HOUSEHOLD EXPENDITURE ON MATERNAL HEALTH CARE IN INDIA: LEVELS, DETERMINANTS AND CONSEQUENCES

Dissertation submitted to Jawaharlal Nehru University
in partial fulfillment of the requirement for
the award of the degree of

MASTER OF PHILOSOPHY

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DECLARATION

This is to certify that the dissertation entitled **"HOUSEHOLD EXPENDITURE ON MATERNAL HEALTH CARE IN INDIA: LEVELS, DETERMINANTS AND CONSEQUENCES"** is my bona fide work for the degree of **MASTER OF PHILOSOPHY** and may be placed before the examiners for evaluation.

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Dedicated to

MY Mamoni

....you made many sacrifices to protect all my dreams.

ACKNOWLEDGMENT

It is a pleasure to thank those who made this dissertation possible. First and foremost I owe my deepest gratitude to my Supervisor Prof. P.M Kulkarni. It has been a great opportunity for me to work under his supervision. His untiring effort, commitment, encouragement, guidance, patience in solving each and every shortcoming helped me greatly in writing of the dissertation.

I would like to thank Dr. Vargesh for his help in handling NSSO data. I would like to thank University Grand Commission (UGC) for proving me Junior Research Fellowship.

Words fail me to express my appreciation to my friend Rakesh Chandra for his suggestions, cooperation and criticisms in solving various problems related to this research work. It would not have been possible for me to complete this dissertation without his support and help.

I am thankful to my friends Binod Jena, Prosenjit Acharaya, Anamika Poonia and my senior Protap Mukherjee for their help in my research work.

Finally, nothing would have been possible without constant emotional support and encouragement of my parents, sister, brother and my family.

Saradiya Mukherjee

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ABBREVIATIONS

ANC	Antenatal Care
CI	Concentration Index
CV	Co-efficient of Variation
EAG	Empowered Action Group
IIPS	International Instituted for Population Sciences
NFHS	National Family Health Survey
NRHM	National Rural Health Mission
NSSO	National Sample Survey Organisation
OOP	Out of Pocket
PNC	Postnatal Care

Chapter –I

Introduction, Review of Literature and Methodology

"Maternal deaths are both caused by poverty and are a cause of it. The cost of child birth can quickly exhaust a family's income, bringing with it even more financial hardship."- Tamar Manuelyan Atine, Vice President for Human Development at World Bank.

1.1 Introduction:

Giving birth to a child is a very important part of a woman's life. But child bearing is a life threatening, suffering and one of the major causes of death of many women. Maternal Health refers to the health of women during pregnancy, child birth and post partum period in order to reduce maternal mortality and morbidity. According to World Health Organization, in its World Health Report 2005, poor maternal conditions account for the fourth leading cause of death for women worldwide, after HIV AIDS, malaria and tuberculosis. Lack of skilled care at delivery and maternal morbidity are the key factors in these deaths. The Millennium Developmental goal aims to reduce maternal mortality by 75 percent within 2015. Skilled birth attendance and emergency obstetric care are two important interventions in reducing maternal mortality (Kruk *et al,* 2007). It is obvious to many practitioners that professionalization of delivery care is a key to reducing maternal mortality. Industrialized countries have halved their maternal mortality in the early 20th century through access to professional midwifery care at delivery, and further reduced it to current lows through access to effective and safe hospital technology (Graham *et al.* 2011).

A range of studies have agreed that sometimes the cost of the obtaining skilled obstetric care cannot be affordable by many households and constitute a major barrier in accessing safe motherhood Lack of access to quality care is the main obstacle to reducing maternal mortality and morbidity in low and middle income countries ((Nahar *et al.* 1998a, Duggal *et al.* 2003a, Borghi *et al.* 2006a).). Two of the main reasons given for not seeking institutional delivery care in the National Family Health Survey III were that institutional delivery is 'not necessary' (71%) and that 'costs were too much' (26.2%) (NFHS-3, 2005-06).

Expenditure on health care plays an important role in utilization of maternal health care (Borghi *et al.* 2006b). Given that out of pocket payment is the principal method of financing health care throughout Asia , over 72% of expenditure in India is financed through out of pocket (Worral *et al*, 2011). Navaneetham and Dharmalingam (2000) highlighted significant differences in maternal care use between Indian States. Studies on the cost of maternity care showed very high expenditure on maternity services and poorer households find it more difficult to cope with cost associated with it (Nahar *et al.* 1998, Duggal *et al.* 2003a, Bonu *et al.* 2009a). Poverty plays an important role in utilization of maternal health services. There is a disparity in utilization of delivery services between rich and poor countries as well as among individuals as evidenced by World Bank report by Gwatkin *et al.* (2000). It was noted that India with high growth rate and yet a developing country having significant number of BPL(Below Poverty Line) families, in spite of all the efforts made by the Government and NGO agencies there are only three states having more than 75% of institutional deliveries. A distinct pattern of rural and urban differentials is also found in terms utilization of maternity services, *i.e*, utilization of services from public and private or home as well as expenditure patterns. Comparison of source of delivery and cost of delivery clearly indicates that higher incidence of home deliveries in rural areas than in urban areas is due to their lack of access to delivery care at a nominal cost. Income inequalities, use of institutional delivery and expenditure on delivery care were very high. The mean expenditure on delivery was more than double in urban areas than that in the rural areas. (Balaji *et al.* 2003b, Bonu *et al.* 2009b).

These out of pocket payments on maternal health care pose serious consequences on economic conditions of households by bringing financial catastrophe and hardships. Unfortunately, the option of financial protection mechanism to mitigate such huge out of pocket burden is very limited (Xu *et al.* 2003; O'Donnell *et al.* 2005; Flores *et al,*. 2008). Due to high expenditure on maternal health care households may cut off their basic necessities or basic consumption requirements in short or long term and may also lead to impoverishment (Berki 1986, Bonu *et al.* 2009c). Such expenditures are termed as catastrophic health expenditure in health economic literatures.

Lowering the rate of poor maternal mortality in Developing countries is important because poor maternal health is both an indicator and a cause of extreme poverty. Results from a study revealed that, each year, about one fourth of the hospitalized people plunge into poverty due catastrophic payment for health care (Peters *et al.* 2002). High out of pocket expenditure force households into or deeper into poverty (Xu *et al.*2003). Maternal health care costs, especially when complications occur, can plunge a household into poverty (Ensor and Ronoh 2005) or raise the level of poverty. A household that at the time of maternity diverts expenditure to maternal health care to an extent that its spending on basic on basic necessities falls below the poverty threshold will not be counted as poor. Nor will that household that lives below the poverty threshold but borrows to cover health care expenses such that its total expenditure is raised above the poverty threshold. Households are not counted as poor because their high maternal health care expenditure placed themselves above the poverty line, but in real sense their high spending on maternal health care raises their level of poverty. A World bank study of 11 countries has estimated that 78 million people in Asia are not counted as poor despite of the fact that their per capita household expenditure on net of health (net)care expenditure falling below the extreme poverty threshold of $1 per day(van Doorslaer *et al*. 2006).

Against these issues discussed above the current study would like to analyse the utilization, expenditure and economic consequences of maternal health care services in India. To prepare the background of this research work, some review of literatures were done.

1.2Review of Literature:

Financing in maternal health care is essential and expensive. In the absence of insurance mechanisms (coverage) sometimes household has to face curse of economic burden of such maternal health care payments which can leads to consequences of catastrophe and hardship. Wide variations of studies have discussed the issues of maternal health care utilization, expenditure and its financial consequences (Nahar *et al.* 1998, Balaji *et al.* 2003, Bonu *et al.* 2009, Xu *et al.*2003; O'Donnell *et al.* 2005; Flores *et al.* 2008, Wagstaff and van Doorsaler 2003).

Brief description of literatures is presented below.

Maternal Health care expenditures can be very high and varies and lack of proper insurance mechanisms poses a huge burden of out of pocket (OOP) payments to the households, especially the poor. A study was done by Nahar *et al.* (1998) in Bangladesh to assess the cost and affordability of free maternal care services in Dhaka and the actual costs incurred by families, and their affordability, during maternity care. The study showed that the mean cost of normal delivery is lower than caesarean section. Expenditures are combined with food, medical supplies, and travelling cost and cost of hiring a female assistance. The result also shows that the expenditure on medical care in Bangladesh is low but the economic burden of free maternity care is significant. Overall 21% of families spend 50-100% of their monthly income and 27% families 1-8 times of their family income. About 74% of caesarean mothers had insufficient funds, and 79 % of those who had insufficient funds borrowed from a relative, friend or moneylender.

