Trends in Maternal Care Utilization in Urban India: A Temporal Analysis

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Abstract

The present study attempts to observe the recent changes in the Indian health care utilization pattern based on secondary data from three National Sample Survey Organisation (NSSO) rounds. The study focuses on urban households across different classes of towns emphasizing the most recent births to married women within a recall of period 365 days. Three dimensions of maternal care services have been discussed in this study, namely, prenatal care services, delivery services and postnatal care services. It is found that the utilization of prenatal, postnatal and delivery services are positively correlated with the economic status of households as measured by the per capita monthly consumption expenditure (MPCE). It is also noted that the household educational and employment index are correlated with the level of prenatal and postnatal care utilization and the dimension of correlation is positive and statistically significant. But in case of delivery services the degree of correlation has changed from being highly positive to negative, specifically in case of household employment index.

This study also attempts to understand the changes in utilization of maternal health care services with respect to public health infrastructure. It is found that the use of public health facilities has significantly reduced over time. The correlation between household economic status and the use of public facilities for the prenatal, postnatal and delivery care present a strong negative and the degree of correlation becomes stronger over time. A similar dimension of association is found in the case of household educational index. It may be the improvement in utilizing public health infrastructure among households from the formal sector. The discrepancy in access to health facilities among different classes of cities can be cited as one of the reasons for lower utilization of maternal health care services. Such discrepancies are relatively lower in case of small towns especially in the case of delivery and prenatal care services.

时间序列分析：印度城市孕产妇护理利用的发展趋势

本研究试图在三轮NSSO二手数据的基础上，观察印度卫生服务利用模式的近期变化。研究关注不同层级的城镇居民家庭，强调研究对象是最近365天生产的已婚女性。孕产期护理服务的三个维度在本研究中进行了讨论，即：产前护理服务、分娩服务的利用和产后护理服务。研究发现，产前、产后和分娩护理服务的使用与家庭的经济状况显示出高度正相关，家庭经济状况通过人均月消费支出（MPCE）进行测量。研究也指出，家庭教育和就业指数均与产前和产后

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护理利用水平高度正相关。但这种相关度在分娩护理中变弱了，比如相关程度已经从高度正相关变成了负相关，特别是家庭就业指数与分娩护理利用的相关程度。

这项研究还试图了解关于公共卫生基础设施特别是孕产妇护理服务的变化。研究发现，对公共卫生设施的使用随着时间推移显著减少。家庭经济状况和产前、产后以及分娩期间对公共设施的使用之间呈现出较强的负相关。相关程度随着时间的推移增强。类似的相关性也体现在家庭教育指标里。这可能是居住在正式住宅中的家庭在利用公共卫生基础设施方面的改善。不同城市阶层之间的卫生设施获取差异性可以被视为孕产妇护理服务利用率低的原因之一。这种差异在小城镇，特别是分娩和产前护理服务的情况中，相对较低。

Keywords

Maternal care, urban health, utilization, prenatal care, post-natal care, correlation study

Introduction

Studies at national and international level have focused on the utilization of maternal health services and its determinants over a certain time span. Navaneetham and Dharmalingam (2002) examined utilization of maternal health care services which is associated with a range of reproductive, socio-economic factors along with state and type of health service. Chandhiok, Dhillon, Kambo and Saxena (2006) identified some determinants of antenatal care utilization in India in a cross-sectional study. They found that the degree of awareness of care during pregnancy and knowledge of pregnancy-related complications was associated with increased utilization of antenatal care services. Singh et al. (2014) found that along with individual-/household-level factors, community- and district-level factors are significant in determining the utilization pattern of maternal health care services. At the community level, the odds of maternal health care utilization were lower in rural areas and in communities with a high concentration of poor and illiterate women. Subba (2013) examined maternal complications in the eastern states of India and identified certain socio-economic factors that determine the utilization of health care services in the state of West Bengal. The analysis reveals that motherhood at a later age increases the probability of utilizing maternal health care services. Social groups, years of schooling, wealth index and place of residence also show significant relationship.

