analysis to compute
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24 household Socioeconomic Scales (SES). Dwelling characteristics, household income and

25
26 household Socioeconomic Scales (SES). Dwelling characteristics, household income and

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28 household assets were included in this composite scale.[19] We used multi-~~variable~~ ~~teble~~ random
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30 effects logistic regression to estimate the association of demographic variables with home
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32 ~~births~~ ~~delivery~~. Crude and adjusted odds ratios were calculated with 95% confidence intervals.
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37 For data from RDWs, Pearson chi-squared was used for categorical variables and t-tests for
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39 comparison of continuous variables.
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43 44 **Qualitative data**

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47 Verbatim transcripts were prepared in a standardized format that included basic demographic
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49 information of the participants and the interviewer's own observations within one week of
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51 conduct of IDI/FGD. Transcripts were uploaded to a software Atlas ti 6.1 (Scientific
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55 Software Development, City West, Berlin) and coded line-by-line using detailed themes and
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57 sub-themes that emerged from the data. After an initial round of coding with a representative
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3 sample of transcripts, the list of codes that were generated was reviewed in order to develop a
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5 structured code list which was then applied to the remaining transcripts. Illustrative quotations
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8 [that captured the key issues reported by the participants from the transcripts](#) have been
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10 included in the results.

11 12 13 **RESULTS**

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17 Of the 6348 households in the three defined clusters, 6092 (96%) ~~households~~ were interviewed
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19 between December 2011 and March 2012, covering a total population of 32,034. Nine
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21 households refused to participate and 247 ~~households~~ did not respond (locked houses) (figure
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23 1). A total of 25 FGDs and 13 in-depth interviews were conducted in January and February
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25 2012. The number of respondents in each FGD ranged from 7-12 members.
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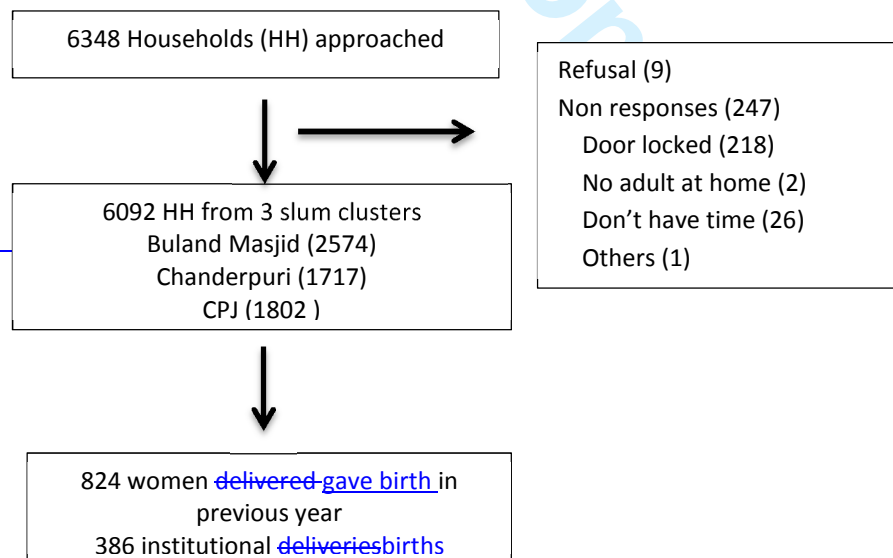
34 **Population and cluster characteristics**