Another study by Balaji *et al.* (2003) in India showed very high out-of-pocket expenditure on institutional delivery. Comparison of sources of delivery and costs of delivery clearly indicated that higher incidence of home deliveries in rural areas than in urban areas is due to their lack of access to delivery care at a nominal cost. Income inequalities, use of institutional delivery and expenditure on delivery care were very high. The mean expenditure on delivery was more than double in urban areas than that in the rural areas. Average expenditure on a normal delivery was four times higher in the private sector, while the expenditure on a caesarean delivery was almost 12 times higher in the private than in the public sector. At the same time, it is to be noted that the cost of delivery in the public sector is higher in rural areas than urban areas. This is due to the fact that public facilities are often distant, adding to the access costs. Compared to the urban areas, the rural population seemed to be spending lesser in delivery care, the obvious reason being the higher number of home deliveries in rural areas. Occupational level shows that average expenditure on delivery care varied from 'professionals/traders' category 'unskilled and casual labour category'. Similar differentials were found in the public and private sectors, which strengthens our argument that potential to pay for delivery care is one major factor that limits women from utilizing institutional facilities delivery care services. Average out of pocket expenditure on delivery care was higher for women delivering for the first time, while it

was lower for women undergoing deliveries for the third time or more. Whereas antenatal care is also very important in reducing maternal morbidity and mortality.

Health care can be financed by the government, borne by private citizen directly or by external funder. There is a substantial work demonstrating that increased level of health system funding can be linked to better accesses to maternal mortality and morbidity (Wagstaff 2002). A study by Desai (2003) discusses the basic concepts underlying the costing of Emergency obstetric care services, and the essential issues one must take into account while assessing the cost effectiveness of Emergency obstetric care interventions. To show the user cost of maternity services in rural Tanzania, Kowalew (2003) found that there were many hidden costs in maternity care services in public hospitals.

Using data from household survey Sharma *et al.* (2005) analyzed that despite government efforts and favourable policies aimed at improving service provision, utilization rates for maternal health services were low among the poor in the five countries. In Peru, 31 percent of poor women had no antenatal care (ANC) during their last pregnancy, and 83 percent of poor women delivered at home. Similarly, 29 percent of poor women in Kenya had no antenatal care during their last pregnancy, and 85 percent of poor women delivered at home. Irrespective of poverty status, a large proportion of women rely on public sector services. In India (Uttaranchal), 29 percent of ANC clients and 18 percent of delivery clients who receive free services at public facilities fall into the non-poor category, raising the question of whether subsidized government services are properly targeted to women most in need. The study also found that poor women incurred substantial maternal health expenses in both the public and private sectors.

In a study in Maltab, Bangladesh by Borghi *et al.* (2006) explores the cost of pregnancy, delivery and post partum periods. The study revealed that the difference in cost between delivery in a health centre and delivery at home was the cost incurred by companions. Overall, the costs incurred by those delivering at basic obstetric facilities was less than 10% of the annual income of their husbands and, therefore, did not reach catastrophic levels as defined by a 20% threshold. On the other hand, the cost to those delivering in a comprehensive obstetric facility was well

above the 20% threshold in the case of a caesarean section, representing almost half of the annual income of the husband. This is only the cost of delivery care, and once the costs of antenatal and postnatal services were added, the total increased substantially. The amount paid did not differ by wealth group but the immediate and longer-term financial burden of expenditure will be greater for the poorest.

Kruk *et al.* (2007) discussed issues regarding health care financing and issues regarding health care financing. This paper was about whether government or the private sector is more effective at financing these essential services in developing countries. Cross-national analysis was done in this particular study to determine the association between government versus private financing of health services and utilization of antenatal care, skilled birth attendants and Caesarean section in 42 low-income and lower-middle-income countries and the findings show that government participation in health care financing is associated with utilization of skilled birth attendants and Caesarean section, two key interventions for reducing maternal mortality. Government financing increases access to maternal health services to a greater extent than the private sector including households paying out-of-pocket but the government financing did not influence women's access to antenatal care. Authors suggested absolute levels of health spending will be required if developing countries are to achieve the Millennium Development Goal on maternal mortality.

A study by *Quayyum et al* (2009) in Indonesia investigated the payments made by households for different obstetric care, economic consequences of payments and role of health insurance policy launched by government as a protective mechanism in maternity expenditure. The study showed that insurance for the poor covered 51% of women at Serang Hospital and 73% of women at Pandeglang. Around 68% of households in the poorest quintiles would have made catastrophic payments. Insurance for the poor appears to have some positive association with the hospitals' expenditure for treatment of different types of maternal care.

A study was carried out by Sen Gupta Dhar *et al.* (2009) estimate the direct maternity-care expense for women who recently delivered in South Delhi and to explore its socio demographic associations. These OOP spending on health care in general and maternal health

care in particular can lead to financial catastrophe for household when it crosses some predefined thresholds of household's total consumption expenditure or nonfood expenditures. These become catastrophe in a sense that households may cut off their basic necessities or basic consumption requirements in short or long term and may also lead to underestimation of poverty (Berki 1986, Xu *et al.*2003; O'Donnell *et al.* 2005; Flores *et al.* 2008, Bonu *et al* 2009; Khan 2009).

A study done by Khan *et al.* in 2009 in rural Bangladesh showed that the costs of obtaining skilled maternal and newborn care are major obstacles in accessing it, especially for the poor. Utilization of home delivery by unskilled providers is pro-poor, while facilities are largely utilized by richer households. Costs of delivery care varied considerably by type of treatment. Mothers who did not obtain delivery care from skilled attendants reported to prefer public facilities if they could afford. Out-of pocket spending was found to be major source for paying for the delivery care for most of the households. Borrowing, using household savings, and financial assistance from relatives were also found to be important in paying for the delivery care. The amount of money borrowed was naturally higher for Caesarean Section (CS) than normal delivery. About 89% households had to borrow more than 50% of their delivery care cost. The number of households with catastrophic expenditure for obstetric care is quite low as most home deliveries and unskilled care attendants had a low level of payment. If mothers have at least three ANC visits and obtain skilled delivery care from facility the number of households making catastrophic payments would be higher.

Using data from National Sample Survey data of 60th round Bonu *et al.* (2009) discussed incidence and correlates of 'catastrophic' maternal health care expenditure in India. Expenditure on ANC, delivery and PNC was higher in urban areas compared with rural areas, except for delivery care in public facilities, where rural households spent more. The ANC, delivery and PNC expenditure also varied widely by state, household and the women's background characteristics. Private providers were preferred over public providers in urban areas for all maternity services—ANC, delivery and PNC. In rural areas, this was the case only for PNC. Use of public facilities varies from the lowest in Bihar to the highest in Himachal Pradesh and also there is a wide range of variation among states in achieving private sector facilities. Use of private facility in ANC use is the highest in Kerala. Socio-economic variation can also be seen in

India in achieving maternal care. Women with higher income or consumption level prefer more private facility over public facility. The study shows that 16 percent of households falls under the catastrophic payments of 10% total annual consumption expenditures and while 51% households incurred Maternal expenditure of more than 40% of household's capacity to pay'. The study examines two methodological approaches of measuring 'catastrophic' maternal expenditure and concludes that measuring maternal expenditure in relation to household 'capacity to pay' may capture the financial barriers to maternal care better than measuring it as a proportion of overall household expenditure. The study explores that financial cost may be a major barrier for the poorest women accessing maternity services

Worral *et al.* (2011) analyzed expenditure on maternal and neonatal care in urban slum communities in Mumbai and found that the cost of delivery care was the greatest maternal expense and that the cost of delivering in a facility was, on average, more than five times the cost of delivering at home. Formal and informal payments for delivery care constituted 90% and 10% of total delivery care expenditure, respectively. It also found that, while direct costs comprised the greatest share of maternal spending - indirect costs constituted a sizeable 19% of total maternal spending on average. Public services and home deliveries were perceived as inferior goods used by poorer families and as such, all spending in the public sector was regressive. As demand for the private sector increased with socio economic status, total and direct spending on private maternal care had a positive Kakwani Index, *i.e,* was progressive. These findings, together with the observation that women in the lowest quintile funded significantly more spending from borrowing, highlighted how those in the lower quintiles are most at risk of both transient and chronic poverty. The authors took 40% of household's total consumption expenditures as catastrophic threshold. Using this definition, 41% of respondents spent catastrophically on maternal and neonatal care. A significantly higher proportion of catastrophic spending occurred in the highest quintile, possibly because women in the lowest quintile were forced to control spending by opting for inferior services such as public providers and home deliveries. These results suggest that women in the highest quintile could afford to spend more, not only because they were less poor, but also because they had more access to savings. The incidence of catastrophic spending in this setting was so high that even quite large changes in the exact measure would not change the fact that a significant percentage of households were being

impoverished by maternal health spending. After adjusting for coping, 15% of the sample experienced catastrophic spending. There was no significant difference in the incidence of catastrophic spending across quintiles after adjusting for coping. These catastrophic burden of health care payments can plunge the households into poverty or deeper into poverty.

