# Intra-Urban Differentials in Utilization of Reproductive and Child Health Care Services in India, 1992-05

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***Abstract:*** *This paper examines intra-urban differentials in selected reproductive and child health care indicators in India and selected states, using data from three rounds of National Family Health Survey. The composite wealth index is computed based on economic proxies, separately for the urban sample and classified the population into poor and non-poor. Results indicate that estimates of poor and non-poor are quite reliable. It is found that antenatal care, safe delivery and immunization coverage has increased over the periods, among poor and non-poor in India and states with stark poor and non-poor differences. Interestingly, coverage of immunization was higher in rural areas than urban poor cutting across the states. Along with other factors, the poverty status of households is a significant determinant of utilization of reproductive and child health care services. Decomposition analysis reports that over 15 percent of the improvements in utilization of such services are attributable to the reduction of poverty across the states.*

## Introduction

Many of the developing countries including India are experiencing rapid growth in the urban population. During the 1975 and 2000 the population growth was 58 percent in the urban areas of developing countries and this figure is expected to reach 90 percent between 2000 and 2025 (United, Nations 2000). According to the population projection (medium variant), the urban population of developing countries were 2 billion in 2005 and expected to reach 4 billion by 2030. The urban populations of developing countries are growing at a rate of 4 percent per annum, while the rural population growth rate has fallen below 2 percent per annum, between 2000 and 2010. As a result, the share of urban population in total has increased rapidly over the periods. For instance it was only, 16 percent by 1950, 39 percent in 1981, and 50 percent in 2005 and expected to cross 60 percent by 2050 (United Nations, World Urbanization Prospects, 2007).

The urbanization in India is following the similar pattern likewise developing countries. In India the share of urban population in total has increased from 17 percent in 1951 to 28 percent in 2001 equating to 285 million populations (Census of India, 2001). Moreover the share of urban population is expected to reach 41 percent in 2030 and 56 percent in 2050. The urban population in the country is growing faster and will continue its pace with stark urban-rural differentials. For instance the urban population will grow at a rate of 2.5 percent per annum, whereas in rural areas it will go down below 1 percent per annum during 2010-2020 (United Nations, World Urbanization Prospects, 2007).

Although urbanization has increased many folds during the decades, there is large variation in level and trends among the states. A number of factors such as rapid development of infrastructure, industrial growth and consequent growth in employment are attributable to the urbanization in India. But specifically it is characterized more by combine effect of natural increase and a large extent of rural to urban migration (Bhagat, 2005). Due to widespread poverty, indebtness, and underemployment in rural areas, a higher volume of young people migrate from rural to urban areas to obtain jobs and schooling that are concentrated in towns and cities. As a result, urban areas are experiencing an unprecedented increase in numbers of adolescents following the decline of mortality and fertility.

In the developing countries the rapid growing urban population is synonymous of the growth of urban poverty (Wratten, 1995). According to World Bank estimates, during 1985 there were 330 million urban poor in the developing countries. The World Health Organization (WHO) and the United Nations Centre for Human Settlements estimates of 1990, 600 million urban dweller (42%) of the urban population in developing countries were living in "life and home threatening" surroundings. According to the United Nations Population Fund (1996) 27.7 percent urban dwellers of developing countries' were living in poverty. In India the similar pattern has been observed. For instance according to estimates of Planning Commission, Government of India, 33 per cent of urban population was living below poverty line in 1993-94. According to the same estimates 26 per cent of urban population was living below poverty line in 2004-05 in the country. Therefore it is evident that whatever the exact figure, a large proportion of the urban population in developing countries live in urban slums which are typically overcrowded, polluted and dangerous and lack of basic services such as clean water and sanitation and which are exposed to infectious diseases. Therefore the health of urban population, particularly of urban poor is a major concern, because a part from the unhygienic and health threatening surroundings, the limited access to health care make urban poor more likely, both to get sick and suffer prolonged periods of illness.

However, until the late 1970s and early 1980s, urbanization was viewed invariably beneficial for improved health status as it resulted in better access to health services. Accordingly the declarations and policies are mainly focused to improve the health of rural communities. The basic argument was that the majority of the developing countries populations lived in rural areas and urban groups were perceived as homogenous in terms of economic and health status (Rossi-Espagnet, 1984). But in 1980s and 1990s various researches revealed a great diversity in the extent of and depth of poverty within the urban sector in developing countries and argued to promote urban primary health care. For instance, the consequences of urban poverty on child health have been well documented during the periods (Harpham et al. 1988; Bradley et al. 1992; Timaeus and Lush; Atkinson et al 1996; Brockerhoff and Brenan 1998; UNICEF 2002). These studies revealed common research findings that the gap in health status is remarkably large between the poor and better-off.

Most of the multi-countries studies indicate that the utilization of maternal and child health care services largely varied from rural areas to urban poor and non-poor. However, the urban poor receive better antenatal care and service delivery care than rural residents but the care of urban poor was worse than non-poor (Wagstaff, 2002; Monica et al. 2003; Montgomery et al. 2005; Monica Magadi 2007). More interestingly, a study by Ellen Van de Poel et al. (2007) using the micro-data from Demographic Health Survey (DHS) for 47 developing countries, documented the magnitude of rural-urban disparities and rich–poor inequalities in child nutritional status and under-5 mortality. The findings of the study indicate that the urban poor have higher rates of stunting and mortality than their rural counterparts.

A part from the poverty, other contributing factors to poor health among the urban poor is the low awareness & practice of recommended health practices and high cost of health facility and accessibility (Mulgaonkar et al. 1994; Sarin, 1997). In very large cities; the slums in which the poor lives are often inaccessible to health-care workers. Many other factors, combined with the cost of health services in urban areas, lead to inadequate maternal health care for poor mothers. Thus, there are many obstacles to the maintenance of good maternal health in urban areas, obstacles unique to urban settings and that particularly affect the poor (Brockerhoff and Biddlecom 1999).

However there is a lack of comparative research on differentials in utilization of reproductive and child health care services in urban areas of developing countries, even the urban population of developing world is growing rapidly as well as the size of reproductive age population increasing simultaneously. In addition a number of literatures documented an urban-rural dichotomy in child health and survival and the utilization of maternal health care in developing countries (Madise and Diamond 1996, Stephenson 1998). This gap in research is very scanty in Indian context. In India several studies have highlighted the growing rich-poor gap in utilization of basic Reproductive and Child Health (RCH) services (Chattopadhyay and Roy; 2005, Singh, & Singh, 2007; Mohanty & Pathak, 2008). But little is known about the emerging inequality and differentials in utilization of such RCH services between urban socio-economic groups (Sen 1994; Harpham 1998). Further, health programmes and policies have been directed for the improvement of health status and utilization of primary health care of rural population. For example, the National Rural Health Mission was initially planned for rural India and excludes the urban India.

While in India the urban population is quite diverse with respect to economic, social and health status. The urbanization is an emerging demographic phenomenon in India, where only just more than one fourth of total population living in urban areas. More ever the urbanization pattern varies from a greater extent among the states (50% in Goa to 9% in Himachal Pradesh, Census of India 2001). Even in many of the states hardly one third of total population live in urban areas. Therefore there are greater prospects of urbanization in India and its states in coming future. Although the proportion of urban population is less in the countriy but in terms of size of urban population, it is the fourth largest country after China, Indonesia and America.

The urbanization in India is unique as it attracts large rural-urban migration to the large cities. Generally, these migrants are deprived and marginalized section of urban population. The increasing cost of health care services makes health services unaffordable for these poor and marginalized. Moreover the weaker family support networks of urban poor tend to have worse RCH outcomes than those who have lived in urban areas for a long time. In addition to this, many of the growing epidemics hit the urban centre first and affect the poor most. Thus there are many obstacles to the maintenance of good maternal and child health in urban areas particularly of urban poor. As the inequity in health poses a major challenge to achieve the Millennium Development Goals, particularly those related to maternal and child health as existing programs are often not able to reach the most needy. Therefore, assessment of the coverage of disadvantaged populations under reproductive and child health programs should receive priority.

Considering the need, this paper focus on the urban poor- women and children which are identified based on modified indicators. Further, the differentials in selected reproductive and child health indicators are examined among poor and non-poor for urban India and its selected states. Moreover the status of urban poor is also compared with rural residence to examine whether urban poor is better than rural total or not. The analysis has been carried out for India and its major twelve states, as these states contribute more that 80 percent (Census of India, 2001) of

total urban population as well as similar proportion of urban poor according to recent estimates (Planning Commission, 2004-05).

## Data and Methods

### *Data*

Data for the present paper is gleaned from three successive rounds of National Family Health Surveys (NFHS) conducted during 1992-05. The large scaled population based survey is in similar line with other Demographic and Health Surveys and covers a wide range of topics such as fertility, mortality, family planning, maternal and child health, nutritional status and other issues. NFHS is national representative survey, and covered its all states which comprise almost 99 percent of total population of India during all three rounds. Survey applies probability based sampling separately for urban and rural population at the national level. With regard to urban sample, first National Family Health Survey (1992-93) collected information from 28,822 households and 27,534 women in age group 13-49 and on 11,359 children born four years preceding the survey. During the second round (1998-99), the information was collected from 30,686 households, 28,055 women (15-49) and on 8,533 children born three years preceding the survey from urban areas. Whereas, the third round of the survey (2005-06) collected information on 50,236 households, 56,961 unmarried and married women (15-49) and on 14,303 children five years preceding the survey from urban area.

### *Identification of urban poor and non-poor*

The first challenge in such study starts with how to define urban poor? In India, the NSSO provides the estimates of urban poor based on consumption expenditure data on a periodical basis. According to the recent estimates (2004-05), about 26 percent of urban populations in the country are living below poverty line (Planning Commission, 2007). However, these estimates are often debated and revised. Also, the health domain covered under the various NSS rounds of survey is limited. Alternatively, the data obtained from various rounds of DHS (in India known as NFHS) are useful to understanding the health situation of urban population. The DHS data set provides information on household facilities, housing characteristics and consumer durables. Using these proxy indicators to assess the economic status at the household level has been a standard practices (Montgomery et al. 2000; Vyas & Kumaranayake, 2006). The composite index based on economic proxy broadly captures the economic differentials in different domain, but has certain limitations.

The first two rounds of NFHS in India provided the composite wealth index, known as standard of living index (SLI) based on arbitrary scoring of the selected household assets and amenities (IIPS and ORC Macro, 1992, 2000). In third round of NFHS, the wealth index based on 33 variables was computed using the Principle Component Analysis and divided into five quintiles (IIPS & ORC Macro, 2005). However, the wealth index so constructed is subject to limitations such as: *i)* it gives equal weights to rural and urban areas in spite of large differentials in economic status in urban and rural areas, while recent study indicates that when wealth index computed separately for urban and rural areas, depicts a different health estimates (Mohanty, 2009) *ii)* index is distributed into 5 quintiles and does not give the true cutoff point for poor *iii)* Some of the variables used in the wealth index are questionable.