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37 The adult male to female ratio was 1000:825. Fifty eight percent of the population were
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39 migrants from Uttar Pradesh (73%) and Bihar (16%). Eighty percent ~~of the population~~ were
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41 living in the same locality for > 5 years. Of the total population, women ~~of in~~ reproductive age
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43 (15-49 years) accounted for 25%, and 16.6% were under-5 children. The area was served by one
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45 referral hospital situated within a distance of 5kms, two outpatient dispensaries, 17 private
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47 clinics (registered and unregistered [with the Medical Council](#)) and one laboratory within the
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49 clusters. The areas also have access to two referral hospitals situated at distance of about 10
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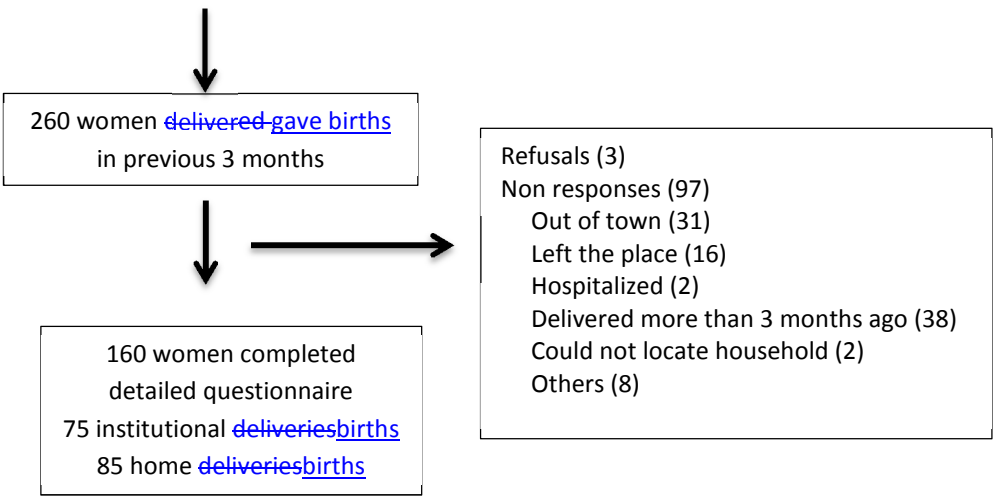
Household characteristics

The median family size was 5 (IQR 4, 7) predominantly living as nuclear families (79.4%) and 63% of houses were self-owned. The head of the household (HOH) was the one considered as the decision-maker but was not necessarily the primary wage earner ~~of the family~~. Fifty nine percent of HOHs were illiterate and were unskilled labourers. Ration cards, Below Poverty Line cards (BPL) and Rashtriya Swasthya Bima Yojna (RSBY) cards that are needed for claiming government run health schemes were possessed ~~only~~ by only 50%, 31% and 24% of households respectively. ~~The M~~majority of the households (82%) lived in single-roomed concrete houses ~~and~~ with cemented or tiled flooring. Most houses (95%) had access to toilets, within the household or community. A detailed socio-demographic profile of the study population is presented in *Table 2*. The household characteristics of the ~~subsample of~~ RDW and the overall population in the study area were similar indicating that our subsample households were representative of this area. Fifteen maternal deaths, 21 still-births and 41 under-5 child deaths were reported for the previous year. Of the total child deaths, 22 were in the neonatal period.

Figure 1: Quantitative survey sampling



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Table 2: Characteristics of households in the study area and households of women who delivered-gave birth in previous 3 months

Demographic characteristics	House to House survey (n=6092 HH from 3 clusters)	Recently <u>Delivered Mothers</u> who recently gave <u>birth-Women</u> (n=160)
Median HH size (IQR)	5(4,7)	5 (4,7)
Family type (%)		
Nuclear	4834(79.4)	115 (71.9)
Joint	944(15.5)	43 (26.9)
Extended	313 (5.1)	2 (1.3)
Spoken language (%)		
Hindi	5328 (87.5)	145 (90.6)
Urdu	624(10.2)	15 (9.4)
Others	140(3.2)	-
Religion (%)		
Hindu	1822(29.9)	42 (26.3)
Muslim	2475 (69.6)	118 (73.8)
Others	33(0.5)	-
Caste category (%)		
General	2546 (41.8)	77 (48.1)
Other Backward Caste	2553 (41.9)	58 (36.3)
Scheduled caste/Scheduled Tribe	932 (15.3)	22 (13.8)
Do not want to answer	4 (0.1)	-
Do not know	57 (0.9)	3 (1.9)
Illiterate women in reproductive age group (%)	(n= 8056) 4122(51.2)	85 (53.1)
Literacy level of HOH (%)		
Illiterate	3561(58.5)	93 (58.1)
Literate but no formal education	196(3.2)	4 (2.5)
Schooling	2129(36.4)	62 (38.8)
College	115(1.89)	1 (0.6)
Occupation of HOH (%)		
Unskilled	2805 (46.3)	77 (48.4)
Skilled	1378 (22.7)	36 (22.6)
Office work	867 (14.3)	19 (12)
Professional	55 (0.91)	-
Not working	955 (15.76)	27 (17)
Median HH income in INR (IQR)	4000(3000-6500)	4000 (3000-7000)
Median HH income in USD (IQR)	76.2(57.1- 123.8)	76.2 (57.1-133.5)
Own house (%)	3829 (62.9)	101 (63.1)
Ration card (%)		
Don't have	2994 (49.2)	91 (56.9)
White	1173 (19.3)	22 (13.8)
Yellow	1196 (19.6)	28 (17.5)
Pink	686 (11.3)	18 (11.3)
Do not want to answer	43 (0.7)	1 (0.6)