The main crux behind the concept is that such high spending implies an opportunity cost of other consumption expenditures in long or short period of time leading to over or under estimation of poverty(Berki 1986, Wagstaff and van Dooresaler 2003, Xu *et al.* 2003). Literature deals the issues of impoverishing effect of health care financing. Van Dooresaler *et al.* (2006) explored health care payments induced poverty in 11 countries Asia. The study reveals that on average, the burden of out-of-pocket payments was the highest in Vietnam, Bangladesh, India, and China and the lowest in Malaysia, Thailand, and Indonesia. Before subtraction of out-of-pocket payments from gross household consumption, poverty was the highest in Nepal, where almost 40% of individuals had less than the equivalent of $1·08 per day. India had the next highest rate of poverty (about 30%), followed by Bangladesh (about 20%), the Philippines, and China (both about 15%). Relative to the higher poverty standard of $2·15 a day, more than two-thirds of the populations of Nepal, India, and Bangladesh lived in poverty, and at least a quarter of people in every country other than Malaysia and (marginally) Thailand were poor. After subtraction of health payments the total estimated increase in the poverty head count was 78·16 million people, which is almost 3% of the population of these 11 low-income to middle income countries. The relative change in the poverty gap after adjustment for out-of-pocket payments was greatest in Vietnam, followed by China, Bangladesh, and India.

A study done by Limwattananon *et al.* (2007) to estimate the incidence and describe the profile of catastrophic expenditures and impoverishment due to household out-of-pocket payments in Thailand before introducing universal health coverage. The findings of the study explored that households using inpatient services, especially at private hospitals, were more likely to face catastrophic expenditures and impoverishment from out-of-pocket payments. Services not covered by the insurance benefit package were major causes of catastrophic expenditures and impoverishment.

Using data from the National Sample Survey on consumption expenditure undertaken in 1993–94 and 2004–05, Ghosh (2010) measured catastrophic payments and impoverishment due to out-of-pocket payments for health care in India. It is noted from the findings of the study that that in spite of the greater concentration of catastrophic payments among better-off households in the majority of the states, OOP payments induce poverty incidence and intensity in India over the period 1993–94 to 2004–05. The findings indicate that 4.4 percent of the total population in India (up from 4 percent in 1993–94) fell below the poverty line because of OOP payments on health care. The health care induced poverty impact of OOP payments was significant in all the selected states, but it was the greatest in Uttar Pradesh (6.6 percent), Kerala (6.1 percent), Madhya Pradesh (5.5 percent) and West Bengal (5.0 percent) in 2004–05. While Andhra Pradesh, Bihar, Tamil Nadu, Karnataka, Punjab and Assam recorded a decline in the incidence of poverty because of OOP payments.

Taking evidences from Western Balkans Mendola *et al.* (2007) showed that private out-of-pocket expenditure on health care appears to increase the incidence of poverty and push poor households into deeper poverty. The findings showed that the financial impact of out-of-pocket payments appears too huge. About 60 percent of health care costs were paid out-of-pocket by households and only one third comes from public spending. After accounting for out-of-pocket payments to finance health care, the headcount poverty ratio increases by 27% and the poverty gap by 36%. The same was true for Serbia, where despite the fact that health insurance is compulsory, the poverty impact of health payments is far from negligible: health-related expenses increased the incidence of poverty by 17% and while the burden of health care expenditure seems to be fairly similar across the income distribution.

1.3 Research Gaps and statement of the problem:

Maternity is a very important phrase of life and every household has to pass through this phenomenon, for this same reason maternal health care expenditure comprises a very important portion of household expenditure. It is established from the studies discussed earlier that the cost of maternal health care can be very expensive and sometimes lowers the utilization of maternity services. In a country like India where a huge number of the people living below poverty and very few have insurance coverage, people have to pay out of pocket for availing health care in

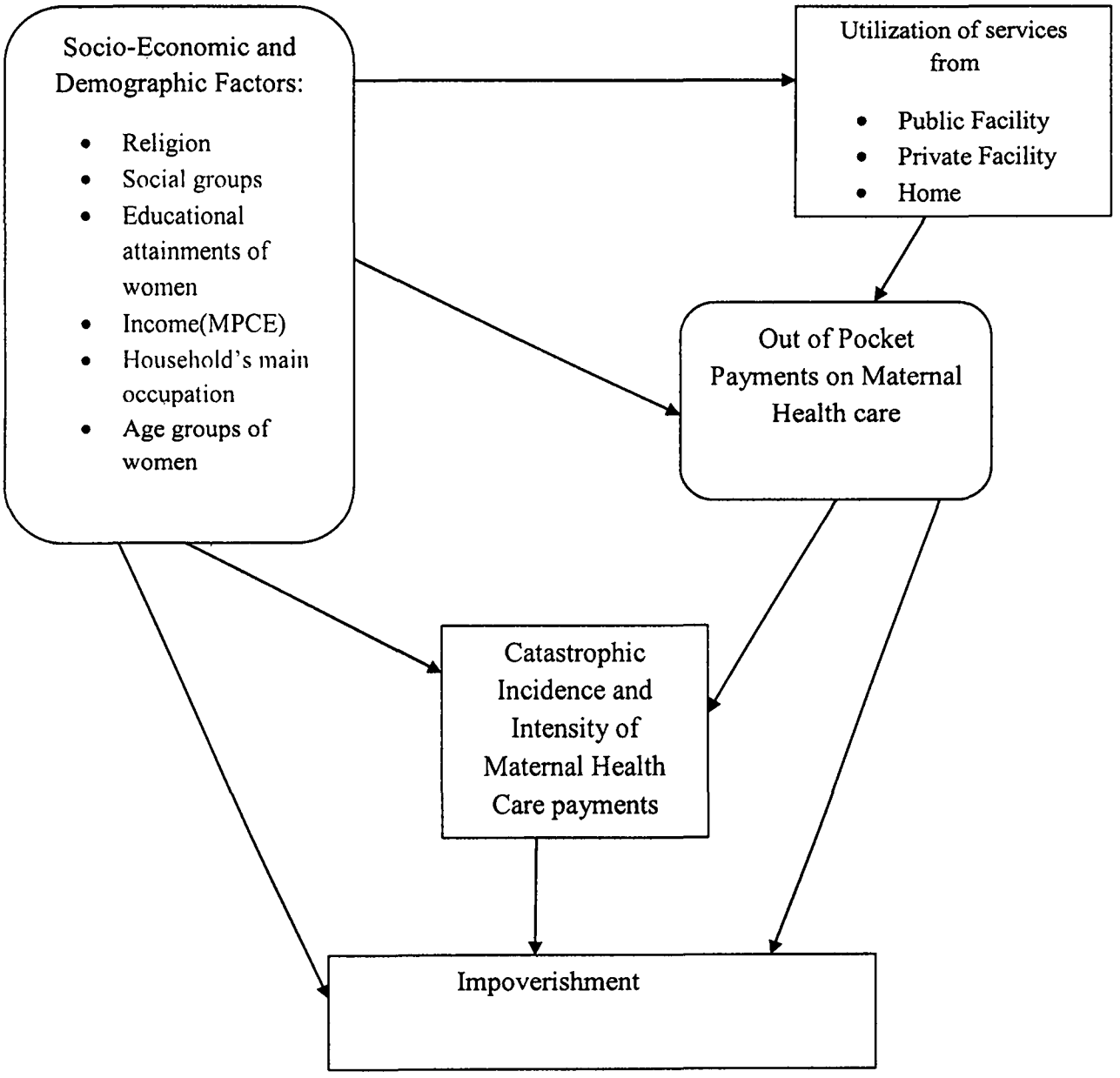
general and maternal health care in particular. The utilization and costs of maternal services various according to place of residence (rural and urban). Since health is a state subject whereby plans and policies regarding health care services vary across country, it is usual to expect that there might be variation in the pattern which can be capture only by a study of inter-state variation. These costs of maternal health care can pose huge economic burden on household with very low or almost no capacity to pay. This may be attributed to lower utilization of maternity services. The economic consequences of maternal health care may be financial catastrophe and impoverishment. Studies of India analyze health care payments inducing poverty relationship by taking general health care expenditure per se. Impoverishment due to maternal health care payment in India has not been explored earlier.

1.4 Objectives:

Against this scenario the present study proposes some objectives which are listed below:-

1) To analyse the utilization and determinants of public and private facilities for maternal health care.
2) To estimate the out-of –pocket payments on maternal health care and also demonstrates the factors influencing it.
3) To explore the incidence, intensity and determinants of catastrophic maternal health care expenditures.
4) To focus on the impoverishment effect of maternal health care spending.
5) To assess interstate variations in various aspects of maternal health care utilization and expenditure.

1.5 Conceptual framework: Utilization, Expenditure and Consequences of Maternal Health Care



The conceptual framework is that various socio-economic factors of woman as well as household determine the utilization of maternity services from public and private facilities. The social variables are religion, social groups, education of women. Economic variables include monthly per capita consumption quintiles, main occupation of households. Educated women are considered to have greater awareness of the existence and value of preventive health care services. Caste and religion have been included as social factors that could facilitate or hinder health-seeking behavior of members of a community. Demographic variables include age-group of women which is one of the most important predictor variables in maternal health care studies of women. Monthly per capita consumption expenditure, *i.e*, proxy income variable of household determines largely the utilization of private and public facility for maternal health care services. Without insurance or other coping mechanisms household has to bear out of pocket payments(expenditure net of reimbursement, if any) for utilization of services from public and private health facilities. Though public services are less expensive than private services, but some times the cost associated with public services compel household in non utilization of services. These out of pocket payments, sometimes pose serious economic consequences for the household by bringing financial catastrophe and hardship. Catastrophic condition occurs when the maternal expenditure exceeds from fixed proportion of household's annual consumption expenditure or annual capacity to pay. This catastrophic maternal expenditure in extreme force the household into poverty.