Desai, Wu and Joshi (2006) found the extensive regional variation in maternal health care utilization in India. Nanda, Adak and Bharati (2010) examined the existing pattern of maternal health care and the factors associated with the utilization of such care in the state of Tamil Nadu. Among social variables, religion, caste and education of women and their husbands are significantly associated with the utilization of maternal health care. Variables, such as, standard of living, age of women, her age at the time of marriage, order of pregnancy and exposure to electronic media are also significantly associated with maternal health care. Shah and Bélanger (2011) examined the effect of maternal characteristics on women's likelihood of using prenatal and delivery health care services among two groups of tribal women using National Family Health Surveys of India in two consecutive rounds. The study found that the tribal women in the northeastern states of India are more likely to utilize maternal health care facilities compared to those in the central states of the country. Women who work are less likely to utilize health care services. Ranganath and Poornima (2011) in a study in urban slums in Bangalore found that the lack of awareness among mothers is the main cause of underutilization of maternal health care services in the slums.

Datta and Manna (2012) found in a study in West Bengal that utilization of all the components of maternal health care was lower at a younger age or among those with lower education and those who belong to poorer household wealth index. Jose, Sarkar, Kumar and Kar (2014) attempted to identify the

factors contributing to improved coverage of maternal care services among the tribal women in Kerala and to indent the causes of differences in health care utilization between tribal and non-tribal areas. It is found that general awareness, affordability, accessibility, quality of services and motivation of health workers are major factors for utilization of health care facilities. It is also found that the lower levels of education and lack of transport facilities are prime factors contributing to underutilization by tribal women.

Based on the above literature, the study tries to establish, first, the patterns of variation in the maternal health care utilization across the socio-economic classes as well as the size class of towns/cities. Second, how the pattern of health care utilization has changed over the period and finally, the factors affecting maternal health care utilization in India.

Methodology and Database

The information has been aggregated by the size class of the town and the expenditure class. The study analyses the variation in utilization of maternal health care services with respect to small-, medium- and large-sized towns and economic classes in India. The analysis has been carried out through two approaches: (a) correlation analysis and (b) cross-tabulation analysis.

The unit records data have been aggregated using sample weight through a formal estimation process. How the poor are responding differently in the three data periods has been focused through a comparative cross-classification study across the three points in time (1986–1987, 1995–1996 and 2004). Households and the aggregate-level analysis depict how the gap between the rich and the poor is changing in terms of accessing maternal health care services in India especially among the urban households. The study attempts to identify the drawbacks of the present health care delivery system in comparison to the last two decades. Unit record data of three NSS rounds (42nd, 52nd and 60th) have been used in the present analysis. Unit record data of three NSS rounds (42nd, 52nd and 60th) have been used in the present analysis. The indicators relating to maternal health care utilization have been generated from the three dimensions of maternal health care, such as, prenatal care, postnatal care and the delivery services. In case of correlation matrix, some household-level index has been constructed. In case of postnatal care services, only the correlation matrix approaches have been analyzed.

Access to Prenatal Care Services

The present study focuses on the maternal health care utilization among urban households during the last two decades. Emphasis has been given to both prenatal care and delivery care services. An attempt has been made to understand the variation in utilizing prenatal care services across the different size class of towns/cities in India over the period 1986–2004. It is found that the percentage of pregnant women who received prenatal care services is relatively higher among the households of metropolitan cities in all three points of time. But the level of utilization of prenatal care services has increased at a faster rate in smaller towns (41.55 percentage point) than in metro cities (15.73 percentage point) in India.

At the same time, rural area has also recorded substantial improvement (46.8 per cent) in utilization of prenatal care services. The network of the Anganwadi workers at the grass-roots level has a significant contribution towards the increasing awareness among pregnant women for child immunization and prenatal care services. The Health and Family Welfare Department has also given some incentive to pregnant women who are below poverty level (BPL). All these initiatives have contributed to the increase in utilization of prenatal care services across different size class of towns in India (Table 1).