BPL card (%)	1903 (31.2)	47 (29.4)
RSBY card (%)	1461 (24)	36 (22.5)
% of HH who are staying in the current locality in years		
< 1	660 (10.8)	13 (8.1)
1-2	238 (3.9)	11 (6.9)
3-5	330 (5.4)	12 (7.5)
>5	4864 (79.8)	124 (77.5)
% belonging to Delhi	3572(57.49)	93 (58.1)
% of HH who migrated but living in Delhi		
< 1 year	261 (7.5)	2 (2.2)
1-2	123 (3.5)	3 (3.2)
3-5 years	195 (5.6)	2 (2.2)
>5 years	2920 (83.5)	86 (92.5)
Living conditions		
Concrete houses (%)	4826 (79.2)	125 (78.1)
Cemented floor (%)	5829 (95.7)	153 (95.6)
Houses with only one room	4978 (81.7)	124 (77.5)
% of HH with separate kitchen	1168 (19.2)	33 (20.6)
Fuel used for cooking (%)		
— Gas	3511 (57.6)	101 (63.1)
— Kerosene	1831 (30.1)	44 (27.5)
— Firewood	572 (9.4)	13 (8.1)
— Electricity	92 (1.5)	2 (1.2)
— Do not cook at home	86 (1.4)	-
Public source of drinking water (%) (handpump/ tanker/bore)	5102 (83.6)	132 (82.5)
Defecation facilities (%)		
— Toilet within house	4571 (75.1)	125 (78.1)
— Community/shared	1242 (20.4)	30 (18.8)
— Defecate in open	278 (4.6)	5 (3.1)
Socioeconomic categories* (%)		
Lowest	1,976(32.45)	53 (33.1)
Middle	2,077 (34.11)	53 (33.1)
Highest	2,036 (33.44)	54 (33.8)
	4350 (71.4)	112 (70)
	1557 (25.6)	46 (28.8)
	1054 (17.3)	29 (18.1)
	4403 (72.3)	115 (71.9)
Distance of HH from nearest Maternal Child Health care centre		
<5 km	4882 (80.1)	125 (78.1)
5-10 km	1550 (18.9)	29 (18.1)
>10 km	60 (1)	6 (3.8)

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3 HOH: Head of Houshold, BPL: Below Poverty Line card, RSBY: Rashtriya Swasthya Bhima Yojna(Health insurance
4 scheme)*The scale is a composite of house type, floor, house ownership, separate kitchen, TV, Refrigerator,
5 Mobile phone, washing machine, total HH income, Number of rooms by principal component analysis
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Place of ~~delivery~~ childbirth

Of the 824 women who gave birth in the previous year, 438 ~~delivered~~ were at home births [53.1%, 95%CI (49.1 - 56.6)] and of the remaining 386, 340 (88%) chose to give birth at a public hospital. Among the women who ~~delivered~~ gave birth in the previous 3 months (n=160), a similar proportion [53.1 %, 95% CI (45.0- 61.0)] ~~delivered at home~~ gave birth at home. Only 16.2% (12) of these mothers' availed cash incentive through JSY scheme (*table 3*). Thirty six (48%) went to hospital due to initiation of labour pains, 32% due to development of complications, and 6.7% reported the reason that they had crossed expected date of delivery. The individual who was most influential in the decision for delivering at a hospital was most often (48%) the women herself, followed by the husband (18.7%) or mother-in-law (17.3%). Irrespective of the place of delivery only 15% of these households were visited by an UChW health worker within 48hrs of delivery and only 30% of women visited a health care facility after ~~delivery~~ giving birth. Among those who gave birth in a facility ~~Most~~ (92%) were satisfied with the services provided at the hospital ~~during delivery~~. ~~Compared to women who delivered at a hospital, w~~ Women who ~~delivered~~ gave birth at home were more likely to be multiparous, less likely to avail ANC in a public hospital and visit a facility during the post-partum period (*table 3*).

Predictors of home ~~delivery~~ births

Among the 824 women who ~~delivered~~ gave birth in the previous year, the following demographic characteristics were significantly associated with ~~delivering at home~~ home births: Living in a rented house, low SES, low literacy of HOH, HOH being an unskilled labourer, migrants and multi-parity. Multi-parity [OR 1.96, 95% CI (1.44, 2.69)], literacy status of HOH [OR

0.71, 95%CI (0.53 0.97)] and migrant status [1.46, 95% CI (1.08, 1.97)] remained strong independent predictors of home [delivery births](#) in multivariate analysis (Table 4).