1.6 Research Questions:

The principal research questions to be addressed are:

1. What are the utilization patterns of public-private facilities for maternal health care in rural and urban sectors of India? Further do socio-economic factors influence this utilization?

2. What is the level of out of pocket payments on maternal health care in rural and urban sectors of India and how does this vary by socio-economic back ground of women.

3. What are the proportions of households bearing catastrophic health payments in rural and urban India and what determines the incidence of such payments?

4. Does spending on maternal health care increases the poverty head counts and poverty gaps in rural and urban India besides does it vary according to socio-economic condition of households?

5. Does utilization of maternity services, expenditure and impoverishment vary across different states of India?

1.7 Materials and Methods:

1.7.1. Data and Variables:

The proposed study will use the unit level data from the 25th schedule on Morbidity and Health Care of the 60th round of the National Sample Survey (NSS), on 'Morbidity and Health care' conducted from January to June 2004 in India. The NSS followed a stratified two-stage design with sampling of census villages in the rural areas and the NSS urban frame survey blocks in the urban areas in the first stage, followed by sampling of households in the second stage (NSSO 2006). A total of 73,868 households were sampled. Data on total maternal health care expenditure (ANC, delivery care and PNC) were collected for all the ever-married women aged 15–49 years who were pregnant during the 365 days prior to the survey. Information was elicited on the aggregate expenditures incurred on different types of services (ANC, childbirth and PNC), and the source of care—public or private for ANC and PNC, and home, public or private for delivery care. All the adult male members were interviewed personally in addition to the women to take care of potential underestimation if only women were interviewed and if all financial transactions were dealt with by the household head (NSSO, 2006).

In all, 9664 women reported being pregnant during the 365days prior to survey in India. Among them 4612 women in rural and 2262 women in urban areas reported giving birth in the same reference period. The study has taken all women sample (6533 in rural and 3127 in urban) with a pregnancy during 355 days prior to the survey.

1.7.2. Key explanatory variables:

The main explanatory variables were the background socio-economic and demographic characteristics of the women who were pregnant or delivered a child during 365 days prior to the survey. These include age groups of women, social groups, religion, type of households, and education of women and monthly per capita consumption expenditure of households.

1.7.3 Methodology:

First simple bi –variate analysis were carried out variate to analyse proportions utilization of public, private health facilities for antenatal care (ANC), delivery, postnatal care (PNC) across socio-economic stratum of rural and urban India. Next, in order to estimate the determinants of utilization of maternal health care by the sources i.e. public and private multinomial logistic regression analysis were done separately for rural and urban areas including utilization of ANC, delivery and PNC services as dependent variables. Multinomial logistic regression was the best suitable method for the statistical analysis as the dependent variables were of three categories namely i) not received care from any health facility for ANC and PNC and delivered at home in delivery, ii) received care from public health facility, iii)received care from private health facility.

The NSSO sample covers the entire country except some interior parts and the analysis has been carried out as such. However, for examining inter-state variations only 16 major states have been included since small and union territories, sample sizes were very small.

In addition, maps have been prepared to reveal marked regional pattern in the utilization of public and private maternal health services for ANC, delivery and PNC utilization services in rural and urban areas separately, using a Geographical Information System (GIS) package.

Simple cross tabulation (bi-variate) was needed to show the patterns of out of pocket payments across various socio-economic conditions of households. In order to estimate the net effect of back ground socio-economic and demographic variables discussed earlier six separate multivariate analyses were included for rural and urban areas. Under multivariate analysis, multiple classification analysis has been done.

Catastrophic payments for health care

Adopting the ideas from the literatures (Bonu *et al.* 2009, Khan *et al.* 2009) the study used 40% of non-food expenditures of the households as catastrophic threshold. Details of the methodology has been discussed in Chapter no: IV

In order to determine whether poor households incur more catastrophic payments than rich households, the concentration index (CI) was calculated. Details of the methodology employed in concentration curve and index has presented in Chapter IV.

Further, Six multiple classification analyses were separately conducted for rural and urban areas.

Impoverishment due to health care expenditure

Impoverishment due to out-of-pocket maternal health expenditure is computed by enumerating the number of individuals who fall below poverty line after paying for maternal health care. The study borrowed the methodology from work of O' Donnell et al. (2008) published by World Bank entitled 'Analyzing Health Equity Using Household Survey Data'. The methodology for measuring poverty head counts and poverty gaps has been discussed in Chapter V.

To obtain pre and post maternal health care payments poverty head counts and poverty gaps across socio-economic characteristics some more sets of bi-variate analyses has been calculated.

In addition, two maps have been prepared to reveal marked state wise variations in pre and post maternal health care payments poverty head counts separately for rural and urban India, using a Geographical Information System (Arc-GIS) package.

Data were analysed using both SPSS -16 and STATA-9.

1.8 Organization of Chapters:

The first chapter is introductory in nature and provides a brief description of literatures review, research gaps and statement of the problem, objectives, research questions, sources of data and methodologies used in the study. Chapter II deals with utilization of maternal health care, i.e, Ante Natal Care, delivery and Post Natal Care from private and public sources by, different socio-economic and demographic characteristics of women as well as interstate variation patterns of utilization of ANC, delivery and PNC. Chapter III explores the variations in out of pocket expenditure on maternal health care, *i.e*, Ante Natal Care, delivery and Post Natal Care in private and public sources by different socio-economic and demographic characteristics of women. Chapter IV covers the catastrophic incidence and intensity of maternal health care expenditure. This chapter accounts the state wise patterns of catastrophic expenditure along with details of incidence and intensity of catastrophic payment across socio-economic characteristics of women. Maternal Health Care induced impoverishment in major states and also across socio-economic characteristics of women is discussed in chapter V. The last chapter (VI) is concluding chapter deals with summary and recommendations .

Chapter-II

Utilization of Maternal Health Care Services by Background Characteristics

2.1 Introduction:

India has made great efforts since independence in meeting the challenges of providing health care services to its people. Although poverty and low level of education are constantly blamed for low achievements of health indicators but poor performance of health care systems in India bears some responsibility in not fulfilling the demand of health care needs of people (Radwan, 2005a). The public health services are very inadequate. The public curative and hospital services are mostly in the cities. Rural areas have mostly preventive services like family planning and immunization (Gangooli *et al,* 2005). Almost seventy percent of India's population lives in rural areas that lack adequate health facilities. Private health services are often concentrated in areas with better infrastructure facilities where they can high profits. Thus, they are unable to satisfy rural health care needs. Public sector health programs in India have faced well-recognized problems, such as inadequate access by the most vulnerable groups, poor quality and coverage of primary and secondary facilities, and inadequate focus on maternal and child health. Even if private services are available in rural areas, the quality differs as compared to that of private providers in urban areas. To some extent, when compared to public health services private health services satisfy the needs of patients (Kumar and Prakash, 2011a). The private sector has filled this gap. At Independence, the private sector accounted for just 8 percent of health care facilities. That figure had risen to 60 percent by the early 1990s. Evidence shows that the private sector provides an increasing share of primary health care and that large segment of the poor use the private sector (Radwan, 2005b). According to NRHM (2005-12) the private sector provides almost 75 percent of health services in India. The utilization patterns of public-private health care services differ in demographic socio-economic status of individual in terms of accessibility, affordability quality of services in different states and regions (Kumar and Prakash, 2011b).

An attempt is made here to see the sector wise interstate variations in the pattern of utilization of Maternal Health Care (ANC, delivery and PNC) services with the use of bi-variate

analysis. By keeping the fact in mind that utilization of maternity services varies across different back ground socio-economic and demographic conditions of women, tabulations by key socio-economic back ground factors are presented.

To determine the effect of key explanatory variables on the utilization of maternal services (ANC, Delivery and PNC) from sources, six multinomial regression models for rural and urban areas were conducted separately.

In addition, six maps have been prepared separately for rural and urban India to reveal marked state wise variations in the utilization of maternal health services (ANC, delivery and PNC) only for major states, using a Geographical Information System (GIS) package.