Table 1. Percentage of Pregnant Women Registered for Prenatal Care by Size Class of Towns in India (1986–1987, 1995–1996 and 2004)

	Pregnant Women Received Prenatal Care (Percentage)		
	1986–1987	1995–1996	2004
Small Town	39.82	59.08	81.37
Medium-Sized Town	47.55	63.11	84.21
Big Town	49.31	66.60	82.12
Metropolises	71.08	76.40	86.78
All Urban Areas	49.19	65.51	83.56
Rural Area	23.36	41.00	69.74
All India	28.95	45.49	72.77

Source: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004) (weighted estimate).

Both small and large towns have reported a substantial increase in accessing prenatal care services during the same time period. The association between the percentage of pregnant women receiving prenatal care and the size class of town shows a high and positive correlation and improving statistical significance throughout the three points of time. It means that the utilization of prenatal care services is more successful in larger towns when compared to small urban centres in India. Perhaps, higher women literacy rate has contributed to the higher rate of utilization of maternal care services in urban India (Appendix Table 1).

In post-liberalization era, the use of public facilities for maternal care especially prenatal care services has reduced significantly. It is interesting to note that the rate of utilization of public health facilities for prenatal care services has reduced marginally in small towns from 56.65 per cent in 1986–1987 to 54.4 per cent in 2004–2005, whereas in the case of metropolises, it has reduced from 55.7 per cent to 35.31 per cent. A similar pattern is observed in the case of bigger- and medium-sized towns in India. A sharp decline in the use of public health facilities for maternal health care services indicates the degradation in the quality of public health facilities in India. It further reflects very low demand from users. The use of public health facilities has increased significantly in the case of rural India. Perhaps, lack of formal health care facilities and availability of grass-roots level health workers has lead to an increase in the utilization rate of public facilities in case of maternal health care services in rural India (Table 2). In terms of the correlation matrix, it is found that that the rate of utilization of public facilities for prenatal care services depicts a strong negative correlation with different class of town/population size for the year 1995–1996 and 2004. It means that the use of public facilities is lower among those who are living in metro cities in comparison to smaller urban centres in India (Appendix Table 2).

The study also examines the changes in accessing prenatal care services across the expenditure quintile in India. It follows that pregnant women receiving prenatal care are relatively higher among the richest expenditure quintile in urban India. On the other hand, use of prenatal care services has increased at a faster rate among the poorest quintile compared to richer households in urban area. In case of rural area, prenatal care services have increased at a faster rate among the richest quintile compared to poorest expenditure quintile. For example, access to prenatal care services has increased by 46.38 percentage point in rural area.

The corresponding increase in urban areas is 34.37 percentage points over the period. It is an important fact that the richest expenditure quintile has reported a relatively higher degree (percentage) of access to prenatal care services when compared to the poorest group but their differences in change over time are

Table 2. Percentage of Pregnant Women Registered for Prenatal Care by Size Class of Towns in India (1986–1987, 1995–1996 and 2004)

	Pregnant Women Received Public Facility (Percentage)		
	1986–1987	1995–1996	2004
Small Town	56.65	60.42	54.40
Medium-Sized Town	60.28	48.39	45.82
Big Town	62.94	47.55	49.17
Metropolises	55.70	52.27	35.31
All Urban Areas	58.72	52.36	46.19
Rural Area	51.44	70.90	60.95
All India	54.68	64.57	57.23

Source: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004) (weighted estimates).