Table 3: Information on ANC and births obtained from recently delivered women

Characteristics*	Home deliveries births (n=85)	Institutional deliveries births (n=75)	p value
Mean age	24.7(4.31)	24.9(4.43)	0.79
>18yrs of age at marriage	72 (84.7)	64(85.3)	0.912
Mean family size	5.5(2.4)	5.5(2.3)	0.937
First child	15 (17.7)	26 (34.7)	0.014
Some ANC care	63 (74.1)	72 (96)	<0.0001
ANC at public hospital	41 (65)	61(84.7)	< 0.0001
ANC in first trimester	21 (33.33)	31 (43.1)	0.498
Some health problem during pregnancy	11 (17.5)	13 (18)	0.92
Satisfaction with ANC	46 (74.6)	65 (90.3)	0.046
Planned place of deliveriesbirth	73 (86)	66 (90.4)	0.38
Delivery-Birth conducted by Doctor/ Nurse	15 (17.7)	74 (98.7)	<0.0001
Home visitation by a community health worker	14 (16.5)	11 (14.7)	0.75
Post- delivery-partum visit to hospital	3 (3.53)	16 (21.33)	0.001

*All continuous variables are expressed as mean and one standard deviation; all proportions are expressed as percentages

Table 4: Predictors of home [delivery births](#)

Characteristics (n=824) 438: Home delivery births 386: Institutional delivery	p value (ignoring clustering)	Crude OR (95% CI), p value (accounted for clustering)	Adjusted* OR (95% CI), p value (LR test)
Buland Masjid CPJ Chaderpuri	<0.001	1 0.42(0.30, 0.59) 0.69 (0.49, 96)	<0.001
Birth order second and above	<0.001	2.12 (1.57, 2.87)	<0.001 1.96 (1.44, 2.69) <0.001
Lower SES Middle SES Highest SES	0.033	1 0.90 (0.64, 1.26) 0.70 (0.50 0.98)	0.68 0.96 (0.66, 1.406) 0.91 (0.60, 1.38)
Joint families	0.057	0.78 (0.57, 1.05)	0.102
Non-Muslims	0.004	0.77 (0.54, 1.1)	0.15 0.78 (0.54, 1.14) 0.21
Schooling of HOH	0.007	0.74 (0.55, 0.99)	0.04 0.71 (0.53 0.97) 0.031
Not working		1	0.063 1 0.2

Elementary job	0.024	1.63(1.08, 2.45)	1.54 (1, 2.38)
Skilled job		1.42 (0.92, 2.17)	1.40 (0.89, 2.21)
Own the house	0.004	0.76 (0.56, 1.02)	0.07 0.94 (0.65, 1.34) 0.72
Ration card possession	0.037	0.80 (0.60, 1.07)	0.14
Not belonging to Delhi	<0.001	1.61(1.21, 2.15)	0.001 1.46 (1.08, 1.97) 0.013

*Adjusted for house ownership, SES, literacy of HOH, Occupation of HOH, belonging to Delhi and birth order

Reasons for ~~delivering at home~~choosing home birth

The majority of home ~~deliveries~~births were pre-planned and 75% of these women had availed some ANC at a facility. Eighty two percent of the home ~~deliveries~~births were conducted by a traditional birth attendant (*Dai*). The results from the quantitative and qualitative data, showed a high level of concordance for the reasons for choosing ~~to deliver at~~ home births. Four major themes emerged as barriers to institutional ~~delivery~~births. Illustrative quotations from the transcripts are presented in *table 5*.

Table 5: Illustrative quotations ~~from the transcripts~~ for reasons for ~~delivering at~~ home birth

Fear and Embarrassment

"They prefer home deliveries as in many cases the doctor does not behave well with them. As soon as they enter, they are separated from their families. The doctor does not communicate to the relative if there is any complication. They stay for 1-2 days in the labour room; the relatives are outside they do not know what is happening. It is very scary for them. Also because of all these reasons, they will come only if it is life threatening. Even then they might prefer to go to someone who is local, who is more patient friendly, private practitioner who are non-judgemental who behave properly. They give more one to one care. They might not be qualified but it is more natural and human." **Senior gynaecologist, Public health facility**

"I'd prefer to have the baby at home. If you're in hospital, they don't even attempt to try for a natural birth. What's the use of having an operation if you can have a child the normal way? We get the check-ups done there, but we end up having the delivery at home". **Pregnant woman**