Table 2.1: Interstate Variations in Pattern of Utilization of Ante Natal Care (ANC), Delivery and Post Natal Care, Large States, India

(Percent of women utilizing care from different states)

State	Rural					Urban				
	ANC									
	Public	Private	No	Total	No of women	Public	Private	No	Total	No of women
Andhra Pradesh	46.3	45.9	7.8	100	258	32.1	60.4	7.5	100	191
Assam	55.3	17.6	27.1	100	134	44.7	55.3	0.0	100	31
Bihar	8.5	43.7	47.8	100	391	6.0	69.3	24.7	100	71
Gujarat	53.0	24.6	22.4	100	165	37.6	50.6	11.8	100	156
Haryana	62.6	21.2	16.2	100	110	38.2	44.2	17.6	100	75
Himachal Pradesh	87.8	8.6	3.6	100	109	88.5	11.5	0.0	100	22
Karnataka	61.3	30.8	7.9	100	154	58.3	33.7	8.0	100	174
Kerala	31.0	67.2	1.8	100	151	28.3	69.3	2.4	100	115
Maharashtra	47.5	34.9	17.6	100	228	24.6	61.6	13.8	100	323
Madhya Pradesh	45.2	15.4	39.4	100	232	47.1	31.8	21.1	100	173
Orissa	66.7	13.4	19.9	100	163	79.4	9.5	11.1	100	57
Punjab	41.3	35.8	22.9	100	76	38.1	17.4	44.5	100	66
Rajasthan	59.4	14.3	26.3	100	259	55.8	42.8	1.4	100	258
Tamil Nadu	69.6	26.2	4.2	100	189	50.4	37.0	12.6	100	146
Uttar Pradesh	31.9	28.4	39.7	100	993	28.7	35.2	36.1	100	466
West Bengal	61.2	28.9	9.9	100	300	54.0	40.3	5.7	100	174
Total	43.7	29.6	26.7	100	3,912	37.9	45.5	16.6	100	2,498
	Delivery									
State	Public	Private	Home	Total	No of women	Public	Private	Home	Total	No of women
Andhra Pradesh	25.8	28.1	46.1	100	259	42.9	47.5	9.6	100	142

Assam	33.3	6.8	59.9	100	131	58	37.2	4.8	100	14
Bihar	3.9	10.9	85.2	100	382	5.0	48.3	46.7	100	65
Gujarat	13.0	28.5	58.5	100	165	19.3	60.2	20.5	100	120
Haryana	2.7	24.9	72.4	100	110	17.9	43.3	38.8	100	50
Himachal Pradesh	53.7	7.9	38.4	100	109	42.7	14.9	42.2	100	20
Karnataka	29.0	37.1	33.9	100	154	39.2	41.9	18.9	100	124
Kerala	32.7	67.3	0.0	100	149	26.9	73.1	0.0	100	79
Maharashtra	25.3	25.9	48.8	100	227	30.1	60.8	9.1	100	229
Madhya Pradesh	23.9	8.5	67.6	100	227	40	37.3	22.7	100	129
Orissa	23.3	5.1	71.6	100	158	39.9	12.7	47.4	100	43
Punjab	19.5	39.1	41.4	100	76	23.7	26.1	50.1	100	54
Rajasthan	16.5	8.2	75.3	100	258	34.7	38.4	26.9	100	110
Tamil Nadu	54.8	32.7	12.5	100	189	49.5	47.9	2.6	100	193
Uttar Pradesh	3.4	8.8	87.8	100	959	8.0	30.2	61.8	100	335
West Bengal	38.7	10.9	50.4	100	291	65.4	25.2	9.4	100	126
Total	18.6	27.4	54.0	100	3,844	30.2	44.0	25.8	100	1,833
PNC										
State	*Public*	*Private*	*No*	*Total*	*No of women*	*Public*	*Private*	*No*	*Total*	*No of women*
Andhra Pradesh	32.6	39	28.4	100	257	30.5	50.4	19.1	100	145
Assam	40.5	29.7	29.8	100	130	63.5	31.7	4.8	100	13
Bihar	10.3	42.0	47.7	100	382	5.6	65.8	28.6	100	64
Gujarat	26.5	23.7	49.8	100	165	23.6	44.7	31.7	100	117
Haryana	14.7	30.5	54.8	100	110	22.8	31.9	45.3	100	50
Himachal Pradesh	65.0	8.7	26.3	100	109	56.3	31.4	12.3	100	20
Karnataka	51.4	28.1	20.5	100	154	47.9	28.7	23.4	100	124
Kerala	25.9	61.2	12.9	100	147	27.4	54.0	18.6	100	77
Maharashtra	29.2	31.7	39.1	100	225	22.6	51.7	25.7	100	233
Madhya Pradesh	37.9	19.9	42.2	100	223	49.4	26.2	24.4	100	127
Orissa	48.7	24.0	27.3	100	153	49.4	10.0	40.6	100	42
Punjab	24.9	31.2	43.9	100	75	41.8	15.6	42.6	100	54
Rajasthan	27.2	29.9	42.9	100	258	26.4	42.5	31.1	100	109
Tamil Nadu	54.0	23.4	22.6	100	189	40.3	34.1	25.6	100	193
Uttar Pradesh	17.6	45.9	36.5	100	946	22.6	47.7	29.7	100	334
West Bengal	36.2	29.5	34.3	100	288	33.0	34.2	32.8	100	126
Total	28.0	35.2	36.8	100	3,811	29.8	42.3	27.9	100	1,828

Source: Estimated from the unit level data of 25th schedule on Morbidity and Health Care of NSSO 60th round survey Care, 2004

Table (2.1) describes by and large a distinct pattern in utilization of maternal health care (ANC, Delivery and PNC) service provisioning in different states. Note that estimates are presented only for 16 large states.

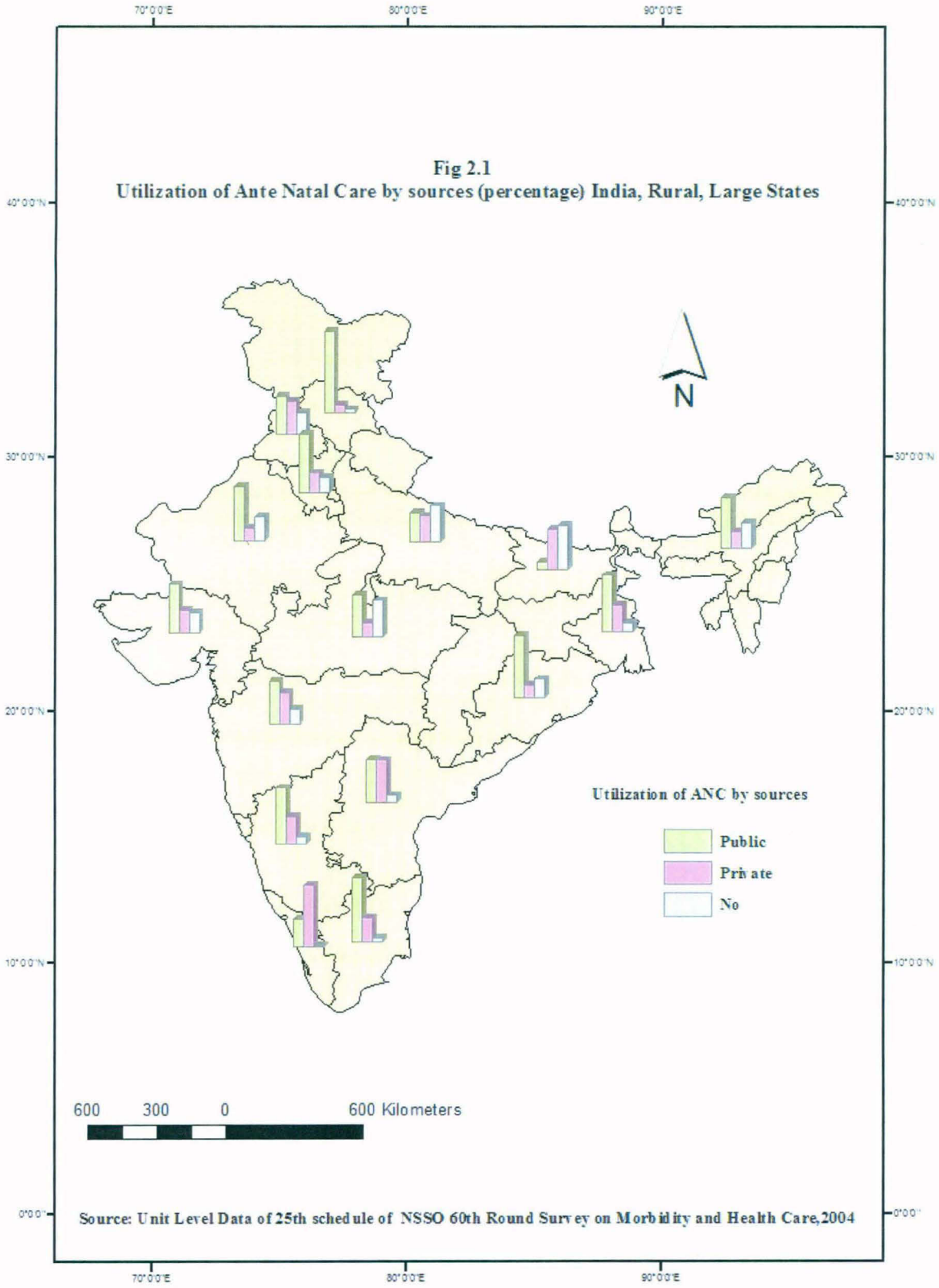
2.2 Utilization of Maternal Health Care Facilities in rural areas of major states:

2.2.1 Antenatal Care:

At the national level 44percent rural women took ANC from public facility and 30 percent from private facilities. It was found from the National Family Health Survey (NFHS), 2005-06 that 41 percent rural women received antenatal care for their most recent birth and 27 percent women living in rural areas received ANC from ANM/nurse/midwife/LHV.