Table 3. Percentage of Pregnant Women Who Received Prenatal Care by Expenditure Quintiles and Sector in India (1986–1987, 1995–1996 and 2004)

	Rural			Urban			All India		
	1986–1987	1995–1996	2004	1986–1987	1995–1996	2004	1986–1987	1995–1996	2004
1st Quintile	18.54	34.76	63.10	44.23	44.00	70.58	21.06	35.40	63.54
2nd Quintile	22.32	39.99	70.76	34.34	57.44	74.32	23.87	42.28	71.14
3rd Quintile	23.16	45.46	71.67	39.87	64.62	79.65	26.36	49.43	73.77
4th Quintile	26.74	53.05	82.74	42.92	72.48	86.35	31.02	59.71	84.12
5th Quintile	34.23	67.32	82.60	65.77	78.67	91.81	50.09	74.45	89.20
Total	23.36	41.00	69.74	49.19	65.51	83.56	28.95	45.49	72.77

Source: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004) (weighted estimates).

negligible. The richest quintile has reported higher degree of access to prenatal care services when compared to lower expenditure quintile in all three points of time. The deferences in affordability may be the cause deferential access to prenatal care services among the rich and poor households in urban India. For example, the 4th quintile has reported an increase in access to prenatal care services by 56.47 percentage points in rural area, whereas in case of urban area, it has increased by 44.12 percentage point over the period. Therefore, in terms of percentage point changes, access to prenatal care services has increased marginally higher in rural area compared to its urban counterpart (Table 3). The study also established a statistically significant positive correlation between the economic status of the household with treated prenatal care cases throughout the three points of time. It means that access to prenatal services is higher among the richer households in urban India. Table 3 also reveals that the use of public facilities for prenatal care services is higher among the poorest expenditure quintile compared to the richest group in both the rural and urban India in all three points of time. It is an interesting fact that rural area has reported an increase in the use of public facilities for prenatal care by 9.51 percentage points, whereas in case of urban areas, it has decreased by 12.53 percentage points during the same period. In urban areas, it is found that exit of public facilities for prenatal care services has occurred at a faster rate when compared to the poorest quintiles (Table 4).

Table 4. Percentage of Prenatal Cases Using Public Facilities by Sector and Expenditure Quintiles in India (1986–1987, 1995–1996 and 2004)

	Rural			Urban			All India		
	1986–1987	1995–1996	2004	1986–1987	1995–1996	2004	1986–1987	1995–1996	2004
1st Quintile	57.24	81.74	66.49	65.29	72.40	70.68	59.53	80.52	66.76
2nd Quintile	56.90	71.17	60.98	69.51	67.68	66.21	60.09	70.33	61.57
3rd Quintile	51.28	69.22	57.85	67.43	61.32	52.80	56.98	66.67	56.42
4th Quintile	44.53	60.87	55.71	69.45	52.43	49.82	54.97	56.88	53.40
5th Quintile	49.64	50.16	45.07	47.60	31.15	26.56	48.24	36.99	31.41
Total	51.44	70.90	60.95	58.72	52.36	46.19	54.68	64.57	57.23

Source: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004) (weighted estimates).

The study further investigates the degree of association between the use of public facilities for prenatal care services and household economic status. It is found that the degree of association between the household economic status and use of public health facilities for prenatal care has shown a strong negative correlation and is statistically significant throughout the three data units (Appendix Table 2). It means that the use of public facilities for prenatal care services is lower among the richer households in urban India and this trend has in turn declined the use of public health facilities at a faster rate among the richer groups.

Access to Delivery Care Services

The present study also analyses access to delivery care services in three points of time across the expenditure quintile and different size class of urban centres in India. Table 5 reveals that the percentage of institutional delivery is higher among the households in metro cities and larger towns compared to small urban centres in India in all three points of time. But smaller- and medium-sized towns have reported faster increase in institutional delivery compared to the larger towns and metro cities. For example, the rate of institutional delivery has increased by 26 percentage points in smaller urban centres, whereas in case of metro cities, it has increased by only 17.12 percentage points over the same period (Table 5).

