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Women's Reproductive Health in Slum Populations in India: Evidence From NFHS-3

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ABSTRACT *The urban population in India is one of the largest in the world. Its unprecedented growth has resulted in a large section of the population living in abject poverty in overcrowded slums. There have been limited efforts to capture the health of people in urban slums. In the present study, we have used data collected during the National Family Health Survey-3 to provide a national representation of women's reproductive health in the slum population in India. We examined a sample of 4,827 women in the age group of 15–49 years to assess the association of the variable slum with selected reproductive health services. We have also tried to identify the sociodemographic factors that influence the utilization of these services among women in the slum communities. All analyses were stratified by slum/non-slum residence, and multivariate logistic regression was used to analyze the strength of association between key reproductive health services and relevant sociodemographic factors. We found that less than half of the women from the slum areas were currently using any contraceptive methods, and discontinuation rate was higher among these women. Sterilization was the most common method of contraception (25%). Use of contraceptives depended on the age, level of education, parity, and the knowledge of contraceptive methods ($p< 0.05$). There were significant differences in the two populations based on the timing and frequency of antenatal visits. The probability of ANC visits depended significantly on the level of education and economic status ($p<0.05$). We found that among slum women, the proportion of deliveries conducted by skilled attendants was low, and the percentage of home deliveries was high. The use of skilled delivery care was found to be significantly associated with age, level of education, economic status, parity, and prior antenatal visits ($p<0.05$). We found that women from slum areas depended on the government facilities for reproductive health services. Our findings suggest that significant differences in reproductive health outcomes exist among women from slum and non-slum communities in India. Efforts to progress towards the health MDGs and other national or international health targets may not be achieved without a focus on the urban slum population.*

KEYWORDS *Slum, India, National Family Health Survey-3, Contraception, Antenatal care, Skilled delivery care*

BACKGROUND

The urbanization of different parts of the world constitutes a major demographic issue of the twenty-first century. This is especially true for India where it is estimated that the urban population is one of the largest in the world. Urban India has 28% of the national population and is predicted to increase to 33% by 2026.[1] The

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unprecedented growth in the urban population in India has also resulted in a large section of the population living in abject poverty in overcrowded slums.

Globally, slums have been recognized as neglected communities with limited access to services. They are often characterized by deteriorated or poorly structured houses crowded together, poor environmental managements such as deficient access to safe drinking water and sanitation, stagnation of water, and poor drainage with excessive open sewers, excessive amount of uncollected rubbish, severe overcrowding, flies, and poor lighting.[2,3] These settings are compounded by inhabitation by migratory population living under stressful conditions.

In India, there has been an alarming increase in the slum population mostly due to the migration of the rural poor. It has been reported that the total slum population in India has doubled in the past two decades and has risen from 27.9 million in 1981 to 42.6 million in 2001. According to the 2001 Census, 640 cities and towns in India reported slums and the total slum population comprised 22.58% of the total urban population of the states/union territories reporting slums.[4]

Slums have often been conceptualized as social clusters that engender a distinct set of health problems.[5] The poor environmental condition coupled with high population density makes them a major reservoir for a wide spectrum of adverse health conditions such as undernutrition, delivery-related complications, postpartum morbidity, etc.[6–8] In India, there have been limited efforts to study the health of individuals especially women living in slums. Of the few studies that exist, most have reported considerable differences in the situation of reproductive and child health in between slum and non-slum areas. For instance, it has been reported that 74% of women in non-slum areas receive three or more ANC check-ups compared to only 55% of the women in slums. Similarly, while 78% of women living in non-slum areas report institutional delivery, the figure is only 65% for slum areas.[9] These disparities are probably the outcome of factors such as employment patterns, literacy levels, availability of health services, traditional customs, gender status, etc., which influence the use of reproductive health services.[6–10] However, the major limitation of most of these studies is that they have been confined to specific cities, and the findings cannot be generalized.

In the present study, we have used data collected during the National Family Health Survey-3 (NFHS-3) to provide a national representation of women's reproductive health in the slum population in India. The objective of the study is to examine the association of the variable slum (dichotomized as slum versus non-slum) with selected reproductive health services. We have also tried to identify the sociodemographic factors that influence the utilization of these services among women in the slum communities.