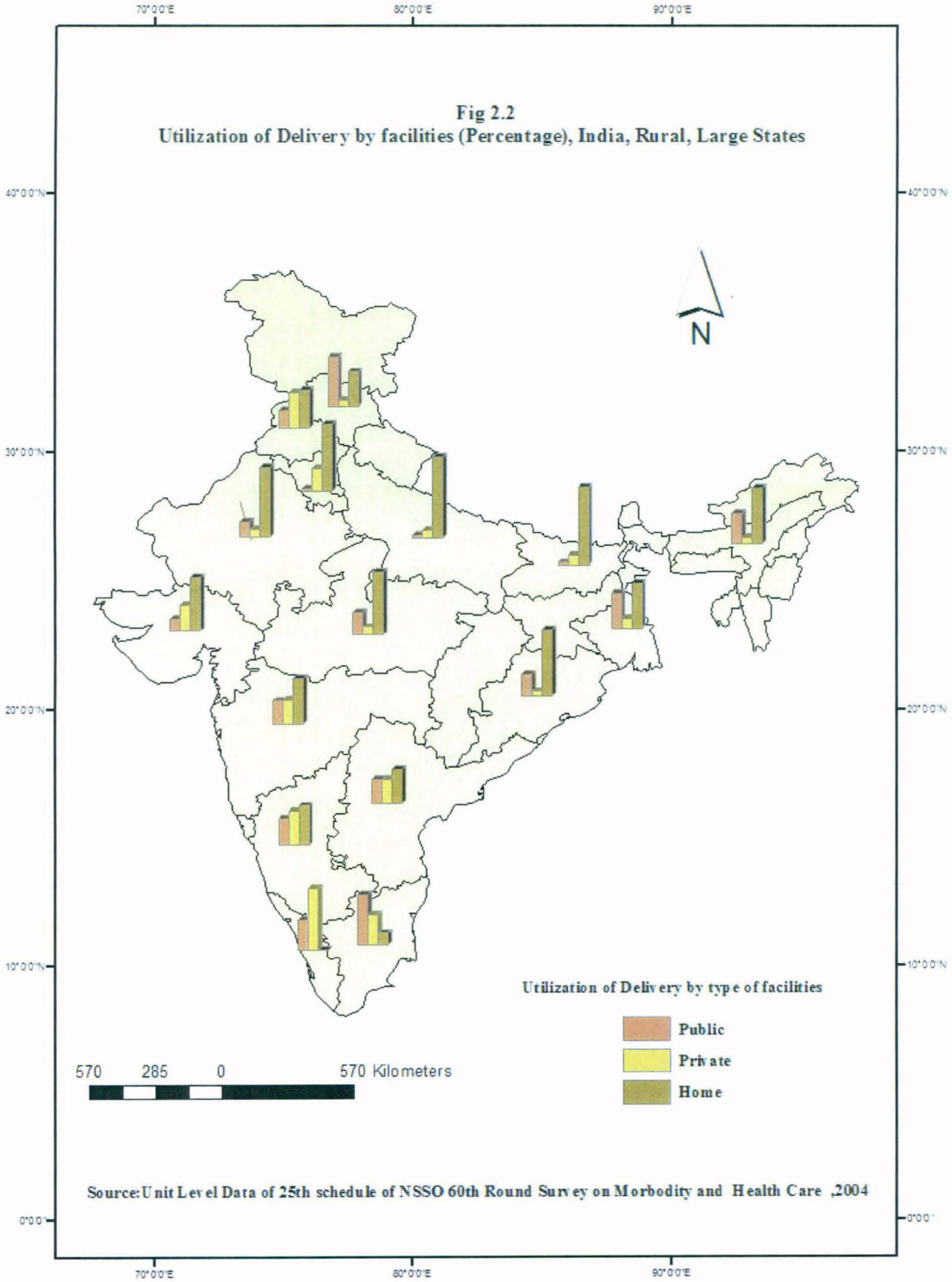
The use of public facilities for ANC was more compared to private facilities in rural areas in almost every state except Bihar and Kerala. In the map (figure no 2.1) one can easily observed that Public services were preferred more than private facilities in West Bengal, Punjab, Orissa, Rajasthan, Karnataka and Tamil Nadu. Above eight percent women sought public facilities for ANC in the rural Bihar. This might be attributed that many public hospitals in Bihar are dysfunctional. On the other hand a large proportion of women from rural parts of northern states did not receive any ANC services compared to rural parts off southern states.

Fig 2.1
Utilization of Ante Natal Care by sources (percentage) India, Rural, Large States



Source: Unit Level Data of 25th schedule of NSSO 60th Round Survey on Morbidity and Health Care,2004

Fig 2.2
Utilization of Delivery by facilities (Percentage), India, Rural, Large States



Source: Unit Level Data of 25th schedule of NSSO 60th Round Survey on Morbodity and Health Care ,2004

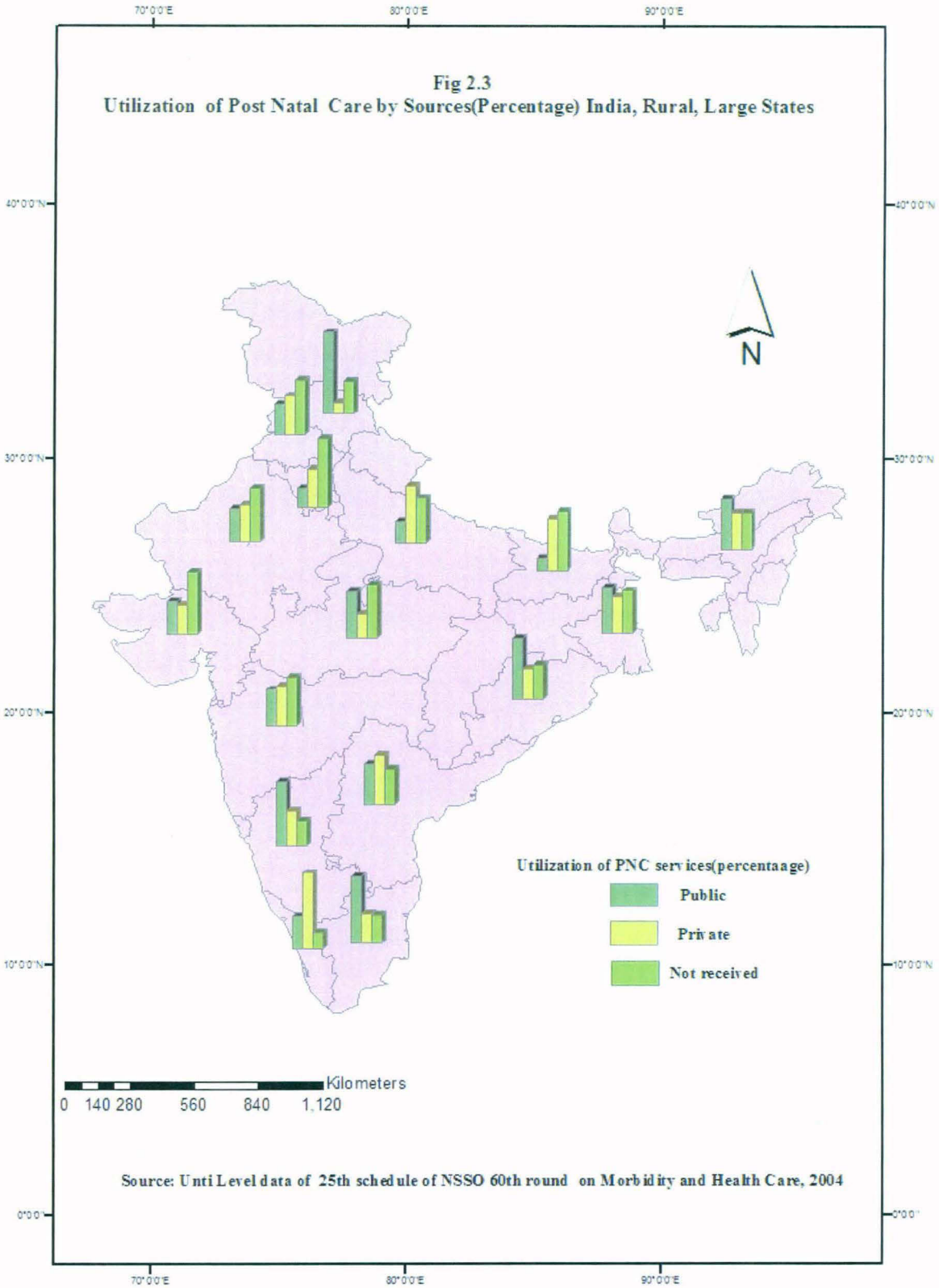


Fig 2.3
Utilization of Post Natal Care by Sources(Percentage) India, Rural, Large States

Source: Unti Level data of 25th schedule of NSSO 60th round on Morbidity and Health Care, 2004

2.2.2 Delivery:

At national level 19 percent and 24 percent women in rural areas gave birth in public sector and private sector respectively. According to NFHS-3 (2005-06) 14.4 percent and 14.2 women in rural areas were reported giving birth at public and private sector respectively in rural India.