As a departure, a unique wealth index is constructed for the urban India & states and identifies the urban poor consistent with the poverty estimates of planning commission. These estimates are derived at three different periods and identify the poor. As a first step, composite wealth index has been computed using a set of consumer durables, household amenities and housing qualities only from urban samples for India and states for all three periods. The variables used (Appendix 1) in

computation of wealth index are based on theoretical rationale and statistical significance. The theoretical rationale refers to the sensitiveness of the variables to poor. For example, the variables like cot/bed, mattress and watch differs largely in quality and price. Further the variable of ownership of agricultural land is not included in the analysis because of limited utility in urban areas. For statistical significance, a descriptive analysis has been carried out for all the available variables, related to economic aspect of household. The variables with higher frequencies and lower standard deviation (closer to zero) are not included in the analysis. Because the standard deviation having zero value indicates that all households own this particular variables or no households own this variables. For example it is found that more than 90 percent of urban households have chair during all three rounds of surveys, therefore this variable is excluded from the analysis (table not shown).

Using the Principle Component Analysis (PCA), a wealth index is compute based on selected variables only from urban sample separately for India and its states. In such cases the analysis has been carried out applying the national weight for India and state weight for states. In the first step, all selected variables have been re-coded into binary forms (i.e. 1= yes and 0= no). In the second step, the PCA is used to derive the factor score and for generating eigenvalue (variance). The derived factor score has been used as a weight for each selected variables and the asset index has been sorted. In the third step, the cumulative population is derived using household size (de jure population). In the fourth step, a percentile (100 percent distribution) is obtained on the cumulative population.

*Cut off point of poor and non-poor*

The cutoff point to demarcate the poor and non-poor is equated with the officially accepted estimates derived from consumption data by Planning Commission, Government of India, close to the survey period. The implicit assumption is that the consumption poor are also asset poor. Accordingly, about 26 percent for 2005-06 are classified as urban poor, equivalent to planning commission estimate of 2004-05. Similarly 28 percent for 1999-2000 and 38 percent for 1993-94 are classified as poor for second and first round of NFHS respectively. It may be further mentioned that while the earlier rounds provided the estimates based on MRP, the 2004-05 provided both in MRP and URP. To make the estimates comparable, the ratio of MRP and URP for the period 2004-05 is used. The ratio is multiplied with the MRP estimates of 1993-94 and 1999-2000 to derive the URP. States specific poverty estimates are used to identify the urban poor for selected states.

The reliability of computed index is tested by robustness and alpha-test. Robustness of the estimates indicates that asset index produces very similar classification of urban poor when different subsets of variables are used in its construction (Montgomery et al. 2000). The percentage of households classified as poor when all variables are used compared with indices based on (1) housing quality, sanitation facility, numbers of rooms (2) consumers durables (i.e. motorcycle, refrigerator etc.) and (3) stable variables (electricity, bank account, landline phone),etc. Result shows that although the percentage of poor varies when the sets of variables change, but in any case more than 50 percent population remains under poor categories during all three periods. During 2005-06, the rank correlation coefficient compared the degree to which two methods produces the same ranking of households. The correlation coefficient of index constructed using all variables and index constructed using only housing quality is 0.82 and with index that uses only consumer durables is 0.66 (Appendix 2). Similar pattern is found for the states (not shown). Reliability of the estimates has been tested by alpha-test. Result of alpha value is given in Appendix 3. Higher alpha values are evident for the estimates. For instance, in India

the alpha value is 0.86, 0.84 and 0.87 during 1992-93, 1998-99 and 2005-06 respectively, which indicates that the estimates are quite reliable. Similar results are observed for the selected states.

After defining the urban poor the three indicators of reproductive and child health care are analyzed-antenatal care, safe delivery and full immunization. All three rounds of survey collected information on antenatal care with varying reference period. Therefore to make the estimates comparable, the Antenatal care of last pregnancy has been computed for all the three periods. The full antenatal care is defined as minimum of three ANC visits with at least two tetanus toxoid injection and taken iron folic tablets or syrup for at least two month. The safe delivery is assessed as any institutional or home delivery assisted by doctor/nurse/or any health personal. Again to overcome the reference periods only the safe delivery for last three births has been considered. The indicator of child health care used in the analysis is full immunization. The full immunization is computed for children aged 12-23 months who received all six doses of childhood immunization i.e. one dose of BCG and three doses of DPT and three doses of Polio and one dose of measles (as it is international standard). Again to avoid the variations in reference periods the immunization coverage is estimated only for last three births during all three periods.

*Method of Analysis*

Descriptive statistics has been carried out for three groups of population (women and child), namely urban poor, urban non-poor and rural total for India and selected states for all three periods. The main purpose is to determine whether the substantial differentials exist between the urban poor and non-poor in the selected maternal and child health indicators. Chi-square test has been applied on these statistics to understand the significant association between health care services and poverty. As India is a huge country, where cultural practices of maternal health care varies across the states, therefore our intention is to examine the differentials in such RCH services within the urban setup of states, rather than cross-states comparison. Cross-tabulation has been used to examine that whether the dependent variables vary according to poverty status among different socio-demographic groups. The analysis has been carried out only for India for all three periods.

Rich-poor ratio has been calculated to understand the relative differentials in maternal and child health indicators between the groups. Analysis has been carried out for India and all selected states for all three periods. Further economic inequality in antenatal care, safe delivery and immunization coverage is measured using the concentration index recently introduced by Erreygers (2006). Concentration index indicates the degree to which the selected variables are disproportionately concentrated among non-poor (as dependent variables are service utilization and associated with better economic status).

The descriptive analysis is followed by multivariate analysis to examine the effect of economic status and residence on maternal and child health indicators, after adjusting the effects of age, parity, exposure to mass media, education status, working status, religion and caste as other important confounders. As our three dependent variables have binary category, therefore binary logistic regression has been carried out to examine the odds of antenatal care, safe delivery and full immunization coverage. Analysis has been carried out for India and states for all three periods.

Finally, to understand the effect of poverty reduction in improvements of reproductive and child health care utilization over the periods, proportional decomposition analysis which is recently introduced by Srinivasan & Mohanty (2008) has been carried out. Because the main focus of the paper is to assess the differences in maternal and child health care utilization due to poverty status, therefore it is necessary to examine that how much improvement in particular service exists due to reduction of poverty level, as poverty level has reduced over the periods. The analysis has been

carried only for all three periods i. e. for NFHS-1(1992-93), NFHS-2 (1998-99) and NFHS-3 (2005-06). For convenient the duration between NFHS-1 and NFHS-2 has been stated as 1992-98 and NFHS-2 and NFHS-3 has been as 1998-05, while NFHS-1 and NFHS-3 has as 1992-05. The Principle Component Analysis, bivariate and multivariate analysis has been carried out using the STATA 8 statistical package.

## Results

### *1. Descriptive analysis*

*Variation in urban poverty across the states:* Extent of urban poverty and number of urban women and child for India and its 12 states for all three periods of time are given in table 1. The proportion of poor varies substantially across the states, over the periods with respect to level of urbanization. It is observed that percent urban poor in the country has reduced during last 13 years. While in 1992-93 almost two-fifths (38%) of urban population were poor, it has reduced up to one-fourth (26%) in 2005-06. The similar results are observed across the states.

**Table 1. Distribution of urban children and women by level of deprivation in India and its selected states, 1992-05.**

| | Percentage poor based on URP | | | N (Urban) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1992-93 | | 1998-99 | | 2005-06 | |
| | 1992-93 | 1998-99 | 2005-06 | Children | Women | Children | Women | Children | Women |
| Maharashtra | 39.03 | 29.77 | 32.20 | 814 | 1678 | 991 | 3176 | 1956 | 6366 |
| Karnataka | 48.11 | 30.26 | 32.60 | 667 | 1429 | 393 | 1503 | 748 | 2274 |
| Uttar Pradesh | 41.18 | 35.94 | 30.60 | 1335 | 2282 | 691 | 1806 | 2359 | 5114 |
| Rajasthan | 35.70 | 23.24 | 32.90 | 451 | 994 | 598 | 191 | 506 | 1361 |
| Gujarat | 35.90 | 20.07 | 13.00 | 599 | 1328 | 488 | 1655 | 570 | 1580 |
| Madhya Pradesh | 51.83 | 41.18 | 42.10 | 803 | 1455 | 649 | 1827 | 1257 | 3373 |
| Kerala | 30.24 | 24.97 | 20.20 | 411 | 1198 | 169 | 845 | 324 | 1246 |
| Tamil Nadu | 46.96 | 26.11 | 22.20 | 606 | 1360 | 594 | 2101 | 896 | 3191 |
| Andhra Pradesh | 53.47 | 37.15 | 28.00 | 444 | 1087 | 299 | 1065 | 1432 | 4564 |
| Orissa | 45.77 | 47.08 | 44.30 | 581 | 1043 | 269 | 867 | 431 | 1373 |
| West Bengal | 29.61 | 19.64 | 14.80 | 373 | 897 | 433 | 1938 | 926 | 3641 |
| Bihar | 41.30 | 39.40 | 34.60 | 681 | 1247 | 243 | 684 | 705 | 1486 |
| India | 38.22 | 27.97 | 25.70 | 12996 | 27236 | 8517 | 27985 | 19387 | 56662 |

**URP-Uniform Recall Periods**

In case of some states like Maharashtra, Karnataka, Rajasthan and Madhya Pradesh, the proportion of urban poor has slightly increased during 1998-05. The possible reason may be that in case of initial stage of urbanization, due to the rapid increase in urban population growth urban areas are witnessing massive strain on labour market, and on the availability of shelter, infrastructure and services. Therefore the existing deficits might have increased the proportion and numbers of persons without access to productive employment, shelter and services and lead to a large scale marginalized and deprived in the states.

The sample size of urban women and children has declined from NFHS 1 to NFHS 2, this is because of the changes in reference periods. For instance in the first round of NFHS the information for last five births in last 4 years, while in second round information is collected for only last three years.

*Antenatal care*

Antenatal care during pregnancy helps in monitoring the health of mother, growth of fetus and pregnancy complications that may results in safe motherhood. Accordingly, World Health Organizations (1994) recommended antenatal care as key goal under its Safe Motherhood Program. In India the Reproductive and Child Health program recommended at least three antenatal check-ups with consuming, iron and folic acid prophylaxis for 60 days and at least two tetanus injections of pregnant women during pregnancy (Ministry of Health and Family Welfare, 2005). All rounds of NFHS collected information on antenatal care with varying reference period. Therefore to make the estimates comparable, the ANC of last pregnancy has been used for all the three periods.

Table 3 shows that antenatal care has increased among urban poor and non poor in India in last 13 years. For example antenatal care of pregnant women has increased from 38 percent to 49 percent among poor compared to 66 percent to 70 percent among non-poor. As urban poor performed better than non-poor, but hardly half of poor women avail such services. Moreover the gap between poor and non-poor remained stark over the period, although the urban poor are in better position that the rural residence.