"If you tell them to put you in a closed room to get a check - up, they tell you to just lie down and get it done right there. It's humiliating; you can't help but feel embarrassed. And if you don't feel embarrassed, other people around you will. They tell you that if you feel ashamed, go to a private hospital. It's a matter of dignity. There are men walking around as well, if a man catches a glimpse, it can create trouble at home".-**Pregnant woman**

Prior experience with hospitals

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"I had gone recently with my sister to a hospital.....when I went there to deliver my baby, they just kept telling me 'keep pushing, keep pushing...' I got so scared I just left. I've had three children at home; I can manage a fourth the same way". **Recently delivered woman**

Other children

"I have small children. If I have to go to the hospital, I have to lock the house and take the children along. Then if she delivers in the hospital, she may be admitted for at least 2 or 3 days depending on the situation. Even if it is a normal delivery it is at least a 2 day stay. How do I manage in such situations? To avoid all this one hopes that if all is well it is better to deliver at home itself. We can all be at home and kids need not have to go anywhere. I can also go for work." **Husband of pregnant woman**

Opportunity costs

"Most of them earn daily wages, so they do not want to come to the hospital. They feel one day will go so they will lose their pay also...So the delivery can be at home if baby is okay. Male member does not want to involve himself in all these things, either if there is an elder woman in the house or neighbourhood who conducts the delivery...Even at the hospital they do not want to stay they say that they have to go to work, or how will they earn for tomorrow's food because they are working on daily wages.." **Senior gynaecologist, public health facility**

Fear and embarrassment

Fear and embarrassment associated with giving birth in hospitals was/were reported as the most important reasons for delivering/giving birth at home during FGDs and IDIs and was also reported as the key reason (35%) among the 85 RDW surveyed. Fear was due to being alone in unfamiliar surroundings and fear of surgical intervention. In addition to fear, women felt that it was embarrassing and uncomfortable for them to be in the presence of 'strangers' during a very vulnerable time. The lack of privacy coupled with the absence of any family member by their side was in stark contrast to the 'safe and reassuring environment' at their homes during the-child birthing process.

Prior experience with hospitals

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3 Prior experience of self, friends, neighbours or a family member played an important role in [the](#)
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5 [choice-choosing to deliver at](#) home or [in](#) hospital [births](#). Positive experiences reinforced the
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7 message that hospitals were a safe and welcoming place as opposed to negative experiences
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9 (such as, perceived improper care and rude behaviour of hospital staff). The health care
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11 providers interviewed indicated that high patient load at hospitals lead to lack of individual
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13 attention and inadequate care.

14 15 16 17 18 19 Domestic responsibilities

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21 Being in an unfamiliar neighbourhood, the absence of extended family to help with childcare
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23 and traditional lack of involvement of men in childcare made women reluctant to leave children
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25 at home and get admitted to hospital. In the survey, 10% of those who [had delivered at](#) home
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27 [births](#) cited lack of help with childcare as a reason.

28 29 30 31 32 33 Opportunity costs

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36 Though most services at the hospital were provided free of cost, opportunity costs in the form
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38 of lost wages for the earning member, cost of food for the family and travel, dissuaded some
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40 women from delivering in hospital. Although only 6% mentioned this as a reason in our survey,
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42 this emerged as [a](#) factor in [the](#) qualitative analysis. [However, direct costs were not one of the](#)
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44 [reasons cited for not opting for hospital births.](#)