Table 5. Percentage of Institutional Childbirth by Size Class of Town in India (1986–1987, 1995–1996 and 2004)

	1986–1987	1995–1996	2004
Small Town	36.91	47.36	62.91
Medium-Sized Town	45.49	57.46	72.58
Big Town	51.08	63.37	74.07
Metropolitan Cities	70.82	74.45	87.94
All Urban Areas	48.02	59.37	74.01
Rural Area	13.5	17.89	34.82
All India	20.97	25.42	43.21

Source: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004) (weighted estimates).

Table 6. Percentage of Childbirth Using Public Facilities by Size Class of Towns Centre in India (1986–1987, 1995–1996 and 2004)

	1986–1987	1995–1996	2004
Small town	58.42	54.07	45.39
Medium-sized town	66.69	46.51	41.6
Big town	56.51	43.28	43.92
Metropolitan cities	59.71	48.28	37.47
All urban area	60.1	48.02	41.85
Rural area	64.76	59.25	52.33
All India	62.45	54.43	48.49

Source: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004) (weighted estimates).

The correlation between the percentage of institutional delivery and town size index is strongly positive and statistically significant throughout the three point of times (Appendix Table 4). It means that the rate of institutional delivery is higher among the metro cities and larger towns when compared to smaller urban centres in India. If data collection would have been carried out in the post NRHM implementation period, there were chances of getting different findings.

Table 6 reveals that the use of public facilities for delivery care is higher among small- and medium-sized towns when compared to large metropolitan cities in all three points of time. Despite the increase in institutional delivery, the percentage use of public facilities has reduced substantially over the period. For example, use of public facilities for institutional delivery has reduced by 18.25 percentage points in urban India on an average and the figure is closer to larger towns. However, the use of public facilities for delivery services has reduced by 25.09 percentage points in medium-sized towns during the same period. The corresponding decline in metro cities is 22.24 percentage points.

Therefore, like curative care, the use of public facilities for maternity care has reduced significantly during the last 18 years especially before the latest survey. In metropolitan cities and medium-sized towns, the private health sector is quite well developed and they provide quality health care services to people. Those who can afford the private facilities avoid visiting public health institutions for delivery care due to differences in the quality of care provided in such places (Table 6).

The correlation between the use of public facilities for delivery care and the class of town/population size exhibits strong negative and statistically significant throughout the three points of time (Appendix Table 4). It shows that the utilization of public facilities for delivery care is lower among the households who live in metro cities and larger town compared to smaller urban centres in India.

The study further examines the degree of association between the rates of institutional delivery with economic status of the households. Table 7 reveals that the percentage of institutional delivery is higher among the richer expenditure quintile in urban India in all three points of time. For example, institutional delivery among the 4th richest quintile has increased by 36.62 percentage points in urban India. But surprisingly, the urban richest quintile has reported an increase in institutional delivery only by 22.45 percentage points. The corresponding increase among the urban poorest quintile is 18.81 percentage points over the same period. But on an average, urban India presents a higher degree of institutional delivery compared to the rural areas in all three points of time.

It is a fact that during the last 10 years, both the central and the state government have emphasized on the rural health care sector. Besides, there is a three-tier rural health care institution in India along with significant numbers of health workers at the grass-roots level. The effective performance of these health

Table 7. Percentage of Institutional Delivery by Expenditure Quintile and Sector in India (1986–1987, 1995–1996 and 2004)

	Rural			Urban			All India		
	1986–1987	1995–1996	2004	1986–1987	1995–1996	2004	1986–1987	1995–1996	2004
1st Quintile	8.11	9.87	23.85	33.20	37.71	52.01	10.57	11.94	25.50
2nd Quintile	11.14	18.65	34.57	30.75	49.60	64.08	13.67	22.84	38.01
3rd Quintile	13.02	26.06	43.78	37.53	55.99	65.19	17.72	32.62	49.69
4th Quintile	17.06	33.69	54.73	39.81	69.14	76.43	23.08	46.82	63.55
5th Quintile	29.45	57.24	78.49	70.88	85.17	93.33	50.29	74.81	89.63
Total	13.50	18.52	34.82	48.02	60.78	74.01	20.97	26.26	43.21

Source: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004) (weighted estimates).

workers has helped to achieve better performance in the rural health sector compared to urban centres (Table 7).