METHODOLOGY

Data Source

The data from 2005–2006 National Family Health Survey (NFHS-3) was analyzed in this study. NFHS-3 is a nationally representative, cross-sectional survey using a systematic, two-stage, cluster sample of households. In the survey, data on urban slums were collected from eight cities in India, including the four major metropolitan cities, which has been used for the present analysis. Areas designated as slums in the 2001 Census were used as the survey sample. Further details on sampling and basic descriptive statistics can be found in the final report of the NFHS-3 survey.[11]

The data during the survey were collected by visit to the selected households by the trained field staff. Structured questionnaires were administered, and a 5-year retrospective pregnancy history was obtained from women aged 15–49 years. The questionnaires administered during the survey covered topics including antenatal, delivery, postnatal care, reproductive history, contraceptive use, etc. To reduce recall bias, the subsample for this study is limited to only those who gave births in the 6 months preceding the survey, for which information was available on all variables. These criteria yielded a final subsample of 4,827 women.

Study Variables and Methods of Analysis

The first domain analyzed in this paper was the distribution of key sociodemographic variables among women living in the slum and non-slum areas. They are described using distribution frequencies of the data. The second domain of interest was knowledge, current use, and pattern of use of contraceptive methods in the two populations. The association between these variables and slum location of residence was assessed by using chi-square (χ^2) test. The third domain analyzed was antenatal care. The antenatal care services were defined in terms of frequency (coded 0, 1, 2, 3 visits or more), timing (initiation in the first, second, or third trimester of pregnancy), health personnel involved, and place of ANC services. The association of these variables with the slum and non-slum residence was also assessed using chi-square test. The fourth domain analyzed was delivery and postpartum care. This was analyzed in the present study, in terms of the type of birth attendant, place of delivery, and postpartum check-up. Chi-square test was used to analyze the above association. We then used multivariate logistic regression to identify factors that are associated with the use of the above reproductive health services, i.e., use of modern contraceptive methods; availing antenatal services defined as at least three ANC visits; and use of skilled birth attendants at delivery. The associations were analyzed after controlling for a set of social and demographic variables selected based on the review of the literature.[6–10]

Ethical Considerations

The survey was approved by the International Institute of Population Sciences ethical review board in India and the institutional review boards of the funding agencies and the technical assistance agency.[12] All individuals selected in the sample were asked to provide informed voluntary consent.

Statistical Analysis

The survey data were analyzed using the primary sampling units and national weights, for women, as determined by Demographic and Health Surveys (DHS). χ^2 test was used to calculate significant differences among proportions of categorical variables. All analyses in the present study were stratified by slum/non-slum residence. Multiple logistic regression was used to analyze the strength of association between key reproductive health services (e.g., use of contraceptives, antenatal check-ups, skilled delivery care, etc.) and relevant sociodemographic factors. The strength of association was estimated by calculating the odds ratios (OR) with 95% confidence intervals (CI). A p value of 0.05 was considered as statistically significant for all analyses. STATA for windows version 10.0 (Stata Corp. College Station, TX, USA) was used for the data analysis.

Results

In our study, 2,420 women were found to belong to slum areas (50.2%) and 2,407 women belonged to non-slum areas (49.8%). The mean age of the women in the slum and non-slum areas was 26.8±0.22 and 27.3±0.14 years, respectively.

The sociodemographic characteristic of the two populations is shown in Table 1. It was found that a higher proportion of the women from the slum areas belonged to the lower economic groups and also had lower levels of education. The economic

TABLE 1 Distribution of the sociodemographic variables among the slum and non-slum dwellers