**Table 2. Antenatal care for urban poor, urban non-poor and rural residents for India and its selected states, 1992-05.**

| | 1992-93 | | | 1998-99 | | | 2005-06 | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Urban poor** | **Urban non-poor** | **Rural** | **Urban poor** | **Urban non-poor** | **Rural** | **Urban poor** | **Urban non-poor** | **Rural** |
| Maharashtra | 46.5 | 70.0 | 45.3 | 59.6 | 74.2 | 47.2 | 56.4 | 76.4 | 55.5 |
| Karnataka | 54.8 | 84.9 | 57.6 | 49.5 | 81.2 | 57.1 | 55.4 | 89.5 | 53.2 |
| Uttar Pradesh | 15.6 | 35.3 | 11.9 | 16.1 | 43.0 | 6.2 | 17.0 | 50.3 | 17.0 |
| Rajasthan | 12.5 | 44.6 | 10.7 | 12.7 | 38.3 | 12.6 | 41.5 | 79.5 | 25.6 |
| Gujarat | 42.1 | 79.9 | 45.1 | 34.7 | 76.8 | 41.0 | 52.7 | 79.4 | 49.5 |
| Madhya Pradesh | 32.4 | 63.6 | 17.3 | 25.3 | 52.9 | 15.3 | 33.2 | 65.2 | 26.9 |
| Kerala | 88.6 | 85.5 | 84.5 | 79.6 | 83.7 | 84.6 | 81.3 | 86.6 | 80.6 |
| Tamil Nadu | 78.8 | 88.0 | 73.5 | 74.4 | 91.5 | 83.8 | 79.3 | 93.8 | 82.8 |
| Andhra Pradesh | 58.7 | 73.5 | 59.7 | 60.1 | 80.0 | 58.3 | 62.0 | 82.2 | 64.6 |
| Orissa | 30.5 | 61.3 | 22.9 | 33.6 | 67.5 | 38.7 | 56.8 | 86.5 | 52.7 |
| West Bengal | 36.2 | 75.2 | 33.1 | 63.3 | 72.3 | 38.1 | 57.5 | 80.1 | 46.5 |
| Bihar | 8.9 | 47.2 | 23.1 | 20.1 | 51.2 | 19.1 | 18.5 | 65.3 | 19.2 |
| India | 37.7 | 66.5 | 27.7 | 39.3 | 65.2 | 29.5 | 48.6 | 70.0 | 34.6 |

Result shows different picture among the states. Substantial differences are observed among urban poor and non-poor in case of antenatal care utilization cutting across the states irrespective of time. More interestingly, in the states of Uttar Pradesh, Madhya Pradesh, Bihar, Andhra Pradesh, Kerala and Tamil Nadu antenatal care has continuously increased among non-poor, while it has declined (Kerala) or stagnated among the urban poor, resulting large disparities between the groups. In the states of Maharashtra and West Bengal, coverage of antenatal care has declined between 1998-05, while it has substantially increased among non-poor. Result reflects that among the states, where deprivation level is comparatively high the coverage of antenatal care is far from

universal, particularly among the urban poor. For example in case of Uttar Pradesh (17.0%), Bihar (18.5%), Madhya Pradesh (33.2%) and Rajasthan (41.5%) hardly one third of urban poor women availed the antenatal care in 2005-06.

While it is assumed that the sources of antenatal care are located closer to most of the urban population than their rural counterpart and urban population can better afford to use them. But result shows that the proportion of women receiving antenatal care for their last birth does not differ substantially for urban poor and rural women, cutting across the states particularly in 2005-06. For instance it is 56% and 55% in Maharashtra, 55% and 53% in Karnataka, 52% and 49% in Gujarat, 81% and 80% in Kerala and 56% and 52% in Orissa respectively for urban poor and rural women in 2005-06. More interestingly the states like Andhra Pradesh and Bihar, the rural women are slightly better than urban poor in case of antenatal care utilization.

*Safe delivery*

Safe delivery is important for the health of both the mother and newborn. Considering the need, in India it has been recommended as an important issue of Reproductive and Child Health Programme to encourage deliveries in proper hygienic conditions under the supervision of trained health professionals. To promote the safe delivery, recently Janani Suraksha Yojana has been launched to provide the referral transport, maternity benefit scheme. Different rounds of NFHS collected information from mother that where she gave the birth and whether the birth is assisted by any health professionals. The same information is used in the present study for analysis.

**Table 3. Safe delivery for urban poor, urban non-poor and rural residents in India and its selected states, 1992-05.**

| | 1992-93 | | | 1998-99 | | | 2005-06 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Urban poor | Urban non-poor | Rural | Urban poor | Urban non-poor | Rural | Urban poor | Urban non-poor | Rural |
| Maharashtra | 64.1 | 88.4 | 36.5 | 60.8 | 80.8 | 43.6 | 72.8 | 93.7 | 57.7 |
| Karnataka | 57.1 | 87.4 | 34.8 | 78.1 | 89.1 | 46.9 | 70.2 | 96.6 | 62.2 |
| Uttar Pradesh | 20.1 | 55.5 | 11.3 | 24.9 | 64.1 | 16.8 | 20.8 | 63.0 | 22.9 |
| Rajasthan | 18.3 | 51.8 | 14.7 | 40.4 | 68.0 | 29.0 | 50.0 | 90.7 | 34.3 |
| Gujarat | 36.3 | 79.6 | 33.3 | 48.6 | 79.0 | 41.6 | 63.6 | 87.7 | 54.1 |
| Madhya Pradesh | 36.5 | 82.6 | 17.5 | 39.3 | 75.8 | 21.0 | 43.8 | 81.2 | 27.0 |
| Kerala | 86.1 | 97.7 | 89.5 | 100.0 | 100.0 | 93.0 | 100.0 | 100.0 | 99.0 |
| Tamil Nadu | 85.2 | 96.5 | 56.8 | 85.4 | 97.6 | 77.9 | 93.6 | 98.2 | 89.0 |
| Andhra Pradesh | 64.2 | 91.1 | 40.1 | 67.8 | 91.7 | 58.5 | 79.8 | 93.0 | 70.7 |
| Orissa | 33.7 | 61.0 | 15.0 | 34.9 | 81.5 | 30.4 | 50.0 | 84.6 | 43.3 |
| West Bengal | 50.2 | 84.5 | 24.0 | 38.6 | 89.5 | 36.0 | 54.9 | 88.0 | 39.0 |
| Bihar | 27.0 | 72.1 | 12.6 | 34.5 | 71.7 | 20.9 | 30.5 | 74.1 | 30.0 |
| India | 44.9 | 73.8 | 23.3 | 56.0 | 84.2 | 33.7 | 51.5 | 83.9 | 39.8 |

Result indicates that among poor, the coverage of safe delivery has increased 45% to 56% during 1992-98 but further declined to 52% during 1998-05 in the country (table 3). However, it has shown continuous increase among non-poor, from 74% to 84% in last 13 years. Similar results are observed for the states of Karnataka, Uttar Pradesh and Bihar. For the states of Uttar Pradesh, Rajasthan, Madhya Pradesh, Orissa and Bihar practice of safe deliver is twice higher among urban non-poor than poor, while the gap is comparatively smaller for the states of Maharashtra, Karnataka, Gujarat, Kerala, Tamil Nadu, Andhra Pradesh and West Bengal. However results depict

that whatever the pattern, the urban poor are more likely than non-poor to deliver outside the health facility cutting across the states except Kerala. In Kerala as many as urban poor women delivered their pregnancy under health facility than non-poor during 1998-99 and 2005-06.The urban poor are in advantage compared to rural counterparts in the country and all most all states over the periods, the differences are more pronounced in Maharashtra, Karnataka, Rajasthan, Madhya Pradesh and West Bengal in 2005-06. More or less similar pattern is observed for 1992-93 and 1998-99. The gaps are marginal in the states of Tamil Nadu and Kerala in 2005-06.

*Immunization Coverage*

In India, the basic childhood immunization services are part of essential health services and accorded a top priority in its health delivery system. The country has adopted Expanded Immunization Programme (EIP) under the National Health Policy in 1978. It introduced six childhood vaccines (Bacillus Calmette-Guerin, DPT, Polio and Measles). This services are delivered at all public health centers at free of cost, and private sectors do provide these services to some extent. To accelerate the implementation of immunization programme, the Government of India launched Universal Immunization Programme (UIP) in 1985-86 with the objective of achieving the universal immunization of all the children by 1990s. This programme became a part of the Child Survival and Safe Motherhood Programme in 1992 and Reproductive and Child Health (RCH) Programme in 1997. However the target of the immunization programme were revised in subsequent National Population Policy and the National Rural Health Mission (MOHFW, 2000; 2008)

**Table 4. Full immunization of children age 12-23 months for urban poor, urban non-poor, and rural residents in India and selected states, 1992-05.**

| | 1992-93 | | | 1998-99 | | | 2005-06 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Urban poor | Urban non-poor | Rural | Urban poor | Urban non-poor | Rural | Urban poor | Urban non-poor | Rural |
| Maharashtra | 44.8 | 70.0 | 65.6 | 43.8 | 71.8 | 73.2 | 58.5 | 71.1 | 49.8 |
| Karnataka | 30.3 | 76.3 | 49.9 | 16.7 | 62.8 | 57.0 | 38.5 | 80.6 | 52.2 |
| Uttar Pradesh | 22.5 | 37.4 | 17.4 | 24.5 | 32.3 | 18.0 | 16.0 | 40.6 | 20.5 |
| Rajasthan | 24.1 | 54.6 | 16.1 | 16.2 | 32.5 | 13.1 | 18.2 | 53.0 | 22.1 |
| Gujarat | 30.2 | 68.1 | 46.8 | 41.6 | 57.0 | 45.0 | 25.0 | 57.1 | 40.1 |
| Madhya Pradesh | 23.1 | 64.2 | 25.2 | 13.9 | 54.3 | 15.3 | 54.0 | 78.5 | 31.5 |
| Kerala | 47.8 | 59.2 | 54.4 | 63.4 | 76.7 | 71.2 | 71.4 | 91.2 | 69.4 |
| Tamil Nadu | 62.3 | 80.9 | 60.9 | 98.9 | 95.6 | 83.7 | 70.6 | 80.8 | 83.7 |
| Andhra Pradesh | 46.2 | 66.1 | 39.7 | 63.8 | 59.6 | 48.9 | 31.5 | 60.3 | 43.0 |
| Orissa | 25.8 | 58.1 | 34.7 | 34.4 | 69.5 | 38.8 | 48.7 | 54.9 | 51.8 |
| West Bengal | 31.0 | 55.3 | 31.3 | 33.2 | 61.8 | 40.8 | 58.5 | 74.1 | 62.3 |
| Bihar | 11.3 | 33.4 | 9.1 | 19.9 | 23.2 | 9.4 | 16.6 | 59.0 | 31.2 |
| India | 31.6 | 57.9 | 29.7 | 42.9 | 61.7 | 34.0 | 36.3 | 64.6 | 38.6 |

Table 4 presents the data of immunization coverage of children age 12-23 months for urban poor, urban non-poor and rural residents in India and selected states for last 13 years. Result indicates the full immunization among urban poor has increased from 32% in 1992-93 to 43% in 1998-99 but declined to 36% in 2005-06 in the country. On the other hand, it has continuously increased from 58% to 65% among non-poor during 1992-05. The similar results are observed for the states of Uttar Pradesh, Andhra Pradesh. On contrary the immunization coverage has decreased among

both the urban poor and non-poor in Rajasthan, Gujarat and Orissa during 1992-05. There are some of states such as Maharashtra, Karnataka and Bihar where immunization coverage has among urban poor has gone down during 1992-98, but it has continuously increased among non-poor during 1992-05. These results are in similar direction with the earlier study (Abhishek and Mohanty, 2008).The differentials in immunization coverage among urban poor and non-poor indicate that urban non-poor are more advantages than poor group in country and the states.The differences are stark for all most all the states except Tamil Nadu and Orissa for all three periods. While comparing the urban poor than rural residents, the urban poor are in disadvantages than rural total in country in 2005-06. Similar results are observed for all most all the states over the periods. For instance, in Karnataka, Uttar Pradesh, Rajasthan, Tamil Nadu, Orissa, West Bengal and Bihar immunization coverage among rural residents are higher than urban poor in 2005-06.