The study also reveals a strong positive correlation between the monthly per capita consumption expenditure in a household and the percentage of institutional delivery which represents that the level of institutional delivery is relatively higher among the richer households in both rural and urban areas in all points of time (Appendix Table 3).

Table 8 represents the changes in use of public hospital for delivery services across the consumption expenditure quintile in India. It is found that the use of public facilities for delivery care is relatively higher among the households of the poorest expenditure quintile across all three points of time. The preference for public hospitals for delivery care has decreased at a faster rate among the households of richest quintiles compared to the poorest group in urban India over the same period. The percentage of childbirth in public hospitals has decreased by 29.03 percentage point among the richest households in urban India, whereas the poorest quintiles have reported a marginal increase in the use of public hospital for delivery care. It is a fact that the poorest bottom 20 per cent households in urban India cannot access costlier private facilities because of low affordability of health care services. On the other hand, use of

Table 8. Percentage of Public Health Facilities Used for Childbirth by Expenditure Quintile and Sectors in India

	Rural			Urban			All India		
	1986–1987	1995–1996	2004	1986–1987	1995–1996	2004	1986–1987	1995–1996	2004
1st Quintile	72.27	72.79	66.22	72.76	68.45	72.98	72.42	71.74	67.02
2nd Quintile	70.61	65.37	58.02	75.92	64.97	58.49	72.12	65.25	58.11
3rd Quintile	66.66	53.39	46.84	69.14	55.97	51.23	67.65	54.36	48.43
4th Quintile	62.23	50.95	36.55	71.50	45.95	47.06	66.49	48.20	41.69
5th Quintile	54.23	36.82	19.49	48.03	27.72	19.00	49.82	30.29	19.10
Total	64.76	59.25	52.33	60.10	48.02	41.85	62.45	54.43	48.49

Source: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004) (weighted estimates).

Note: For the estimation of childbirth ratio in public health institution, total institutional childbirth has been used as the denominator.

public facilities has decreased among the richest quintile in rural area by 34.74 percentage points which is higher than the urban richest quintiles. Therefore, the exit of public facilities in case of delivery care services is lower among the poorest quintiles compared to the richer sections in urban India. It is quite natural that richer people would always prefer private facilities for both the curative and maternal care because of qualitative perception over public health care services. Besides, the affordability in accessing private facilities is also higher among the richer households.

The correlation between the economic status of households and use of public facilities for delivery care is found to be strongly negative and statistically significant throughout the three points of time (Appendix Table 4). It implies that the use of public facilities for institutional delivery is lower among the richer households in urban India. This scenario gradually worsened over time. However, the information was collected just before the implementation of National Rural Health Mission in 2005. Therefore, the present findings were not influenced by the NRHM programme implementations in rural area.

Access to Postnatal Care Services

The present study also assesses the changes in the utilization of postnatal care services over the period 1986–1987 to 2004–2005. The extent of the utilization of postnatal care services is highly correlated with the economic, educational and employment status of a household. The rate of utilization is much higher among the richer households having higher educational status. But in the case of employment index, the degree of correlation changes from positive significant to positive insignificant level. It represents that employment status gradually becomes irrelevant in case of utilization of postnatal care services. Similarly, the household state of residence index, class of cities/population size and household size were highly correlated with the utilization of postnatal care services in the first 2 years but gradually became insignificant from 2004–2005 onwards. It means that the impact of class of town, population size, per capita net state domestic product (NSDP) gradually became irrelevant in the utilization of postnatal care services among the urban households in India. It is also observed that the ratio of adult educated female members in the household is highly correlated with utilization of postnatal care services. It is because educated females can help to increase the degree of utilization of postnatal care services.