Characteristics	Slum (n=2,420), (%)	Non-slum (n=2,407), (%)
Age		
15–24 years	34.69	29.69
25–34 years	56.83	62.21
35–44 years	8.24	7.93
45–49 years	0.24	0.17
Level of education		
No education	26.02	13.53
Primary	13.38	8.50
Secondary	52.59	49.38
Higher	8.01	28.59
Religion		
Hindu	67.77	77.13
Muslim	24.97	15.72
Christian	2.22	2.66
Sikh	0.81	1.56
Other	4.24	2.93
Caste/tribe		
Schedule caste	17.18	13.24
Schedule tribe	1.54	1.67
Other backward class	21.07	25.05
General	59.51	60.04
Do not know	0.71	0.00
Wealth index		
Poorest	0.61	0.16
Poor	3.24	1.96
Middle	15.26	6.67
Richer	40.04	23.24
Richest	40.85	67.98
Marital status		
Married	97.77	98.71
Widowed	0.81	0.44
Divorced	0.07	0.02
Separated	1.35	0.83
Age of marriage		
<18 years	45.87	28.95
18 years or more	54.13	71.05
Total no. of children ever born		
1	32.51	39.35
2	31.82	37.44
3 or more	35.67	23.2

groups defined in this study were based on the wealth index provided in the NFHS survey. It was interesting to note that more than four fifths of the slum population belonged to the upper two quintiles of the wealth index.

We also found a difference in the two populations based on the age of marriage and number of living children. Women from slums areas were more likely to marry before the legal age of marriage and also had higher number of children born to them.

In our study, we found that irrespective of the place of residence, a high proportion of our respondents had knowledge of contraceptive methods. However, it was found that a significantly lower proportion of women from the slum areas had ever used contraceptives. In fact, we found that less than half of the women from the slum areas were currently using any contraceptive methods.

Approximately one fourth of the slum women considered sterilization as the preferred method of contraception. The use of methods such as pills, IUDs, and condoms was not common among women from both slum and non-slum areas. Among the users of contraceptives, the pattern of use differed significantly between the two groups. We found that the discontinuation rate was higher among women from slum areas compared to non-slum areas. For the respondents for the slum areas who used contraceptives, the main source of the contraceptive was government pharmacies and clinics (Table 2).

Our analysis of the data for variables related to antenatal care services showed that there were significant differences between both the areas. While the proportion of women who had had antenatal check-ups was high irrespective of the place of residence; there were differences in the timing and frequency of the visits. A lower proportion of women from the slum communities attended antenatal services in the first trimester of pregnancy. There were also differences in the frequency of the visits. The proportion of women who had completed three or more antenatal visits was found to be lower in the slums. In both populations, doctors were the main provider of antenatal services followed by nurses. Even though most women from slum areas attended government facilities for antenatal check-ups, it was found that about 45% of the women attended private facilities (Table 3).

Our study found a significant difference in the use of skilled delivery care. A lower proportion of women from slum areas were found to use skilled attendants at birth (i.e., doctors, nurses, ANMs, and SNs). Also, the proportion of home deliveries was found to be significantly higher among women from slum areas. Among the subset of slum residents who delivered in facilities, it was found that both government and private facilities were commonly used. We also found a difference in the provision for post-partum check-ups in both the populations. A significantly lower proportion of women from the slum areas had received post-partum check-ups (Table 4).

We conducted a multivariate analysis to determine the factors that were associated with the use of these reproductive health services. Our analysis showed that the odds of using modern contraceptives were significantly lower among the slum residents compared to their non-slum counterparts (OR 0.56; $p<0.00$). We found that the factors that were significantly associated with the use of modern contraceptives included age, level of education, parity, and employment status. Factors such as religion, economic status, financial autonomy, and partner's education or occupation were not found to have a significant influence (Table 5).

We also conducted a multivariate analysis to identify the factors that have an influence on the use of antenatal services among slum women. For the purpose of the analysis, we defined use of antenatal services as receiving at least three antenatal

TABLE 2 Differences in knowledge, current use, source, and pattern of use of contraceptives