In conclusions, there are considerable intra-urban differentials in maternal and child health care in India and states over the periods. The urban poor are disadvantages than non-poor in antenatal care, safe delivery and immunization, but the differences are more pronounced for safe delivery. That may be because the service like safe delivery is expensive in nature than the rest of two. While comparing the urban poor with rural residence, three different results are observed for all most all the states and country. For example in case of antenatal care marginal differences are observed among the group, while in case of safe delivery results are in favour of urban non poor with stark poor non-poor difference. Finally in case of full immunization coverage the situations of rural residence are rather better that urban poor.

*Differentials in maternal and child health care among urban poor and non-poor by socio-demographic group*

This section provides a brief description about differentials in maternal and child health care by different socio-economic characteristics among urban poor and non-poor in urban India during 1992-05. Figure 1.a shows the differentials in antenatal care among urban poor and non-poor by parity, age-group and educational status of women in India during 2005-06.

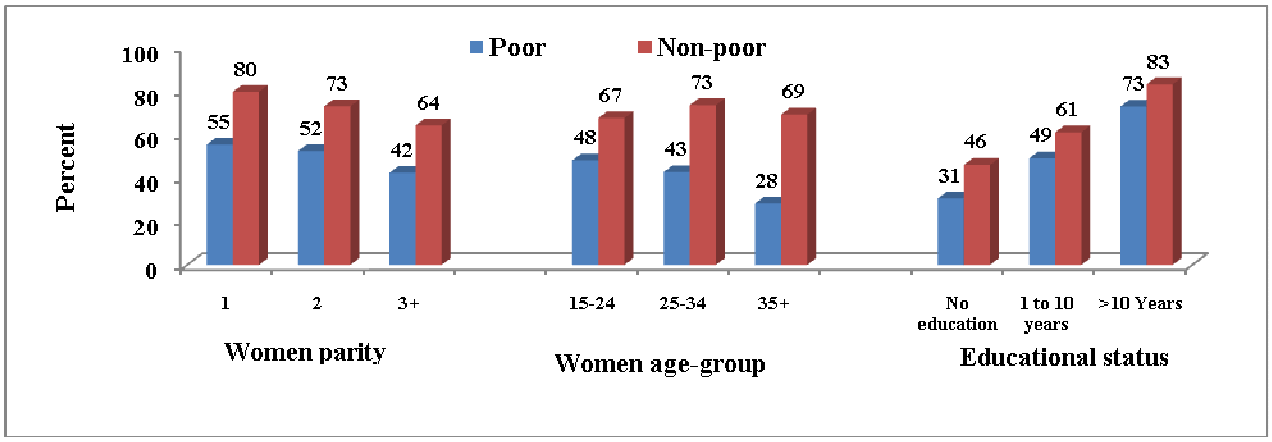


**Figure 1.a Differences in antenatal care among urban poor and non-poor women by their parity, age group and educational status for India, 2005-06.**

Clear differences are observed between economic groups for all parity, age-groups and educational status of women. The gap among poor and non-poor are more pronounced for lower parity women and as the parity increase the gap reduced. In case of age as the age of women increase the antenatal care decreased among urban poor, while for non-poor it has increased with age resulting starker gap among poor and non-poor in the older age women. The differences by educational status are comparatively low. Moreover as the educational status improves, the gap between poor and non-poor narrowed down.

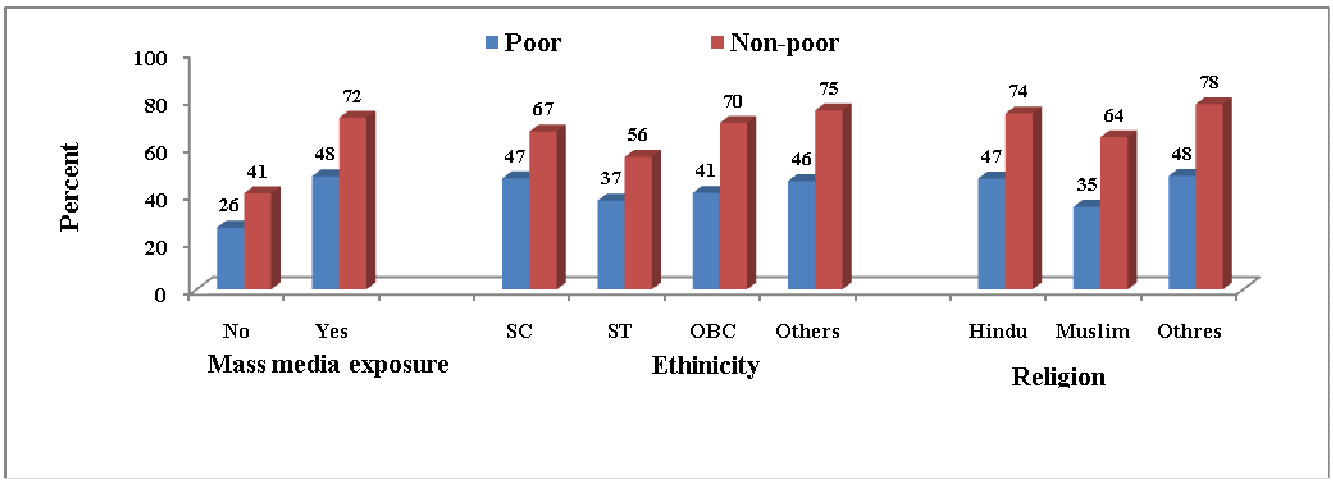


**Figure 1.b Differences in antenatal care among urban poor and non-poor women by mass media exposure, and ethnicity and religious status in India, 2005-06.**

Figure 1.b shows substantial differences in utilization of antenatal care among urban poor and non-poor in selected indicators. As the antenatal care is inversely related with exposure to mass media but gap between poor and non-poor remained same whether the women is exposed to mass media or not. In case of ethnicity gap between poor and non-poor is comparatively more pronounced for OBC & Others group. In case of religion, however the utilization of antenatal care comparatively lower for Muslim than the rest groups but poor non-poor differences almost same cutting across the religion. Similar results are observed for NFHS-1 and NFHS-2 (table not shown).

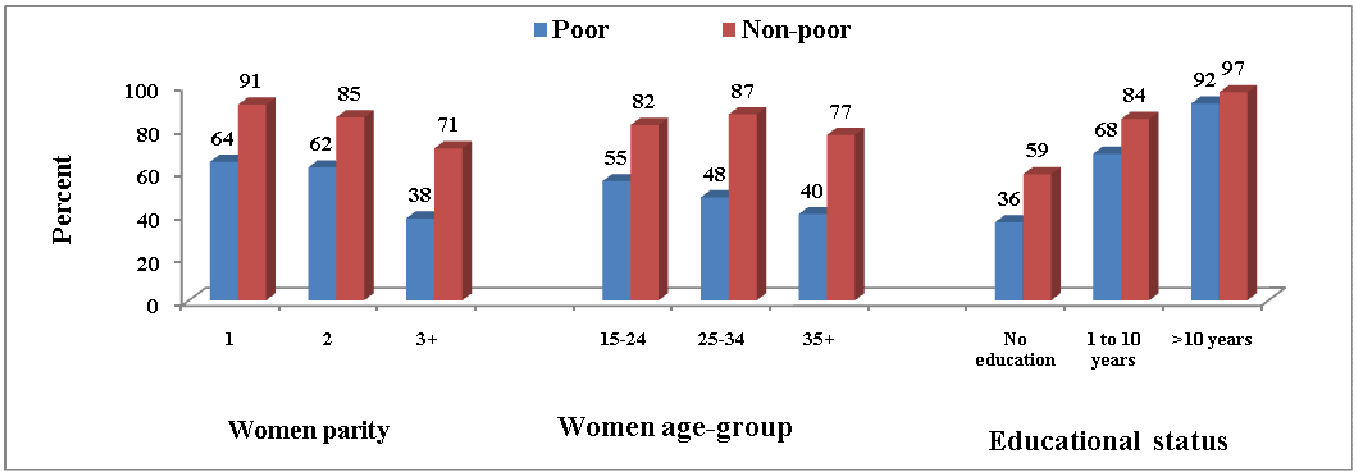


**Figure 2.a Differences in safe delivery among urban poor and non-poor women by their parity, age group and educational status in India, 2005-06.**

Figure 2.a shows large differences in safe delivery among poor and non-poor for all considered indicators. Safe delivery reversely varies with parity among both poor and non-poor, however the decline is comparatively more among poor. Thus the poor non-poor gap seems larger for higher parity women. Differences for safe delivery are substantially large with respect to age of women. This is because of as the age increased the safe delivery service has declined among poor while it increased or remained constant for the urban non-poor. As the safe delivery is inversely associated with education status of women across the group, but poor non-poor differentials are evident. However the difference is declined as the educational status increased.

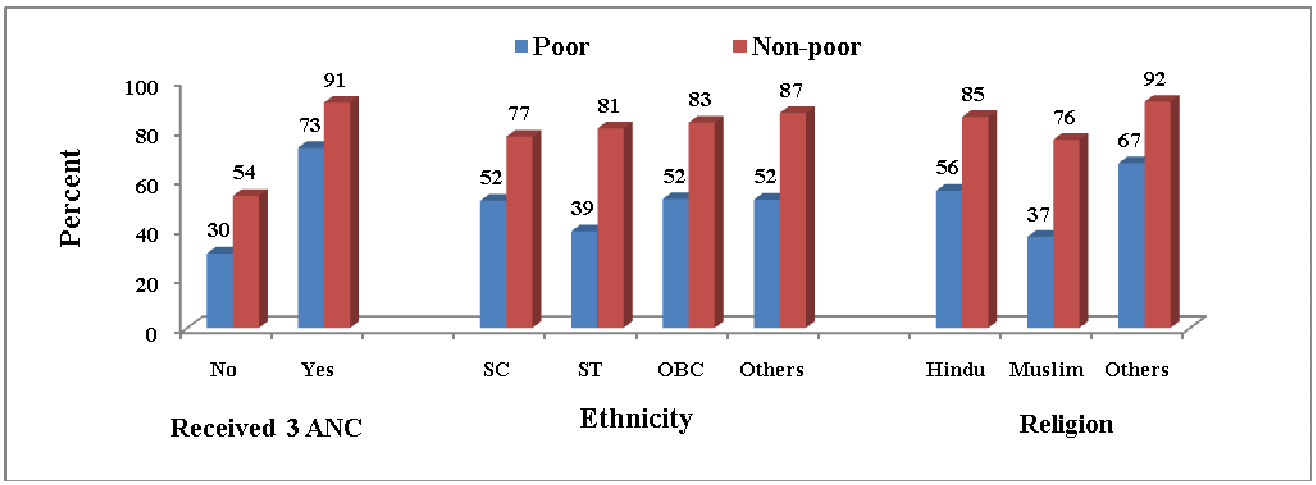


**Figure 2.b Differences in safe delivery among urban poor and non-poor women by antenatal care, ethnicity and religious status in India, 2005-06.**

Safe delivery is inversely related with antenatal care cross the poor and non-poor. But the poor non-poor difference is large for those who received less than 3 antenatal care visits. Substantial gaps are observed among poor and non-poor with respect to ethnicity, however it is more pronounced for ST & Others ethnic group. With respect to religious groups of women, substantial differences are observed among poor and non-poor, but the difference is larger for Muslim followed by Hindu and Others. Similar results are observed for NFHS-1 and NFHS-2 (table not shown).