45 46 47 48 49 50 51 52 **DISCUSSION**

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3 Our study showed a high prevalence of home [deliveries-births](#) conducted by [dais-TBA](#) among
4
5 the urban poor of north-east district of Delhi. Fear of surgical procedures, unfamiliarity with
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7 hospital surroundings, lack of help for childcare and loss of wages, were some of the reasons
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9 that drove women to choose home [deliverybirths](#). Other predictors of home [delivery-births](#)
10
11 were low literacy, higher parity and migrant status. Concordance between results derived from
12
13 qualitative and quantitative data lends greater credibility to these findings. [Figure 2 presents a](#)
14
15 [conceptual framework based on the study findings which could help us to design strategies for](#)
16
17 [some of the modifiable factors](#).
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22 The prevalence and reasons for home [deliveries-births](#) in our study was similar to that found in
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24 most other urban surveys [13 14 20-26] from India (*Table 6*). In the Mumbai slum study[25], the
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26 prevalence varied from 6-16% across 48 slum clusters. Tradition was the most important reason
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28 behind home [delivery-births](#) in this study. Apart from the predictors that we identified, poor
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30 housing, lack of water supply and hazardous location were associated with home [deliveries](#)
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32 [births](#) in the Mumbai study, indicating that apart from individual and household level factors,
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34 the type of neighbourhoods also played a role. One of the limitations of our study is that we
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36 could not evaluate cluster level predictors of home [delivery-births](#) as we included only three
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38 clusters in this study.
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47 Migrant status was one of the important determinants of home [delivery-births](#) in our study. [In](#)
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49 [an Aa](#) analyses using NFHS data, Singh et al[27] reported that urban poor migrants were at
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51 highest risk of unsafe [delivery-birthing](#) practices in contrast to non-poor, non-migrants who
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53 were at least risk. In our study sample almost 60% of the households were migrants from
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55 neighbouring states, [but-and](#) most [had-been](#) living in Delhi for more than 5 years. In spite of
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3 this, these households were less likely to possess ration, BPL or RSBY cards which are required
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5 for availing entitlements to healthcare.
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8 [Quality of care did not figure in the discussions as a factor for choosing home births. The quantitative](#)
9 [data also confirm that majority of women who visited hospital for ANC and for birthing were quite](#)
10 [satisfied with the services offered. We hypothesize that since the focus on facility based birthing and](#)
11 [offering free services to enable the same is comparatively new to the urban poor community, the](#)
12 [community has not reached the stage of assessing the quality of care and using that as a factor in](#)
13 [making a decision on where to deliver. Based on our observation of the facilities there is lot of scope for](#)
14 [improvement in the services being offered suggesting a gap between what level of services women](#)
15 [perceive they are entitled to, and what they actually receive.](#)
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28 The ~~dissatisfaction-discomfort~~ [of hospitals expressed by those who gave birth at home among](#)
29 [the care seekers that we observed](#) could be attributed to the overburdening of referral
30 hospitals [leading to lack of personalized care](#). Antenatal care is provided at dispensaries,
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32 maternal and child care centres (MCH), secondary level and referral hospitals. However, MCH
33 centres cater to deliveries of multigravida only, and all primigravida are referred to the
34 secondary level or referral hospitals leading to increased patient load at these centres.
35 Initiatives to decentralize care to reduce burden on referral hospitals by upgrading the MCH
36 centres has been rather slow. It might be possible that other supply-side issues could have also
37 contributed to this level of dissatisfaction, but due to delay in obtaining permissions, we were
38 unable to conduct facility assessment to identify the potential causes.
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53 **Table 6: Prevalence and reasons for home [delivery births](#) from urban surveys in India since**
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Author, year	Study area and target	Sample size and prevalence of	Reasons for home
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of publication (ref)	population/ Study design	home deliveries births	deliveries home births
Rahi et al, 2006 ¹⁷	One Urban slum in Delhi, Births recorded during April-June 2005, cross sectional survey	n= 82 births Home deliveries births= 56.1%	Not reported
Agarwal ¹⁸ et al, 2007	One urban slum in Delhi, Women who delivered last 1 year, Cross sectional survey	n= 82 Home deliveries births = 31.8%	Lack of awareness for need for check-up (27%) Lack of knowledge about service availability (17%) Long waiting time (22%) None to accompany (15%) Finance (12%) Fear of hospitals (7%) Family objections (2%)
DLHS Fact sheet (2007-8) ⁹	Delhi state in 2008 using multistage stratified probability sampling	n= 9689 households Home births Rural = 42.6% Urban = 29.9% Total = 30.8%	Not reported
Thind et al, 2008 ¹⁵	NFHS survey data from Maharashtra , cross sectional survey	n=1510 recent births Home deliveries births(overall) = 37% Only Urban = 15.3%	Predisposing factors Religion(Hindu), multiple births and caste
Agarwal S et al , 2010 ¹⁹	11 slums of Indore, MP, Cross sectional survey of mothers of infants(2004-06)	n= 312 Home births deliveries= 56.4%	Not reported
Das S, 2011 ²⁰	Mumbai slums from 6 municipal wards, surveillance study (2005-2007)	n= 10,754 births Home deliveries births =10%	Customary(28%) , No time to reach hospital(13%), no body to go along(8%), Fear(7%)
Dasgupta et al, 2006 ¹⁶	Rural and urban clusters in West Bengal from Birbhum district. Cross sectional survey, women who delivered in the last one year	n= 320 Home deliveries births (rural and urban combined) =51.88%	Not reported
Khan Z et al, 2009 ²¹	Periurban area of Aligarh, Uttar Pradesh	n=92 mother of infants Home deliveries births = 60%	Tradition (42%) Related to economics(31%)
Hazarika, 2009 ⁸	NFHS- 3 Delhi data, Cross sectional survey, women who delivered 6 months ago	n= 2420 (slum dwellers) Home deliveries births= 22.62%	Not reported