Characteristics	Slum ($n=2,420$), (%)	Non-slum ($n=2,407$), (%)
Knowledge of contraceptive methods		
Yes	99.6	99.9
No	0.40	0.10
Ever use of contraceptive method		
Never used	39.76	24.11
Only used folkloric methods	0.02	0.11
Only used traditional methods	4.57	6.66
Used modern methods	55.65	69.13
Current contraceptive method		
Not using	50.13	33.73
Pills	6.01	5.73
IUD	5.66	8.15
Condom	11.04	22.93
Sterilization	22.03	19.89
Abstinence/withdrawal	4.80	9.34
Others	0.33	0.24
Pattern of use (among ever users)		
Currently using	49.87	66.27
Used since last birth	4.11	5.15
Used before last birth	6.26	4.47
Not using	39.76	24.11
Source of contraceptives (among ever users)		
Govt. clinic/dispensary/health centre	20.61	18.81
Private clinic/facility/doctor	9.22	15.09
Drugstore/Pharmacy/Shop	4.17	11.87
Husband/Friend/Relative	3.54	10.67
Other	0.11	0.13
Missing[a]	5.45	9.58
Nonusers	50.13	33.73

Differences were found to be statistically significant at $p<0.05$ for all variables
[a]Observations missing ($n=366$)

check-ups. We found that women in slum areas were less likely to have completed the three ANC visits; however, the finding was not statistically significant (OR 0.94; $p=0.69$). We also found that among the slum women, the odds of completing the recommended number of ANC visits decreased with increased age. Christian and Sikh women, those with higher levels of education, and those employed had significantly higher odds of completing the required number of ANC visits, while women with higher parity had lower odds. We found that the partner's education or occupation was not associated with the odds of a woman completing the requisite ANC visits (Table 6).

We found that women in the slum areas were less likely to utilize the services of a skilled birth attendant at delivery; however, this finding was not found to be statistically significant (OR 0.83; $p=0.31$). We found that the use of skilled delivery care was significantly associated with age, level of education, economic status, parity, working status, financial autonomy, and prior antenatal visits. Similar to previous findings, we found that partner's education or occupation was not associated with the use of skilled attendants at birth (Table 7).

TABLE 3 Differences in number, timing, and providers for antenatal care

Characteristics	Slum ($n=2,420$), (%)	Non-slum ($n=2,407$), (%)
Antenatal check-up received[a]		
Yes	95.59	95.76
No	4.41	4.25
Timing of antenatal visits		
1st trimester	64.32	75.87
2nd trimester	23.48	20.62
3rd trimester	10.75	3.15
Do not know	1.45	0.36
No. of antenatal visits		
No visits	4.42	4.25
1	2.08	1.70
2	8.91	5.24
3+	83.54	87.45
Do not know	1.05	1.35
Antenatal service provider[a]		
Only doctor	78.06	76.27
Only nurse	4.50	3.91
Both doctor and nurse	11.67	14.96
Other	1.36	0.62
No one	4.41	4.25
Place of antenatal care		
Home	2.57	3.25
Govt. facilities/providers	48.04	37.75
Private facilities/providers	44.91	54.68
Other	0.00	0.03
No one	4.41	4.25

[a]Differences were not found to be statistically significant at $p<0.05$

Discussion

In India, the public healthcare system has focused primarily on rural areas. With the rapid urbanization that India has witnessed over the past decades, the public health problems in the country are increasingly assuming an urban dimension. This is

TABLE 4 Differences in delivery care

Characteristics	Slum ($n=2,420$), *n* (%)	Non-slum ($n=2,407$), *n* (%)
Birth attendants		
Skilled	79.61	86.35
Unskilled	20.09	13.36
No one	0.30	0.28
Place of delivery		
Home	22.62	15.57
Govt. facilities	42.68	37.09
Private facilities	34.70	47.34
Health check-up after delivery		
Yes	67.45	80.04
No	32.55	19.96

All differences were found to be statistically significant at $p\leq0.05$

TABLE 5 Factors that influence the use of modern contraceptives (*n*=4,827)