Figure 3.a shows that the immunization coverage among urban poor and non-poor varies largely by sex of the child. While immunization of children is same (65%) for male and female among non-poor but in case of poor it is less for female child than their male counterpart indicating that gender gap (39% vs. 34% for male and female) is large among poor. Immunization coverage is reversely associated with birth order across the poor and non-poor, but the larger gap is observed for lower birth order. As it is expected, substantial differences for immunization coverage is observed across the educational status of mother and it is most among highly educated mother.

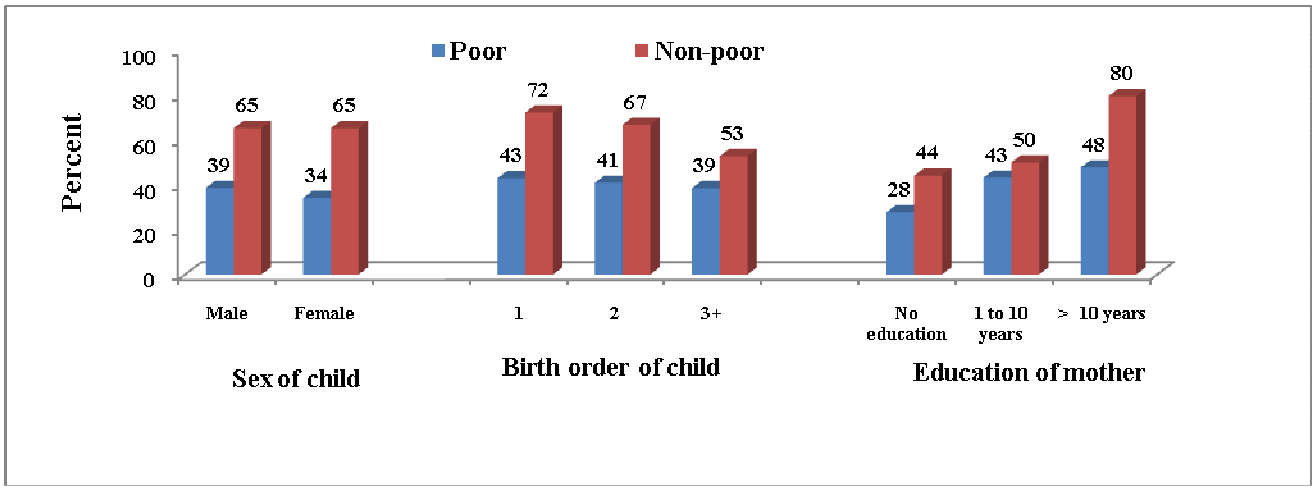


**Figure 3.a Differences in immunization coverage among urban poor and non-poor children by sex of child, birth order and education status of women in India, 2005-06.**

In figure 3.b it reflects that immunization coverage is inversely related with mother's awareness of mass media, possession of health card and ANC visit of mothers among poor and non-poor. But poor non-poor differences among children are more pronounced for those who have not a heath card, their mother is not exposed to mass media and has received less than 3 ANC visit. Similar results are observed for NFHS-1 and NFHS-2 (table not shown).

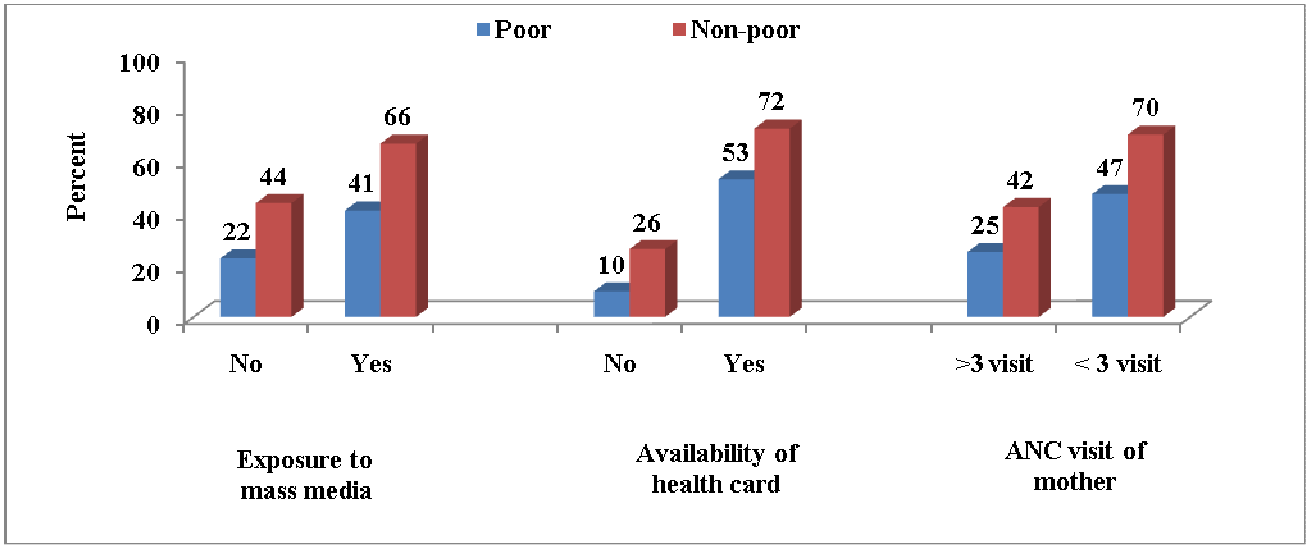


**Figure 3.b Differences in immunization coverage among urban poor and non-poor children by mother's mass media awareness, possession of health card and ANC visit of mother in India, 2005-06.**

In sum, the differentials among poor and non-poor for maternal and child health indicators are evident for all socio-demographic groups. However the poor non-poor gaps were inversely related with education status and exposure to mass media of women/mother for antenatal care, safe delivery and immunization coverage.

*Rich-poor gap in reproductive and child care*

Rich-poor ratio has been defined as the ratio of urban non-poor and poor and been used to measure the gap in utilization of reproductive and child health services between the groups for India and its states for all three period. Ratio with less than one value indicates that utilization of services is higher among poor and value more than one indicates that non-poor are advantaged than poor, while the value with one indicates that there is no variation among poor and non-poor in utilization of particular service. Table 5 shows that the rich-poor gap has declined from 1.76 to 1.36 for antenatal care in India during 1992-05, indicating that the utilization of service is increasing among both the group but the pace is slightly higher among the urban poor. Among the states the mixed pattern is observed. For example in Maharashtra, Rajasthan, Gujarat, West Bengal and Bihar the gap has minimized in last 13 years. On the other hand in case of Karnataka, Uttar Pradesh, Tamil Nadu, Andhra Pradesh and Orissa the rich-poor gap has increased over the periods indicating that the improvement in the services occurred among the non-poor most.

In case of safe delivery the rich-poor gap stagnated in the country in last 13 years, but still the gap is substantial (1.63). That may be because the practice of safe delivery is almost closer to universal (more than 80%) among non-poor, while it is hardly 50% among the poor group. Moreover it is increasing slowly among the poor. In case of states the gap has been declined in last 13 years cutting across the states, but still it is higher in the states of Uttar Pradesh, Rajasthan, Gujarat, Madhya Pradesh Orissa, West Bengal and Bihar.

The rich-poor gap has marginally declined (1.83 to 1.78) for immunization coverage in the country between 1992-05. Moreover the gap is more pronounced. In case of states the situation is worse in Karnataka, Uttar Pradesh, Rajasthan, Gujarat and Bihar, where the rich-poor gap has not only increased during the period but immunization is coverage more than twice among non-poor than urban poor. More interestingly in Andhra Pradesh the rich-poor gap has increased from 0.93 to 1.91 between 1998-05, indicating that when the service care utilization declined it affects the poor most.

**Table 5. Rich-Poor Ratio for full immunization, safe delivery and antenatal care in urban India and its selected states, 1992-05.**

| | ANC Visits | | | Safe delivery | | | Full immunization | | |
|---|---|---|---|---|---|---|---|---|---|
| | **1992-93** | **1998-99** | **2005-06** | **1992-93** | **1998-99** | **2005-06** | **1992-93** | **1998-99** | **2005-06** |
| Maharashtra | 1.51 | 1.24 | 1.35 | 1.38 | 1.33 | 1.29 | 1.56 | 1.64 | 1.22 |
| Karnataka | 1.55 | 1.64 | 1.62 | 1.53 | 1.14 | 1.38 | 2.52 | 3.76 | 2.09 |
| Uttar Pradesh | 2.26 | 2.68 | 2.96 | 2.76 | 2.57 | 3.03 | 1.66 | 1.32 | 2.54 |
| Rajasthan | 3.57 | 3.02 | 1.92 | 2.83 | 1.68 | 1.81 | 2.27 | 2.01 | 2.91 |
| Gujarat | 1.90 | 2.21 | 1.51 | 2.19 | 1.63 | 1.38 | 2.25 | 1.37 | 2.28 |
| Madhya Pradesh | 1.96 | 2.09 | 1.96 | 2.26 | 1.93 | 1.85 | 2.78 | 3.91 | 1.45 |
| Kerala | 0.97 | 1.05 | 1.07 | 1.13 | 1.00 | 1.00 | 1.24 | 1.21 | 1.28 |
| Tamil Nadu | 1.12 | 1.23 | 1.18 | 1.13 | 1.14 | 1.05 | 1.30 | 0.97 | 1.14 |
| Andhra Pradesh | 1.25 | 1.33 | 1.33 | 1.42 | 1.35 | 1.17 | 1.43 | 0.93 | 1.91 |
| Orissa | 2.01 | 2.01 | 1.52 | 1.81 | 2.34 | 1.69 | 2.25 | 2.02 | 1.13 |
| West Bengal | 2.08 | 1.14 | 1.39 | 1.68 | 2.32 | 1.60 | 1.78 | 1.86 | 1.27 |
| Bihar | 5.30 | 2.55 | 3.53 | 2.67 | 2.08 | 2.43 | 2.96 | 1.17 | 3.55 |
| India | 1.76 | 1.66 | 1.36 | 1.64 | 1.50 | 1.63 | 1.83 | 1.44 | 1.78 |

Thus it may be concluded that the rich-poor gap in utilization of reproductive and child health indicators are declining in the country but still poor are disadvantaged. In case of states the gap is comparatively large for antenatal care and immunization coverage among most of the states and it is starker for immunization coverage. Moreover the states where level of urbanization is very low the problem is more serious.