The study also examines the utilization of public health facilities in urban India. It is found that utilization of public health facilities for postnatal care services has reduced drastically over the period and the rate of decline is higher among the rich and educated households in urban areas. Similarly, the rate of utilization of prenatal care services especially in public health facilities is found to be higher in small towns when compared to medium and the large cities in India in all the points of time.

Conclusions

The economic reforms have adversely affected the Indian health sector. The public health sector has seen a drastic reform over the last 18 years (from 1986–2004). As far as maternal care is concerned, it is found that the percentage of pregnant women who received prenatal care services is relatively higher among the households of metropolitan cities at all points of time. But the level of utilization of prenatal care services has increased at a faster rate in smaller towns when compared to metro cities.

The association between the percentage of pregnant women who received prenatal care and the size class of town is observed as strongly positive and statistically significant throughout the three points of time. Thus, the utilization of prenatal care services is more successful in larger towns in comparison to small urban centres in India. In the post-liberalization era, the use of public facilities for the maternal care especially prenatal services has reduced significantly. It is interesting to note that the rate of utilization of public health facilities for prenatal care services has reduced marginally in small towns. Also, demand for prenatal services has rapidly increased among the poorest quintile when compared to richer households in urban areas. It means that access to prenatal care is higher among the richer households in urban India. The study also reveals that the use of public facilities for prenatal care services is higher among the poorest expenditure quintile compared to richest group in urban India at all points of time. The use of public facilities for prenatal care services is lower among the richer households in urban India and has also declined at a faster rate among the richest expenditure quintile. The percentage of institutional delivery is relatively higher among the households in metro cities and large towns in comparison to small urban centres. But small- and medium-sized towns have reported a faster increase in institutional delivery. Therefore, the use of public facilities for delivery care is higher among the smaller- and medium-sized towns than the larger and metropolitan cities. Like curative care, use of public facilities for maternity care has reduced significantly during the last 18 years before the latest survey. In metropolitan cities and medium-sized town, the private health sector has developed and is providing quality health care to people. Those who can afford the private facilities do not visit public health facilities for delivery care due to differences in the qualitative perception over the services. Usage of public facilities for delivery care is found to be lower among the households in metro cities and larger towns compared to smaller urban centres in India. So, the rich poor conferences in utilization of public facilitates for maternal health care services has increased significantly in the post reform period in urban India.

Appendix

Correlation Matrix Table 1. Coefficient of Correlation of Percentage of Pregnant Women Who Received Prenatal Care with Select Indicators (Urban India)

	1986–1987	1995–1996	2004
Per Capita MPCE	0.125(**)	0.220(**)	0.129(**)
Household Educational Index	0.364(**)	0.297(**)	0.234(**)
Household Employment Index	0.177(**)	0.028(**)	–0.035
Population Size/Class of Town/Cities	0.285(**)	0.150(**)	0.078(**)
Household State of Residence Index	0.337(**)	0.288(**)	0.126(**)
Household Size	0.053(**)	0.065(**)	0.017
Ratio of Adult Educated Female Member (Above 18 years) in Households	0.319(**)	0.122(**)	0.209(**)
Female-Headed Household	0.042(**)	0.046(**)	0.018

Source: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004).

Correlation Matrix Table 2. Coefficient of Correlation of Pregnant Women Who Received Prenatal Care from Public Facilities with Select Indicators (Urban India)

	1986–1987	1995–1996	2004
Per Capita MPCE	−0.112(**)	−0.264(**)	−0.199(**)
Household Educational Index	−0.131(**)	−0.267(**)	−0.238(**)
Household Employment Index	−0.015	−0.022	0.059(**)
Population Size/Class of Town/Cities	−0.026	−0.132(**)	−0.113(**)
Household State of Residence Index	−0.069(**)	−0.129(**)	0.009
Ratio of Adult Educated Female Member (Above 18 years qualified) in Households	−0.107(**)	−0.123(**)	−0.223(**)
Female-Headed Household	−0.012	−0.006	−0.001

Sources: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004).