Characteristics	Odds ratio	95% CI	*p* Value
Place of residence			
Non-slum[a]			
Slum	0.56	0.44, 0.71	0.00
Age			
15–24 years[a]			
25–34 years	1.61	1.32, 1.98	0.00
35–44 years	1.17	0.76,1.79	0.47
45–54 years	0.33	0.06, 1.70	0.19
Religion			
Hindu[a]			
Muslim	0.70	0.51, 0.96	0.03
Christian	1.08	0.57, 2.05	0.80
Sikh	3.42	0.74, 15.85	0.12
Other	0.49	0.29, 0.83	0.008
Education level			
No education[a]			
Primary	1.55	1.06, 2.26	0.023
Secondary	2.11	1.59, 2.79	0.000
Higher	5.05	3.21, 7.93	0.000
Wealth index			
Poorest[a]			
Poorer	1.04	0.28, 3.85	0.95
Middle	1.28	0.33, 4.98	0.72
Rich	1.65	0.43, 6.41	0.47
Richest	1.84	0.47, 7.18	0.38
Parity			
One[a]			
Two	2.64	2.07, 3.37	0.000
Three or more	2.82	2.04, 3.89	0.000
Employment status			
Not employed[a]			
Employed	1.82	1.39, 2.38	0.000
Money for own use			
Not available[a]			
Available	1.18	0.96, 1.46	0.11
Partner's education			
No education[a]			
Primary	1.04	0.72, 1.50	0.85
Secondary	0.74	0.50, 1.09	0.13
Higher	0.86	0.52, 1.44	0.59
Partner's occupation			
Did not work[a]			
Professional, technical, managerial	4.03	1.61, 10.05	0.003
Clerical	2.33	0.93, 5.83	0.07
Sales	3.97	1.15, 7.62	0.02
Agric-employee	2.23	0.63, 7.87	0.21
Services	2.28	1.17, 7.04	0.02
Skilled and unskilled manual	2.63	1.04, 6.69	0.04

Adjusted for age (continuous variable), education level, religion, wealth index, parity, employment status, current marital status, desire for boys, financial autonomy, and partner's education and occupation

[a]Reference group

TABLE 6 Factors that influence the use of ANC services ($n=4,827$)

Characteristics	Odds ratio	95% CI	p Value
Place of residence			
Non-slum[a]			
Slum	0.94	0.68, 1.29	0.69
Age			
15–24 years[a]			
25–34 years	1.29	1.00, 1.66	0.05
35–44 years	1.14	0.75, 1.73	0.54
45–54 years	0.26	0.03, 2.28	0.22
Religion			
Hindu[a]			
Muslim	0.96	0.68, 1.35	0.81
Christian	5.46	1.81, 16.45	0.003
Sikh	18.54	2.34, 147.0	0.006
Other	1.88	0.19, 18.37	0.59
Education level			
No education[a]			
Primary	1.89	1.29, 2.77	0.001
Secondary	2.54	1.85, 3.49	0.000
Higher	3.11	1.78, 5.44	0.000
Wealth index			
Poorest[a]			
Poorer	1.03	0.29, 3.63	0.96
Middle	1.58	0.48, 5.15	0.45
Rich	2.57	0.79, 8.34	0.12
Richest	2.87	0.85, 9.68	0.09
Parity			
One[a]			
Two	0.90	0.64, 1.26	0.53
Three or more	0.45	0.33, 0.63	0.000
Employment status			
Not employed[a]			
Employed	1.42	1.05, 1.92	0.02
Money for own use			
Not available[a]			
Available	1.00	0.77, 1.31	0.99
Partner's education			
No education[a]			
Primary	1.26	0.83, 1.91	0.28
Secondary	1.42	0.99, 2.03	0.06
Higher	1.67	0.98, 2.85	0.06
Partner's occupation			
Did not work[a]			
Professional, technical, managerial	2.00	0.57, 7.05	0.28
Clerical	0.73	0.20, 2.64	0.63
Sales	1.44	0.34, 3.86	0.83
Agric-employee	0.74	0.17, 3.27	0.69
Services	1.09	0.32, 3.76	0.89
Skilled and unskilled manual	0.98	0.30, 3.19	0.97

Adjusted for age (continuous variable), education level, religion, wealth index, parity, employment status, current marital status, desire for boys, financial autonomy, and partner's education and occupation

[a]Reference group

TABLE 7 Factors that influence the use of skilled delivery care (n=4,827)