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3 Qualitative data from our study suggest that there was a lack of perceived risk among women
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5 and their family members. [According to the mothers and the family members who played an](#)
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7 [important role in decision making, the practice of giving birth at home was common and that](#)
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9 [they had witnessed their relatives doing well after doing the same. Priority](#) was given to other
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11 domestic responsibilities [and tradition](#) over safe [delivery births](#). This may have been particularly
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13 relevant among multiparous women.
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18 A low literacy level of the HOH was another important predictor indicating the need to raise
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20 awareness of safe birthing practices. The role of CHWs in improving maternal and neonatal
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22 health indicators by increasing awareness is well known.[28] Though the Delhi State Health
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24 Mission has deployed Accredited Social Health Activists (ASHA) in the urban areas replicating
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26 the rural model, a recent evaluation has shown several implementation gaps.[29]
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32 [Afsana et al from Bangladesh report that cost, fear of hospitals due to lack of privacy, unfamiliar](#)
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34 [surroundings and stigma attached to hospital delivery were key reasons for women to choose](#)
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36 [home births](#). [30] [While women](#) in our study [were spoke about](#) fear and embarrassment [as](#)
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38 [deterrents, direct costs associated with delivery and stigma attached to a hospital delivery were](#)
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40 [not mentioned as factors affecting their choice](#). Traditionally, Indian women [have gave](#)
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42 [birth delivered](#) at home [s](#)-surrounded by close family members. There is evidence to show that
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44 the support of a female relative during the birth process is beneficial and leads to better birth
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46 outcomes.[31] The state of Tamil Nadu has implemented a successful birth companion scheme
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48 through its public health system which addresses the issues of social support, fear and
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50 embarrassment.[32] This model provides a prototype that may be replicated, with suitable
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52 context-specific modifications, to address this important barrier to institutional deliveries.
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3 [In our study most births at home were conducted by Dai who lacked professional training in](#)
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5 [safe birthing practices. An extensive review by Bergstrom and Goodburn has shown that](#)
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7 [traditional birth attendants had no impact on any reduction in maternal mortality](#)[33]. [A meta-](#)
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9 [analysis of training birth attendants improved survival but the studies included in the review](#)
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11 [were from high mortality burden rural population and not urban population.](#) [34]Koblinsky et
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13 al[6] analysed national level data from several countries which reduced the MMR drastically
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15 since 1950 and showed that maternal deaths could be reduced by providing training to *dais* or
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17 professionals developing a partnership with *dais*, however it required [apart from political will,](#)
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19 effective outreach and referral mechanisms that support traditional system of birthing.
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21 Experiences from Malaysia and Sri Lanka show that, women are willing to move from home
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23 based to facility-based [delivery care](#) if transport and services are made free for all, improved
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25 awareness and also ensured quality of services at facilities.[6] [In India, currently there is no](#)
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27 [program at national scale for promoting or scaling up community based SBA. The National Rural](#)
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29 [Health Mission of Government of India has its main strategy for reduction in maternal mortality](#)
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31 [focused on facility based intra-partum care and provision of -Emergency Obstetrics -Care \(EmOC\).](#)
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40 Current initiatives by the government aimed at improving MCH indicators of the urban poor do
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42 not directly address some of the key elements identified in our study. Identification and
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44 mapping of the most vulnerable populations within the city, sensitization of health
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46 professionals to the needs and fears of women, improving reach of UCHW to the marginalized,
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48 empowering women with information regarding their healthcare entitlements, provision of
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50 BPL, ration and RSBY cards to the neediest are some of the key issues that need focused and
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52 aggressive implementation.
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3 It is important for health departments to strengthen the supply side, be more accessible to
4 those who need them the most and establish faith among the community. India needs to
5 explore innovative ways at all levels of care to make [birthingdelivery](#) practices safer. There is
6 hope that the urban health situation will improve in the coming years with the NUHM, if we
7 intervene at the individual, community, system and policy level. The ANCHUL project and
8 similar such endeavours all over the country will feed to provide innovative scalable strategies
9 for the betterment of our urban community.
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33 inputs from AHS and SZ. ND analysed the quantitative data and prepared the first draft of the
34 manuscript. SMG analysed the qualitative data and wrote the first draft of the qualitative
35 findings. GA₂ and A_HS supervised data collection and commented on drafts of the manuscript.
36 HN and AHS commented on drafts of the manuscript. SZ is the Principal Investigator of
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38 All authors contributed to critique and modification of the manuscript, read and approved the
39 final version. ND had full access to all the data in the study and had final responsibility for the
40 decision to submit for publication.
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23 the authors [and can be requested by emailing to niveditha@iiphd.org.](#)
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5 **Legends:**
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7 [Figure 1: Quantitative survey sampling](#)
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9 [Figure 2: Conceptual framework of factors leading to home births among urban poor](#)
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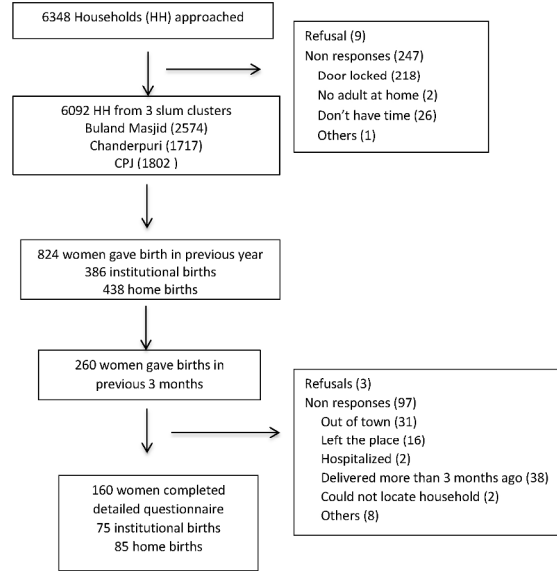
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For peer review only