### *Inequality of reproductive and child health care*

The concentration index has been used to measure the overall inequality among the urban poor and non-poor (Erreygers, 2006; O'Donnell, 2008). It is defined as twice the area between the concentration curve and the line of inequality and varies between -1 to +1. Where negative values indicates that health variables (bad health) or health care utilizations are concentrated among the poor, while positive value indicates that the any phenomena are concentrated among non-poor. If the value closer to 1 the more unequal is the health care utilization and closer to 0, the more equal is the health care utilization between the groups.

Result presented in table 6 indicates that reproductive and child health care indicators considered in the study are concentrated among urban non-poor cutting across the states and periods. However the magnitude of concentration varies from states to states for all RCH indicators. It is evident that antenatal care, safe delivery and full immunization coverage are comparatively more concentrated among the urban non-poor in the states of Uttar Pradesh, Rajasthan, Madhya Pradesh, Orissa and Bihar for all three periods of time.

**Table 6. Urban poor/urban non-poor concentration indices for full immunization, safe delivery and antenatal care in India and selected its states, 1992-05.**

| | ANC Visits | | | Safe delivery | | | Immunization | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1992-93 | 1998-99 | 2005-06 | 1992-93 | 1998-99 | 2005-06 | 1992-93 | 1998-99 | 2005-06 |
| Maharashtra | 0.20 | 0.18 | 0.17 | 0.07 | 0.04 | 0.06 | 0.10 | 0.15 | 0.14 |
| Karnataka | 0.11 | 0.10 | 0.09 | 0.10 | 0.02 | 0.08 | 0.19 | 0.16 | 0.10 |
| Uttar Pradesh | 0.33 | 0.29 | 0.27 | 0.18 | 0.46 | 0.15 | 0.25 | 0.22 | 0.21 |
| Rajasthan | 0.23 | 0.18 | 0.18 | 0.18 | 0.07 | 0.12 | 0.23 | 0.18 | 0.15 |
| Gujarat | 0.13 | 0.11 | 0.15 | 0.12 | 0.06 | 0.04 | 0.13 | 0.14 | 0.12 |
| Madhya Pradesh | 0.27 | 0.27 | 0.24 | 0.18 | 0.14 | 0.10 | 0.23 | 0.24 | 0.26 |
| Kerala | -0.01 | 0.01 | 0.01 | 0.03 | 0.39 | 0.00 | 0.04 | 0.03 | 0.04 |
| Tamil Nadu | 0.03 | 0.03 | 0.02 | 0.03 | 0.02 | 0.02 | 0.06 | 0.00 | 0.01 |
| Andhra Pradesh | 0.18 | 0.16 | 0.13 | 0.09 | 0.06 | 0.02 | 0.19 | 0.11 | 0.17 |
| Orissa | 0.27 | 0.27 | 0.20 | 0.13 | 0.05 | 0.13 | 0.28 | 0.26 | 0.18 |
| West Bengal | 0.18 | 0.12 | 0.14 | 0.13 | -0.20 | 0.04 | 0.12 | 0.13 | 0.13 |
| Bihar | 0.34 | 0.32 | 0.36 | 0.22 | -0.10 | 0.16 | 0.36 | 0.34 | 0.25 |
| India | 0.18 | 0.15 | 0.12 | 0.19 | 0.13 | 0.14 | 0.11 | -0.03 | 0.08 |

*Multivariate Analysis*

The differentials observed among poor and non-poor for RCH care by descriptive analysis may biased because a number of socio demographic confounder may be associated with residence has not been accounted in the analysis. But as the graphs indicate that the difference among poor and non-poor for RCH care has narrowed with the improvement of education status and similar result is observed with exposure to mass media. Therefore to examine the significant effect of poverty on utilization of maternal and child health care binary logistic regression has been carried out adjusting a number covariates such as parity, age of women, education of women, exposure to mass media, working status, husband educational status, religion and ethnicity. The descriptive analysis has shown that in some states the status of urban poor are even worse than rural residence, therefore to examine the significance rural total has also been consider in the Analysis for cutting across the states and for all periods.

*Antenatal care:* Table 7 presents the result of the logistic regression for the antenatal care for India and selected states. Result indicates that urban non-poor are significantly more likely to availing the antenatal care in India 2005-06. The odds of antenatal care for urban non-poor are 1.31, 1.41 and 1.19 respectively for 1992-93, 1998-99 and 2005-06. In the states of Maharashtra, Uttar Pradesh, Rajasthan, Gujarat, Madhya Pradesh, Tamil Nadu, Orissa, West Bengal and Bihar the urban non-poor are significantly more likely to utilizing antenatal care in 2005-06. Similar pattern are observed over the periods. As indicated by the other result the education of women and exposure to mass media are significantly associated in positive direction with utilization of antenatal care for the country over the period. Other selected confounders were not evenly associated over the periods (Result not shown).

On the other hand the utilization of antenatal care are significantly less likely among rural women with respect to urban poor for the country over the periods. For instance the odds of antenatal care among rural women are 0.71, 0.65 and 0.65 for NFHS-1, NFHS-2 and NFHS-3 respectively. In case of states the antenatal care among rural poor are significantly less in-Maharashtra, Uttar

Pradesh, Rajasthan, Madhya Pradesh, Tamil Nadu, West Bengal and Bihar in 2005-06. Similar results are observed for NFHS-1 and NFHS-2.

**Table 7. Odds ratios of antenatal care for urban non-poor and rural residents vs. Urban poor, based on logistic regression models in India and selected states, 1992-05.**

| | 1992-93 | | 1998-99 | | 2005-06 | |
|---|---|---|---|---|---|---|
| | Urban non-poor | Rural | Urban non-poor | Rural | Urban non-poor | Rural |
| Maharashtra | 1.03 | 0.92 | 1.35* | 0.58* | 1.43* | 0.92** |
| Karnataka | 2.09* | 1.22* | 1.95* | 1.44 | 1.43 | 0.90 |
| Uttar Pradesh | 1.58* | 0.48* | 2.64* | 1.61 | 1.45* | 0.65** |
| Rajasthan | 3.25** | 2.57 | 1.62* | 1.00 | 2.79** | 0.70* |
| Gujarat | 1.73* | 2.69** | 3.25** | 1.16 | 1.70* | 0.88 |
| Madhya Pradesh | 1.79** | 0.81* | 1.36** | 0.79** | 2.17** | 0.72* |
| Kerala | 0.78 | 1.76 | 1.14 | 1.67 | 1.09 | 0.94 |
| Tamil Nadu | 1.15 | 0.27** | 1.79* | 1.27 | 1.97* | 0.89** |
| Andhra Pradesh | 1.26* | 1.57 | 1.89* | 1.02 | 1.20 | 0.99 |
| Orissa | 5.64** | 0.52** | 1.99* | 1.30 | 1.94* | 0.88 |
| West Bengal | 1.97** | 0.79* | 0.83 | 0.35** | 1.63* | 0.61* |
| Bihar | 1.77 | 0.68* | 1.02 | 0.37* | 2.62* | 0.79* |
| India | 1.31** | 0.71** | 1.42** | 0.65** | 1.19** | 0.65** |

** $p < 0.05$; ** $p < 0.01$*

*Safe delivery:* Result of logistic regression showing the odds ratio for safe delivery is presented in table 8. Among all the selected RCH indicators, result of safe delivery is more consistent with residence for all most all the states. In India, practice of safe delivery is more likely among urban non-poor with respect to poor, in all three periods, for instance the odds ratio for safe delivery among urban non-poor are 1.15, 1.60 and 1.80 respectively for NFHS-1 NFHS-2 and NFHS-3. Results indicate that urban non-poor are more likely to availing the safe delivery than non-poor for all most all states. Exceptionally, in Kerala the significant differences are not observed among urban and non-poor (result is consistent with descriptive analysis). Interestingly, ANC visits of women along with education are observed significantly associated with safe delivery in India and across the states (result not shown). Results are consistent with other studies (Abhishek Singh and F. Ram 2006.)

Results indicate that urban poor have significantly lower risk of unsafe delivery than rural women in the country. For example the odds of safe delivery for rural women are 0.40, 0.36 and 0.68 respectively for NFHS-1, NFHS-2 and NFHS-3. Among the states results are observed in expected direction, but it is not evenly significant for all the states and periods. For example in 1992-93 the rural women are significantly at the higher risk of unsafe delivery for all the states except Rajasthan and Kerala. While in 1998-99 results are not significantly associated for Andhra Pradesh, Orissa and West Bengal, and in 2005-06, Tamil Nadu is also added in the group. In case of Kerala as the practice of safe delivery does not vary among urban poor and rural (evident from descriptive analysis) therefore multivariate result is not observed for 1998-99 and 2005-06.

**Table 8. Odds ratios of safe delivery for urban non-poor and rural residents vs. Urban poor, based on logistic regression models in India and its selected states, 1992-05.**

| | 1992-93 | | 1998-99 | | 2005-06 | |
|---|---|---|---|---|---|---|
| | Urban non-poor | Rural | Urban non-poor | Rural | Urban non-poor | Rural |
| Maharashtra | 2.08* | 0.32** | 1.60 | 0.36 | 1.78** | 0.53** |
| Karnataka | 1.91* | 0.34** | 0.56 | 0.15** | 3.83** | 0.62* |
| Uttar Pradesh | 1.29 | 0.44** | 2.37** | 0.68* | 2.02** | 0.92* |
| Rajasthan | 1.35 | 0.71 | 1.21* | 0.59* | 3.71** | 0.60* |
| Gujarat | 2.28* | 0.67* | 1.64* | 0.57* | 1.42 | 0.47* |
| Madhya Pradesh | 2.55** | 0.40** | 1.51* | 0.42** | 2.37** | 0.58* |
| Kerala | 2.24 | 0.75 | | | | |
| Tamil Nadu | 1.83 | 0.23** | 2.32* | 0.42* | 2.59 | 0.47 |
| Andhra Pradesh | 2.43* | 0.52* | 2.01* | 0.73 | 1.44 | 0.61 |
| Orissa | 0.94 | 0.24** | 3.04** | 0.53 | 2.36** | 0.79 |
| West Bengal | 1.53 | 0.79** | 1.88** | 0.89 | 3.86** | 0.73 |
| Bihar | 1.68* | 0.36** | 1.97 | 0.51* | 1.19 | 0.49 |
| India | 1.15* | 0.40** | 1.60* | 0.36** | 1.80** | 0.68** |

** $p < 0.05$; ** $p < 0.01$*

*Immunization Coverage:* Table 9 presents the odds ratio of immunization coverage for urban non-poor and rural residence for India and states. The immunization coverage is significantly higher among urban non-poor than poor for India in all three periods. The odds ratios are 1.45, 1.66 and 1.22 respectively for NFHS-1 NFHS-2 and NFHS-3. Among all the states results are observed in expected direction but evenly not significant across the states.