Correlation Matrix Table 3. Coefficient of Correlation of Percentage of Institutional Childbirth with Select Indicators (Urban India)

	1986–1987	1995–1996	2004
Per Capita MPCE	0.171(**)	0.280(**)	0.237(**)
Household Educational Index	0.408(**)	0.387(**)	0.350(**)
Household Employment Index	0.200(**)	0.023(*)	−0.004
Population Size/Class of Town/Cities	0.361(**)	0.220(**)	0.155(**)
Household State of Residence Index	0.242(**)	0.277(**)	0.222(**)
Household Size	0.041(**)	0.041(**)	0.076(**)
Ratio of Adult Educated Female Member (Above 18 years qualified) in Households	0.365(**)	0.187(**)	0.316(**)
Female-Headed Household	0.031(**)	0.058(**)	0.029

Source: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004).
Note: The indicators percentage of childbirth assisted by the medical attendant and percentage of institutional childbirth are different things. In NSS 60th round, the percentage of institutional childbirth can be created as per the questionnaire but in 52nd round both the indicators can be created as per the schedule.

Correlation Matrix Table 4. Coefficient of Correlation of Mother Giving Childbirth in Public Facilities. (0,1) with Select Indicators (urban India)

	1986–1987	1995–1996	2004
Per Capita MPCE	−0.077(**)	−0.254(**)	−0.257(**)
Household Educational Index	−0.232(**)	−0.251(**)	−0.290(**)
Household Employment Index	−0.081(**)	0.003	0.066(**)
Population Size/Class of Town/Cities	−0.094(**)	−0.124(**)	−0.086(**)
Household State of Residence Index	−0.161(**)	−0.142(**)	0.023
Ratio of Adult Educated Female Member (Above 18 years qualified) in Households	−0.193(**)	−0.099(**)	−0.237(**)
Female headed household	0.011	−0.017	0.024

Source: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004).

Correlation Matrix Table 5. Coefficient of Correlation of Percentage of New Mother Receiving Postnatal Care with Select Indicators (urban India)

	1986–1987	1995–1996	2004
Per Capita MPCE	0.084(**)	0.172(**)	0.131(**)
Household Educational Index	0.220(**)	0.212(**)	0.181(**)
Household Employment Index	0.099(**)	0.041(**)	0.028
Population Size/Class of Town	0.146(**)	0.092(**)	0.039
Household State of Residence Index	0.234(**)	0.166(**)	0.025
Household Size	0.037(**)	0.039(**)	0.009
Ratio of Adult Educated Female Member (Above 18 years qualified) in Households	0.194(**)	0.091(**)	0.172(**)
Female-Headed Household	0.027(*)	0.024(*)	0.029

Source: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004).

Correlation Matrix Table 6. Coefficient of Correlation of Percentage of New Mother Receiving Postnatal Care from Public Health Facilities with Select Indicators (urban India)

Mother Received Postnatal Care from Public Facilities. (0,1)			
	Urban India		
	1986–1987	1995–1996	2004
Per Capita MPCE	−0.012	−0.258(**)	−0.122(**)
Household Educational Index	−0.104(**)	−0.254(**)	−0.165(**)
Household Employment Index	−0.023	0.000	0.022
Population Size/Class of Town	−0.031	−0.126(**)	−0.066(**)
Household State of Residence Index	−0.031	−0.131(**)	0.089(**)
HH Size	0.036	0.017	0.030
Ratio of Adult Educated Female Member (Above 18 years) in Households	−0.116(**)	−0.140(**)	−0.157(**)
Female-Headed Household	−0.021	−0.016	0.035

Source: NSSO unit record data of 42nd (1986–1987), 52nd (1995–1996) and 60th round (2004).

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