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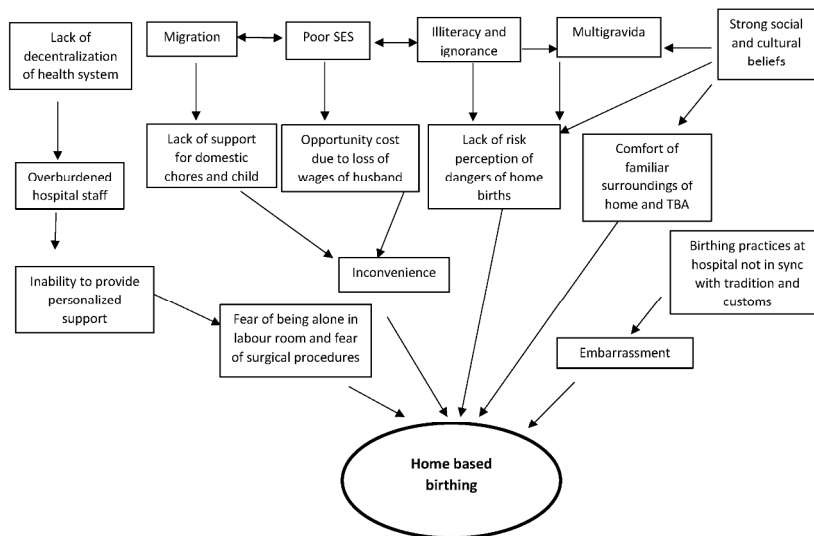
Figure 1: Quantitative survey sampling



Quantitative survey sampling
210x297mm (300 x 300 DPI)

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Figure 2: Conceptual framework of factors leading to home births among urban poor



Conceptual framework of factors leading to home births among urban poor
210x297mm (300 x 300 DPI)

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	2
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	7
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	7
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	8
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	9
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	NA
Bias	9	Describe any efforts to address potential sources of bias	10
Study size	10	Explain how the study size was arrived at	8
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	10
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	10
		(b) Describe any methods used to examine subgroups and interactions	NA
		(c) Explain how missing data were addressed	NA
		(d) If applicable, describe analytical methods taking account of sampling strategy	10
		(e) Describe any sensitivity analyses	NA
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	10
		(b) Give reasons for non-participation at each stage	10
		(c) Consider use of a flow diagram	Figure 1
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	11-12
		(b) Indicate number of participants with missing data for each variable of interest	NA
Outcome data	15*	Report numbers of outcome events or summary measures	13-14

1 2 3 4 5 6 7 8 9 10 11 12 13	Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	14
14 15 16 17 18 19 20 21 22			(b) Report category boundaries when continuous variables were categorized	14
23 24 25 26 27 28 29			(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	NA
	Discussion			
	Key results	18	Summarise key results with reference to study objectives	18
	Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	19
	Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	20
	Generalisability	21	Discuss the generalisability (external validity) of the study results	20
	Other information			
	Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	24

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.