**Table 9. Odds ratio of full immunization coverage for urban non-poor and rural residents vs. Urban poor, based on logistic regression models in India and its selected states, 1992-05.**

| | 1992-93 | | 1998-99 | | 2005-06 | |
|---|---|---|---|---|---|---|
| | Urban non-poor | Rural | Urban non-poor | Rural | Urban non-poor | Rural |
| Maharashtra | 1.23* | 2.49** | 2.22* | 2.08* | 2.53** | 1.01 |
| Karnataka | 2.18* | 1.73* | 4.02** | 1.33** | 1.72** | 1.65* |
| Uttar Pradesh | 0.90 | 0.67 | 1.95 | 0.87 | 1.25** | 1.12* |
| Rajasthan | 1.59* | 0.58 | 2.43** | 1.67** | 3.52** | 2.02 |
| Gujarat | 1.71 | 1.68 | 0.68 | 0.92 | 2.35 | 1.07 |
| Madhya Pradesh | 1.84** | 1.67* | 3.19 | 1.62 | 1.73** | 0.49 |
| Kerala | 1.77** | 1.06 | 1.08** | 2.09 | 1.73 | 0.10* |
| Tamil Nadu | 1.40** | 0.94 | 0.15 | 0.05* | 1.14 | 1.12 |
| Andhra Pradesh | 1.03 | 0.80 | 0.69 | 0.58 | 1.69 | 1.40 |
| Orissa | 1.27 | 1.08 | 1.79** | 0.99 | 1.47 | 1.00 |
| West Bengal | 1.17** | 1.25 | 2.20 | 2.35 | 1.16** | 0.82* |
| Bihar | 1.12 | 0.58 | 0.26 | 0.25* | 2.06** | 1.01 |
| India | 1.45** | 1.10 | 1.66* | 0.85* | 1.34** | 1.22* |

** $p < 0.05$; ** $p < 0.01$*

Among all the covariates considered in the analyses, more interesting results are observed for ANC visits of mother and availability of health card. The chances of immunization coverage are significantly more likely for the children possessing a health card and their mother visited antenatal care. Significant association is found in India and states for all three periods. In case of rural vs. urban poor it is observed that immunization coverage is less likely among rural children, however results are not significant evenly. Exceptionally in case of Maharashtra and Karnataka, immunization coverage is significantly higher among rural children.

The advantages of urban non-poor over urban poor are confirmed by multivariate results in all reproductive and child health care indicators. As it is expected the rural women are disadvantage then urban poor in case of safe delivery. This may be attributed mainly due to physical accessibility of health center. A part from the economic status education is also found significantly associated with the utilization of RCH services in India. Interestingly, ANC visit and possession of health card are significantly associated for safe delivery and immunization coverage respectively for India in all three periods (result not shown).

*Decompositions analysis*

Previous results document that poverty has declined more or less in India and states in last 13 years and there is an association between poverty and utilization of RCH services. Therefore to understand the effect of poverty reductions on improvement of RCH services utilization, a proportional decomposition analysis has been carried out. The analysis has been carried out only between 1992-05, because poverty has increased between 1992-98 in India and many of states.

**Table 10. Decomposition of full immunization, safe delivery and antenatal care by poverty level for urban India and its selected states, 1992-05.**

| | ANC visits | Safe delivery | Immunization |
|---|---|---|---|
| Maharashtra | 17.3 | 28.8 | 15.6 |
| Karnataka | 15.2 | 54.4 | 23.7 |
| Uttar Pradesh | 22.2 | 23.3 | 23.0 |
| Rajasthan | 23.5 | 30.6 | 19.6 |
| Gujarat | 20.6 | 59.9 | 18.9 |
| Madhya Pradesh | 21.6 | 45.0 | 26.3 |
| Kerala | 15.6 | 35.6 | 13.2 |
| Tamil Nadu | 15.5 | 36.0 | 16.2 |
| Andhra Pradesh | 23.8 | 32.0 | 15.9 |
| Orissa | 22.2 | 23.3 | 23.0 |
| West Bengal | 16.0 | 38.7 | 15.1 |
| Bihar | 20.0 | 20.3 | 21.1 |
| India | 11.7 | 22.3 | 21.9 |

Table 10 presents the proportion improvements in reproductive and child health care utilization which are attributable due to poverty reduction between 1992-05. It is observed that in India 12 percent in antenatal care, 22 percent in safe delivery and 22 percent improvement in immunization coverage are attributable due to reduction of poverty during 1992-05. Remaining percentage changes may be attributable due to programme and other factors. The impact of poverty reduction on improvement of RCH care is more pronounced for safe delivery. For instance more than 25 percent improvement in safe delivery is attributable due to poverty reduction for all most all the states ranging from 59 percent in Gujarat to 20 percent in Bihar. This indicates that poverty is strongly associated with those services which are related to economic status. Substantive improvements are also attributable for antenatal care and immunization coverage, cutting across the states. These results are similar to that of deprivation in RCH services (Srinivasan & Mohanty, 2008)

**Discussion and conclusions**

The study attempts to understand the intra-urban differentials in utilization of reproductive and child health services in India and selected states. As a first step the wealth index is computed only for urban sample using the PCA, separately for India and states. The poor and non-poor are classified using the official cut-off point of poverty estimates of the country and states based on uniform recall period. Results indicate that poor and non-poor classified by set of variables inhibit greater reliability for India as well as the states. After defining the urban poor and non-poor the differentials in antenatal care, safe delivery and immunization coverage has been examined among the groups. Urban poor are also compared with rural total in the analysis. Results indicate that for all indicators urban poor are disadvantaged than non-poor in India and its states for all three periods. However the utilization of RCH services has improved among urban poor cutting across the states in subsequent periods, still there are stark gaps exist between the groups. The gaps are more pronounced with respect full immunization and antenatal care in India and across the states.

On most indicators health care varies along with rural total, urban poor and non-poor, but service utilization among rural total are closer to urban poor with respect to antenatal care across the states. More interestingly, in case of full immunization even performance of urban poor are worse than rural total in some states after controlling the individual characteristics such as education. However in case of safe delivery urban poor are advantaged than rural total. After controlling of personal characteristics such as education, age and parity it is observed that rural women are on higher risk to deliver their pregnancies in unsafe circumstances, in India and across the states. This may be due to physical inaccessibility of facilities providing the delivery care unlike the antenatal care which usually available in smaller health centers.

The descriptive results suggest that apart from the poverty status, personal characteristics such as education, age and exposure to mass media also influenced the utilization of RCH services. As the education increased the differentials in utilization of RCH services among urban poor and non-poor has minimized. Similar results are observed for mass media awareness. Therefore to assess the finding the multivariate analysis has been carried out where a number of individual confounders have been adjusted. Results indicate that after adjusting the confounder, urban poor are less likely to utilize the all reproductive and child health care across the states in all three periods. These results are similar with other previous studies, which has established the link between socio-economic status and documented that the women who are socially and economically disadvantaged are less likely to utilize the reproductive and child health services (Magadi et al. 2003; Knust and Houweling 2001; Doherty et al. 2001 Li 2004;).

However the stark intra-urban differentials in utilization of selected reproductive and child health indicators are observed in all most all the states. But it is important to mentions that the disparities are not uniform across the states. Differentials in utilization of RCH services are larger in states of Uttar Pradesh, Rajasthan, Madhya Pradesh, Orissa and Bihar. Moreover the disparities are more pronounced for safe delivery care, where it is twice higher among non-poor. More interestingly among all these states the performance of urban poor are equal than the rural total, even in case of immunization coverage the condition of urban poor are worse too.

In Indian context many studies has been examined rich-poor gap in utilization of reproductive and child health care (Chattopadhyay and Roy; 2005, Singh, & Singh, 2007; Mohanty & Pathak, 2008). Moreover a number of studies advocate large rural urban differentials in utilization of RCH services and focused on rural areas. It is assumed that disadvantaged situation of rural areas is barriers to achieve the Millenium Development Goals related to maternal and child health. Therefore programmes and policies are implemented to improve the maternal and child health status of rural areas (National Rural Health Mission) where two-thirds of Indian population resides. Off course it is fact that urbanization in India is low and varies from states to states. But likewise other developing countries, urban population of India is also growing rapidly and will continue too. Therefore most of the population will live in cities. As a direct consequence of urban population growth urban areas in India are witnessing the deficit of housing, employment, infrastructure and services which will affect the urban poor most. The continue trends of urbanization will increase the need for basic health services in the cities. Moreover the states such as Uttar Pradesh, Rajasthan, Madhya Pradesh, Orissa and Bihar where level of urbanization is very low and there is huge potential of urban population growth in recent future, which will increase the urban poverty.

Findings indicate that the current situation of urban poor with respect to utilization of reproductive and child health care is considerable. If the urban population will grow the disparities between urban poor and non-poor in utilization of RCH services will lead the health crisis in urban India and states. Among all the states conditions of urban poor are miserable. Moreover, it is worse in the states of Uttar Pradesh, Madhya Pradesh, Rajasthan, Andhra Pradesh, Orissa and Bihar. However this paper also demonstrates that the conditions of rural women are far from satisfactory, but there may be some other factors rather than poverty, which need to explored. Therefore this study argues that along with rural areas, the attention should be given to the urban poor to improve maternal and child health condition. Moreover, as data collected in National Family Health Survey only provides information on supply of health care services, while the demand of reproductive and child health care services are need to be explored that how the demand of particular services varies between the economic groups. As India is a huge country in terms of cultural practices and constraints related to utilization of reproductive and child health services from states to states, therefore cross-states comparisons are needed to understand the extent of poor and non-poor disparities in urban areas across the states irrespective of urban poverty. Such study will help to draw the state specific programmes.

**References:**


Agarwal, S., Satyavada, A., Kaushik, S., and Kumar, R. 2007. Urbanization, urban poverty and health of the urban poor: Status, challenge and the way forward, *Demography India* 36(1):121-134.

Bassett, M. and M. Mhloyi. 1991. Women and AIDS in Zimbabwe: the making of an epidemic, *International Journal of Health Services* 21(1):143-156.

Bhagat, R. B. 2005. Rural-urban classification and municipal governance in India, *Singapore Journal of Tropical Geography* 26(1):61-73.

Brockerhoff, M. and A, E. Biddlecom. 1999. Migration, Sexual behaviour and the risk of HIV in Kenya, *International Migration Review* 33(4): 833-856.

Brockerhoff, M. and E. Brennan, 1998. The poverty of cities in developing countries*, Population and Development Review* 24(1):75-114.

Cairncross, S., J. E. Hardoy, and D. Satterthwaite (eds.). 1990. *The Poor Die Young: Housing and Health in Third World Citie*s. London: Earthscan.

Chatterjee, G. 2002. *Census versus Confrontation: Local Authorities and State Agencies from Partnerships with Urban Poor in Mumbai.* Nairobi: UNHABITAT.