Large proportions of women from rural parts of economically and demographically poor states like Bihar, Uttar Pradesh, Madhya Pradesh, Orissa were reported giving birth at home. Kerala (rural) reported full institutional delivery. The map (figure no 2.3) shows that use of private facility for delivery was highest in Kerala and lowest in Orissa. Use of public facility was the highest in Himachal Pradesh followed by West Bengal and Assam.

2.2.3 Post Natal Care:

A huge proportion of rural women from Empowered Action Groups (EAG) states did not receive any PNC services. On the other hand women delivering in health facilities, particularly in private sector are most likely to have a postnatal care check-up. At all India level 28 percent rural women received PNC from public sources and 35 percent women received the same from private facility. But NFHS-3(2005-06) showed that at national level 21 percent women received PNC from doctor and only eight percent received a PNC check-up from ANM/ nurse or mid wife in rural areas. In map (figure 2.3) it was found that in most of the states utilization of PNC was found higher in private providers than public providers in rural areas and the utilization was lowest in Himachal Pradesh and the highest in Kerala.

2.3 Maternal Health Care provisioning in urban areas of major states:

2.3.1 Antenatal Care:

At national level 38 percent women received ANC from public sources and 46 percent women received ANC from private facility in urban areas. According to NFHS-3(2005-06) 77 percent women received ANC from doctor and 12 percent women living in urban India took ANC from ANM, nurse or mid wife.

Utilization of public facilities for ANC was the highest in urban Himachal Pradesh same as its rural counterpart compared to other states. The map (figure 2.3) shows that proportions of women received ANC from private facilities were higher in urban areas compare to rural counterparts. Urban Women from the states like Maharashtra, Kerala, Gujarat, Haryana, Bihar, Uttar Pradesh, and Rajasthan sought private providers for ANC services.

2.3.2 Delivery:

The results show that 30 percent women gave birth at public facility and 44 percent at private facility in urban parts of India. NFHS-3 (2005-06) showed that 29 percent and 38 percent women gave birth at public and private facility in urban India.

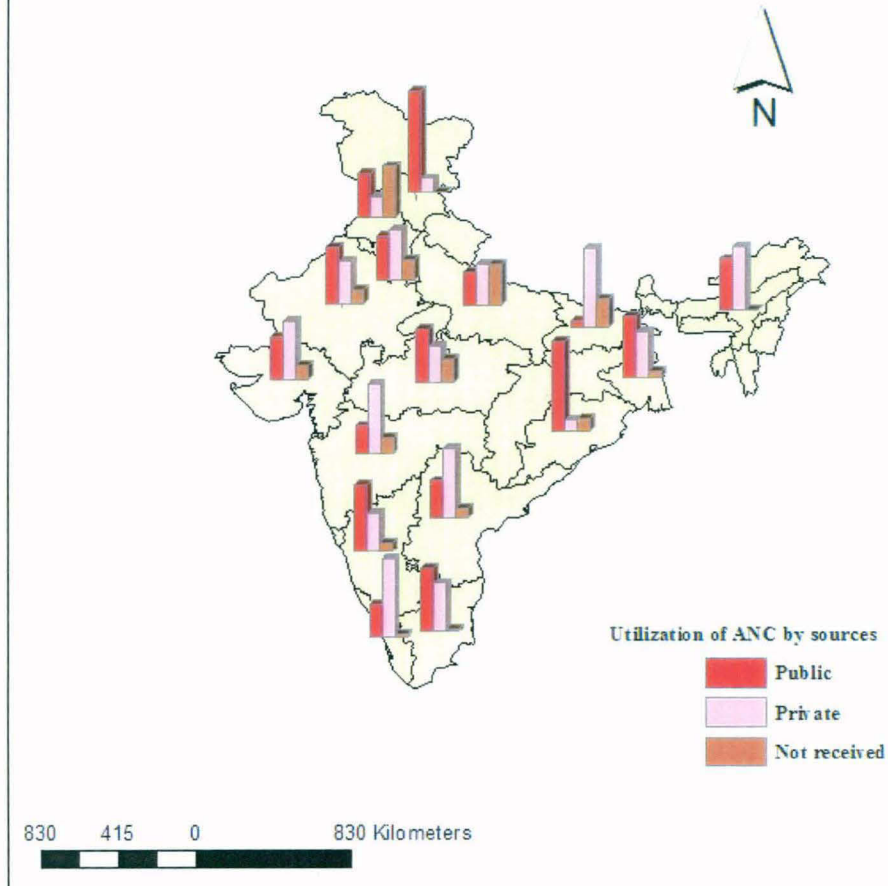
Women from Kerala reported full institutional delivery. Proportions of home deliveries were found less in urban areas compared to rural areas. Maps shows (Figure 2.5) Proportion of home deliveries were found very less in urban parts of states like Tamil Nadu, Assam and West Bengal. Utilization of private facilities was the highest in Kerala (73 %) and the lowest in Himachal Pradesh. Use of public facilities for delivery was the highest in West Bengal and the lowest in Bihar (only 5%).

2.3.3 Post Natal Care:

NFHS-3(2005-06) showed that in urban parts of India 53 percent women took PNC from doctor and only eight percent received the same from ANM/ nurse or mid wife. The result for this study showed that 30 percent and 42 percent women in urban India received PNC from public and private facility respectively.

Women reported non use of PNC was the highest in Haryana and the lowest in Assam. Over all in urban areas women preferred private providers for PNC than public providers in almost every states.

Fig 2.4
Utilization of Ante- Natal Care by Sources(Percentage) India,Urban,Large States



Source: Unit Level Data of 25th schedule of NSSO 60th Round Survey on Morbidity and Health Care Aged, 2004

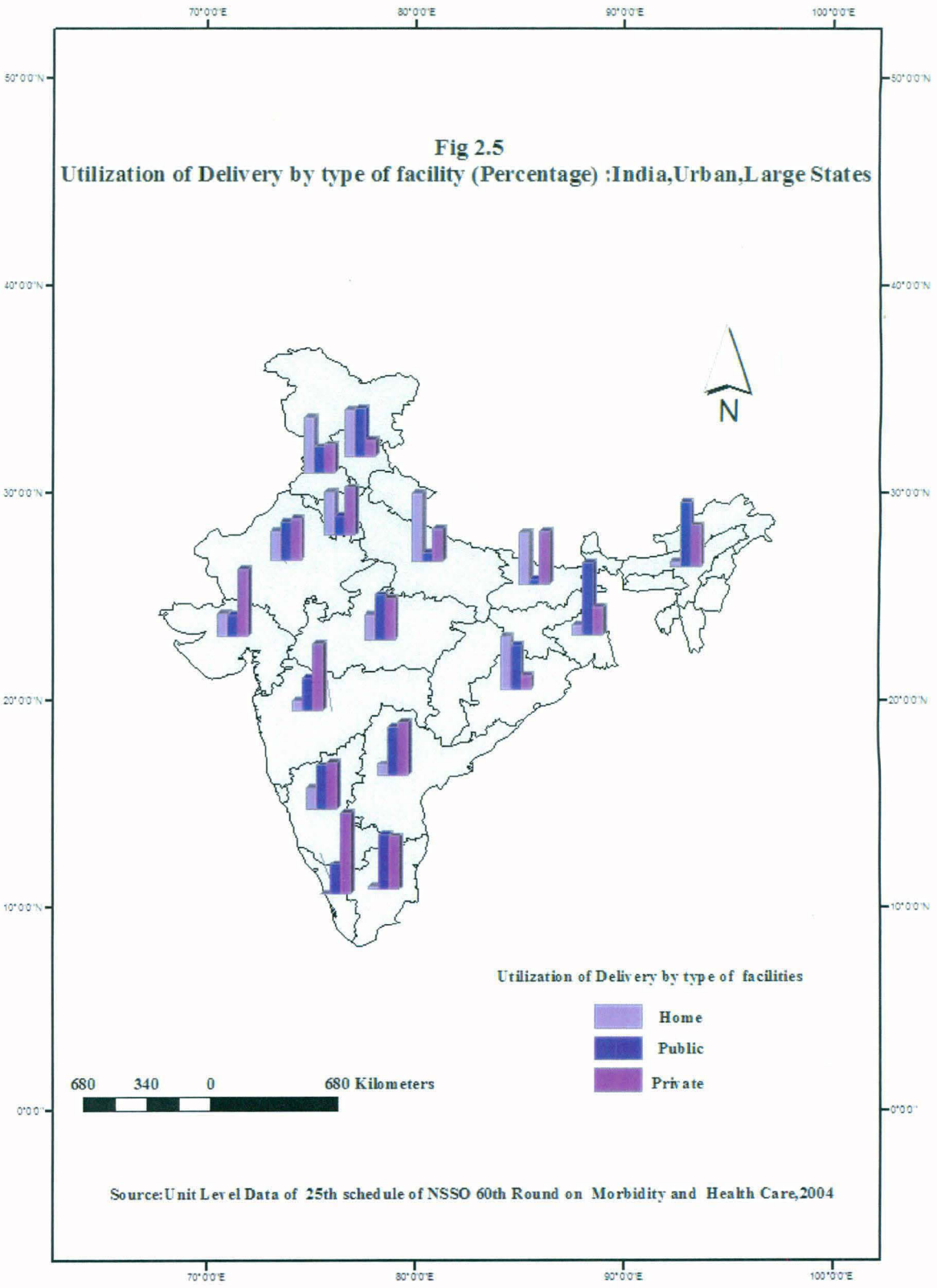


Fig 2.5
Utilization of Delivery by type of facility (Percentage) :India,Urban,Large States