Characteristics	Odds ratio	95% CI	p Value
Place of residence			
Non-slum[a]			
Slum	0.83	0.58, 1.19	0.31
Age			
15–24 years[a]			
25–34 years	1.53	1.19, 1.97	0.001
35–44 years	1.93	1.18, 3.15	0.009
45–54 years[a]	0.74	0.07, 7.29	0.80
Religion			
Hindu[a]			
Muslim	0.77	0.51, 1.18	0.24
Christian	2.03	0.74, 5.56	0.17
Sikh	0.38	0.16, 0.90	0.03
Other	2.08	0.88, 4.94	0.10
Education level			
No education[a]			
Primary	1.59	1.11, 2.28	0.012
Secondary	3.55	2.71, 4.65	0.000
Higher	6.04	3.48, 10.49	0.000
Wealth index			
Poorest[a]			
Poorer	4.70	0.41, 54.02	0.21
Middle	7.96	0.74, 85.27	0.09
Rich	9.70	0.74, 85.27	0.06
Richest	12.46	1.16, 133.9	0.04
Parity			
One[a]			
Two	0.83	0.63, 1.09	0.19
Three or more	0.43	0.32, 0.57	0.00
Employment status			
Not employed			
Employed	1.56	1.11, 2.17	0.01
Money for own use			
Not available[a]			
Available	1.37	1.05, 1.78	0.02
Partner's education			
No education[a]			
Primary	1.03	0.67, 1.59	0.90
Secondary	1.24	0.86, 1.77	0.24
Higher	1.27	0.81, 2.00	0.29
Partner's occupation			
Did not work[a]			
Professional, technical, managerial	0.73	0.19, 2.77	0.64
Clerical	0.77	0.22, 2.80	0.70
Sales	0.66	0.19, 2.29	0.51
Agric-employee	0.53	0.12, 2.27	0.39
Services	0.75	0.22, 2.63	0.66
Skilled and unskilled manual	0.47	0.14, 1.60	0.23
ANC visits			
No[a]			
Yes	8.75	5.37, 14.27	0.000

Adjusted for age (continuous variable), education level, religion, wealth index, parity, and partner's education and occupation

[a]Reference group

especially true for the estimated one fourth of the urban population who live in slums. There are growing indications that this segment of urban India is more disadvantaged in various aspects of health and well-being.[13]

In our study, we found that there were differences in the socioeconomic conditions of the slum and non-slum communities. We found that women living in the slum communities were more likely to belong to lower economic groups and have lower levels of education. However, we also found that four fifths of our respondents from the slum areas belonged to the upper two quintiles of the wealth index (defined by DHS). This observation does raise concerns about the sensitivity of the DHS wealth index in identifying the true economic status of individuals living in slum areas. Even in the past, the index has been criticized for having an urban bias and for its inability to distinguish the poorest of the poor from other poor households.[14] This finding could have underplayed the heterogeneities in the socioeconomic conditions of the two populations in our study.

Previous studies have reported that both individual level socioeconomic and demographic factors like age, religion, caste, education, standard of living, place of residence, etc., along with community level factors play a role in the use of contraceptive methods.[15,16] Our results show that the use of contraceptives differed significantly between the slum and non-slum urban areas. Even though there were no differences in the knowledge about contraceptives between the two communities, we found that women residing in the slums were less likely to use modern contraceptives. This finding suggests that mere increase in the awareness in these communities does not translate into increased utilization. The low usage could be due to lack of access to services, risk misperceptions, negative social norms, and/or inability to negotiate the use of contraceptives with partners.

We found that among the users of contraceptives, sterilization was the most common method in the slum areas. The use of modern contraceptives such as pills, IUD, condoms, etc., was relatively uncommon. We found that for most users, the most common source of family planning services were the government facilities.