Chattopadhyay, A. and Roy, T. K. 2005. Are urban poor doing better than their rural counterpart in India? A study of fertility, family planning and health, *Demography India* 34(2): 299-312.

Davis, Kingsley. 1972. The Urbanization of Human population, *Scientific American 213*: 44.

Filmer, D. & Pritchett. H. 2001. Estimating wealth effects without expenditure data-or tears: An application to educational enrollments in states of India, *Demography 38* (1): 115-132.

Graham, W.J. & Murray S.F. 1997. *A Question of Survival? Review of Safe Motherhood in Kenya.* Kenya: Ministry of health [Kenya], Division of Primary Health Care.

Harpham, T., T. Lusty, and P.Vaughan. 1998. *In the shadow of the city: Community Health and the Urban Poo*r. Oxford: Oxford University Press.

International Institute for Population Sciences (IIPS) & ORC MACRO. 1993. *National Family Health Survey (NFHS-1)*, 1992-93: India, Mumbai: IIPS.

International Institute for Population Sciences (IIPS) & ORC MACRO. 2000. *National Family Health Survey (NFHS-2)*, 1998-99: India, Mumbai: IIPS.

International Institute for Population Sciences (IIPS) & ORC MACRO. 2007. *National Family Health Survey (NFH-3)*, 2005-06: India, Mumbai: IIPS.

Kumar A. and Mohanty S.K. 2008. Understanding factors associated with slow progress of childhood immunization coverage in India and selected States. Paper presented in IUSSP conference at Marrakech, Morocco, 2009.

Ladusingh, L. and Singh, H. C. 2007. Rich-poor gap in maternal care: The case of Northeast India, *Asian Population Studies* 3(1).

Mensch, B., Bruce, J. and Greene, M. E. 1998. *The Unchartered Passage: Girls' Adolescence in the Developing World*. New York: The population Council.

Mohanty S.K. 2009. Alternative wealth indices and health estimates in India, Genus, LXV(2)**:**113-137.

Mohanty, S.K. and Pathak, P. K. 2008. Rich-poor gap in utilization of reproductive and child health services in India*, Journal of Bio Social Science* 41(03):381-398.

Monica, A. M., Eliya M. Z. Brockerhoff, M. 2003. The inequality of maternal health care in urban sub-Saharan Africa in the 1990s, *Population Studies* 57(3): 347-366.

Montgomery. M. R., Grangnolati, M. Burke, K.A. and Paredes, E. 2000. Measuring living standards with proxy variables, *Demography* 37(2): 1556-1574.

Montgomery, M.R. and Hewett, P.C. 2005. Urban poverty and health in developing countries: Household and neighborhood effects, *Demography* 42 (3):397-425.

Mulgaonkar, V. B., Parikh, I.G. Taskar, V.R. Dharap, N.D. and Pradhan, V.P. 1994.Perception of Bombay slum women regarding refusal to participate in a gynecological health programme.

National Sample Survey Orgaization, 61th round survey, 2004-05.

Pelletier, D. L. et al. 1995. The effects of malnutrition on child mortality in developing countries. *Bulletin of the* WHO. 73:443-448.

Poel, E.V.d., O. O'Donnell, and E.V. Doorslaer. 2007. Are Urban Children Really Healthier? Evidences from 47 Developing Countries. *Social Science & Medicine* 65:1986-2003.

Ram F. and Singh A. 2006. Is antenatal care effective in improving maternal health in rural Uttar Pradesh? Evidence from a district level household survey. *Journal of Bio-Social Science* 38(4):433-438.

Ruzicka, L. T. and Kane, P. 1985. Nutrition and child survival in south Asia. *In*: K. Srinivasan and S. Mukerji. (eds.), *Dynamic of Family Welfare* Bombay: Himalaya Publishing House.

Satterthwaite, D. 1993. The Impact on health of urban environment. "*Environment and Urbanization,* 15(2): 87-111.

Scalar, E. D., Garau, P. and Caroloni, G. 2005. The 21st century health challenge of slums and cities, *Lancet* 365: 901-903.

Sims, J. 1994. *Women, Health and The Environment: A Anhology*, World Health Organization. Geneva.

Srinivasan, K. and Mohanty,S.K. 2008. Households deprivation and its linkages with Reproductive Health Utilization, *Economic Political Weekly* 67-76.

Udaya S Mishra and T. R. Dilip. On use of Wealth Quintiles in NFHS-3 Data: A note of Caution.

United Nations, 2000. *World Urbanization Prospects: The 2001 Revision.* New York: United Nations Population Division.

United Nations, 2007, *World Urbanization Prospects: The 2005 Revision.* New York: United Nations Population Division.

UNAIDS, UNICEF, and USAID. 2002. Children on the Brink 2002: A Joint Report on Orphan Estimates and Program Strategies << http: //www.dec.org/pdf_docs/PNACP860.

Vyas, S. and Kumaranayake, L. 2006. Constructing Socio-economic status indices: how to use Principal Component analysis, *Health Policy and Planning* 21(6):459-468.

Wagstaff, A. 2002. Poverty and health sector inequalities, *Bulletin of World Health Organization*, 80(2):97-105.

Wratten, E. 1995. Conceptualizing Urban Poverty, *Environment And Urbanization*.17 (1): 11-36.

**Appendix 1. List of variables used in computation of wealth index for urban poor, non-poor and rural total using the data of NFHS 1992-05**

| | Households variables available in different round of NFHS | | | Used in construction of wealth index for Urban area | | |
|---|---|---|---|---|---|---|
| | NFHS-1 | NFHS-2 | NFHS-3 | NFHS-1 | NFHS-2 | NFHS-3 |
| **Most stable variables** | | | | | | |
| Bank account/post office account | - | - | X | N | N | Y |
| Landline phone | - | X | X | N | Y | Y |
| Electricity | X | X | X | Y | Y | Y |
| **Consumer durables** | | | | | | |
| Radio | - | X | X | N | N | N |
| Bicycle | X | X | X | N | N | N |
| Watch | X | X | X | N | N | N |
| Pressure cooker | - | X | X | N | Y | Y |
| Motorcycle | X | X | X | Y | Y | Y |
| Electric fan | X | X | X | Y | Y | Y |
| Sewing machine | X | X | X | Y | Y | Y |
| Television (Black and White) | X | X | X | Y | Y | Y |
| Television (Color) | - | X | X | N | Y | Y |
| Refrigerator | X | X | X | Y | Y | Y |
| Mobile phone | - | - | X | N | N | Y |
| Computer | - | - | X | N | N | Y |
| Car | X | X | X | Y | Y | Y |
| **Housing condition and sanitation** | | | | | | |
| Pucca house | X | X | - | Y | Y | N |
| Semi pucca house | X | X | - | Y | Y | N |
| Kaccha house | X | X | - | Y | Y | N |
| Floor Material (Natural/rudimentary or finished) | - | - | X | N | N | Y |
| Wall material (Natural/rudimentary or finished) | - | - | X | N | N | Y |
| Roof material (Natural/rudimentary or finished) | - | - | X | N | N | Y |
| No Window | - | - | X | N | N | Y |
| Window without cover | - | - | X | N | N | Y |
| Window with cover | - | - | X | N | N | Y |
| Ownership of house | - | X | X | N | Y | Y |
| 2 Person per room | X | X | X | Y | Y | Y |
| 2 to 4 Person per room | X | X | X | Y | Y | Y |
| More than 4 person per room | X | X | X | Y | Y | Y |
| Has Separate Kitchen | X | X | X | Y | Y | Y |
| Safe water (water in dwelling, bottled water) | X | X | X | Y | Y | Y |
| Unsafe water(public tap) | X | X | X | Y | Y | Y |
| Other/no water (tube well ,rain ,dam, other) | X | X | X | Y | Y | Y |
| Fuel type | X | X | X | Y | Y | Y |
| No toilet | X | X | X | Y | Y | Y |
| Pit toilet | X | X | X | Y | Y | Y |
| Flush toilet | X | X | X | Y | Y | Y |
| **Agricultural related accessories** | | | | | | |
| No land | X | X | X | N | N | N |
| Marginal land | X | X | X | N | N | N |
| Less than 5 acres | X | X | X | N | N | N |
| 5 acres and more | X | X | X | N | N | N |
| Any irrigated land | X | X | X | N | N | N |
| Thresher | X | X | X | N | N | N |
| Tractors | X | X | X | N | N | N |
| Water pumps | X | X | X | N | N | N |

X: Available, -: Not available, Y: Used, N: Not used

**Appendix 2 Classification differences of the urban poor for India,1992-05**

| | Base Case: All variables | Based on only housing variables[1] | Based on Consumers durables variables[2] | More stable variables[3] |
|---|---|---|---|---|
| **2005-06** | | | | |
| Urban poor 26% | 100.00 | 88.07 | 76.82 | 56.75 |
| Non poor 74% | 0.00 | 11.93 | 23.18 | 43.25 |
| Total | 100.00 | 100.00 | 100.00 | 100.0 |
| ***Spearman Rank Correlation Coefficient*** | **1.00** | **0.82** | **0.66** | **0.40** |
| **1998-99** | | | | |
| Urban poor 28% | 100.00 | 86.96 | 67.00 | 46.81 |
| Non poor 72% | 0.00 | 13.04 | 33.00 | 53.19 |
| Total | 100.00 | 100.00 | 100.00 | 100.00 |
| ***Spearman Rank Correlation Coefficient*** | **1.00** | **0.80** | **0.55** | **0.27** |
| **1992-93** | | | | |
| Urban poor 38% | 100.00 | 90.98 | 81.36 | *** |
| Non poor 62% | 0.00 | 9.02 | 18.64 | *** |
| Total | 100.00 | 100.00 | 100.00 | *** |
| ***Spearman Rank Correlation Coefficient*** | **1.00** | **0.84** | **0.69** | *** |

**1**: Variables of Housing conditions (Type of house, floor material, wall material, roof material, window facility, person per room, separate kitchen, water type, toilet type, flush type)

**2:** Consumer durables including (pressure cooker, motorcycle, electric fan, sewing machine, television, television color, refrigerator, mobile phone, computer, car)

**3**: Stable variable (Bank account, landline phone, electricity)

**Appendix 3. Reliability (alpha-test) of computed wealth index for urban India and selected states 1992-05**

| | 1992-93 | 1998-99 | 2005-06 |
|---|---|---|---|
| Maharashtra | 0.84 | 0.81 | 0.86 |
| Karnataka | 0.87 | 0.84 | 0.86 |
| Uttar Pradesh | 0.87 | 0.84 | 0.89 |
| Rajasthan | 0.87 | 0.84 | 0.88 |
| Gujarat | 0.88 | 0.86 | 0.85 |
| Madhya Pradesh | 0.87 | 0.86 | 0.88 |
| Kerala | 0.81 | 0.79 | 0.82 |
| Tamil Nadu | 0.85 | 0.84 | 0.87 |
| Andhra Pradesh | 0.87 | 0.85 | 0.87 |
| Orissa | 0.87 | 0.87 | 0.91 |
| West Bengal | 0.88 | 0.83 | 0.86 |
| Bihar | 0.89 | 0.86 | 0.89 |
| India | 0.86 | 0.84 | 0.87 |