Our multivariate analysis showed that the use of contraceptives decreased with the age of the respondent, which is similar to previous reports and could be because younger women may have more modern attitudes towards healthcare use.[15] We also found that women with higher level of education were more likely to use contraceptives. This could be because increased educational attainment influences service use by increasing female decision-making power, increasing awareness of health services, changing marriage patterns, and creating shifts in household dynamics.[17] We found that while women with higher parity and those employed were more likely to use contraceptives, its use was not influenced by the economic status of the women. Also notable was the finding that partner characteristics such as education and occupation had no influence on the use of contraceptives. These findings are contrary to the findings of previous studies and require further exploration.[15,18]

Our study has shown that despite high ANC coverage in both populations, the proportion of slum women who had completed the recommended number of visits or who initiated the visit in the first trimester of pregnancy was low as compared to women from non-slum communities. We found that among the slum women, doctors and nurses were the common providers of antenatal services. These women were also more likely to attend government facilities for the antenatal check-ups. However, a high proportion of these women also attended private facilities for antenatal services. A possible explanation for the high use of private facilities among

slum women could be due to ineffective outreach, overcrowding of patients, and poor quality of services in the urban public health system.

Our multivariate analysis showed that several factors influence the use of antenatal services among slum women. We found strong linkages between education, wealth, and use of antenatal services. The finding suggests that both the variables probably serve as a proxy for information, cognitive skills, and values and possibly exert effect on health-seeking behavior through a number of pathways. The association between antenatal care and parity is in line with other studies. Women of high parity were less likely to initiate ANC on time or to make the recommended number of visits, presumably due to the assumption that they are experienced at the exercise.[19]

Our study also found differences in the use of skilled care during delivery among women from both communities. The proportion of deliveries assisted by skilled attendants was found to be lower among the women from slum areas. This finding could be due to lack of availability, poor access, or inability to afford the services of skilled attendants. The proportion of home delivery was also found to be higher among women from slum areas. The low utilization of delivery facilities by slum women has also been reported in previous studies.[6–8] In addition, while government facilities were commonly used for institutional deliveries, a high proportion of the women also reported the use of private facilities. This finding could again be due to the lack of availability of these services in government facilities, poor access, or poor quality of services. Our multivariate analysis of the factors associated with delivery care found that women with secondary or higher education were more likely to use skilled attendants at birth. We also found a strong linkage between use of antenatal care services and delivery care. Women reporting at least one ANC visits were more likely to seek skilled delivery care. This finding suggests that improving ANC coverage could be a potential strategy to increase the use of skilled health personnel at birth.

We found that one of the most important factors associated with the use of skilled care was the economic status of the women. The lack of use of skilled care by the poor in our study raises concerns about the awareness, availability, accessibility, quality, and cost involved. In this regard, it is expected that recent schemes such as the "Janani Suraksha Yojana" (a modification of the National Maternity Benefit Scheme) at national or state level initiatives such as the "Chiranjeevi Yojana" in Gujarat or the "Janani Suvidha Yojana" in Haryana, would be effective in removing some of the barriers and encourage the adoption of safe delivery practices.

An important finding from our study is the dependence of the slum women on the public health system for reproductive health services. This is not only encouraging but is also a concern as in India, it is widely recognized that urban health facilities are marred by inadequate medical and nonmedical manpower.[1] Previous reports have suggested that only about 77% of the Urban Family Welfare Centers and Urban Health Posts are fully functional.[20] These findings highlight the need to strengthen and revamp the existing urban public health system in India. The proposed National Urban Health Mission and the initiatives under it could be the step in the right direction.

The present study has several limitations. The study is based on data collected during the NFHS-3 survey which did not collect important information on the availability and access to reproductive health services in slum areas. Besides, the cross-sectional nature of the data does not allow examination of the causal association with the identified determinants and uptake of the services. Also, since

we do not know the sequence of events, some of the associations may be biased as the practice may have preceded their behavior pattern recorded in the survey.

CONCLUSION

India is facing an unprecedented increase in the growth of its urban population. This has posed as a significant challenge for the country as this growth has led to an increase in the number of slum dwellers with their associated health problems. Inability to reach this section of the population with health services could become an impediment in the country's progress towards the health MDGs.

Our study has shown that there are significant differences in the utilization pattern of reproductive health services among women in the slum and non-slum communities. The findings of this study call for focused and sustained efforts geared towards the promotion of the use of reproductive services in the slum communities. The much awaited National Urban Health Mission could provide the required impetus and an early rollout of the initiatives under the program is desired.

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