Source:Unit Level Data of 25th schedule of NSSO 60th Round on Morbidity and Health Care,2004

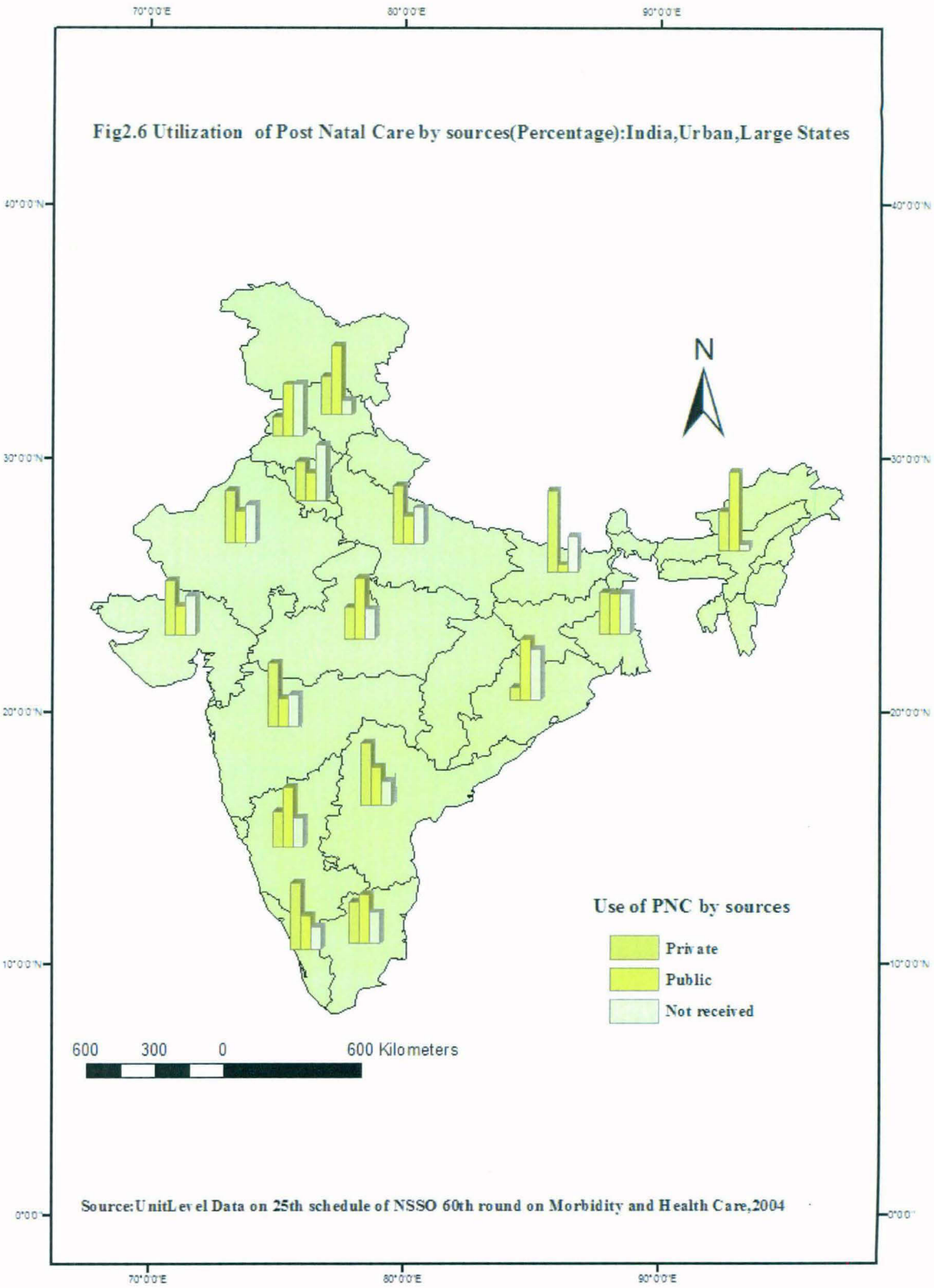


Fig2.6 Utilization of Post Natal Care by sources(Percentage):India,Urban,Large States

Source:UnitLevel Data on 25th schedule of NSSO 60th round on Morbidity and Health Care,2004

Table 2.2: Utilization of Ante Natal Care (ANC), Delivery and Post Natal Care (PNC) by Type of Facility across Background Characteristics of Women in Rural India

Background Characteristics	*ANC*					*Delivery*					*PNC*				
Religion	*Public*	*Private*	*No*	*Total*	*No of women*	*Public*	*Private*	*Home*	*Total*	*No of women*	*Public*	*Private*	*No*	*Total*	*No of women*
Hindu	43.4	27.0	30.6	100	5,108	18.5	16.2	65.1	100	3,686	28.3	34.0	37.7	100	3,647
Muslim	39.5	25.8	35.7	100	823	14.9	13.8	71.2	100	544	24.0	37.0	39.0	100	537
Christian	32.0	41.1	27.9	100	349	25.7	32.0	42.1	100	197	32.4	29.5	38.1	100	184
Others	37.1	31.9	31.1	100	238	19.7	33.2	46.9	100	185	27.3	30.5	42.2	100	179
MPCE Quintile															
I	43.8	21.2	35.0	100	1,320	12.7	8.1	79.0	100	1,035	28.2	35.4	36.4	100	1,028
II	40.5	23.0	36.5	100	1,462	20.2	9.3	70.4	100	1,055	28.4	30.3	41.3	100	1,054
III	42.2	29.1	29.7	100	1,425	19.9	18.1	61.9	100	1,022	26.4	31.6	42.0	100	1,014
IV	43.4	29.4	27.2	100	1,023	22.3	22.6	55.0	100	702	28.4	35.6	36.0	100	695
V	43.4	38.1	18.5	100	1,288	18.8	38.8	42.2	100	798	27.0	41.0	32.0	100	789
Social Groups															
ST	48.7	13.6	38.7	100	940	14.9	6.0	79.0	100	635	32.0	18.0	50.0	100	624
SC	42.4	23.8	34.8	100	1,298	20.0	11.0	68.8	100	957	26.3	32.2	41.5	100	956
OBC	40.5	28.3	31.2	100	2,601	17.3	18.7	63.8	100	1,871	29.1	34.8	36.1	100	1,859
Others	43.3	34.2	22.5	100	1,679	19.3	23.6	57.0	100	1,149	25.0	42.5	32.5	100	1,141
Household's main Occupation															
Self employed in non agriculture	43.2	29.3	27.5	100	1,120	21.5	17.0	61.0	100	774	29.4	36.1	34.5	100	766
Agricultural labour	46.3	20.0	34.7	100	1,276	20.5	10.0	69.0	100	957	28.1	29.5	42.4	100	945
Other labour	45.5	25.9	28.6	100	703	19.0	22.1	59.0	100	517	28.4	32.8	39.8	100	510
Self employed in agriculture	39.2	28.5	32.3	100	2,780	13.5	16.7	70.0	100	1,947	27.1	36.3	36.6	100	1,916
Others	38.5	41.1	20.4	100	636	22.2	28.5	49.0	100	416	26.6	39.4	34.0	100	412

Age groups															
15-19	50.7	25.6	24.7	100	615	22.0	17.4	60.5	100	373	30.8	31.0	38.2	100	371
20-24	42.5	28.5	29.0	100	2,617	19.5	19.6	60.8	100	1,866	28.8	34.7	36.5	100	1,846
25-29	44.3	27.1	28.6	100	1,819	19.3	16.1	64.4	100	1,316	29.3	32.7	38.0	100	1,297
30-34	41.2	26.2	33.7	100	906	15.9	14.2	69.8	100	655	24.9	37.1	38.0	100	645
35-39	33.2	23.4	43.4	100	370	8.4	6.2	85.3	100	257	24.4	35.1	40.5	100	255
40-44	29.1	28.8	42.1	100	123	13.4	8.9	77.5	100	93	20.5	29.5	50.0	100	86
45-49	10.8	24.9	64.3	100	68	6.0	8.7	85.2	100	52	13.5	35.3	51.2	100	58
Educational Attainments															
Not literate+below primary	39.7	22.2	38.1	100	3,615	14.5	9.3	76.0	100	2,638	25.7	32.3	42.0	100	2,612
Primary+Middle	50.6	30.2	19.2	100	1,989	26.7	22.7	51.0	100	1,350	33.6	35.0	31.4	100	1,348
Secondary+Diploma	40.2	47.7	12.1	100	756	23.8	45.2	31.0	100	518	29.1	43.6	27.3	100	519
Graduate+Higher	34.8	54.5	11.7	100	157	11.0	69.5	19.0	100	107	17.5	62.2	20.3	100	109
Total	42.5	27.2	30.3	100	6,518	18.2	16.6	65.1	100	4,612	27.9	34.1	38.0	100	4558

Source: Estimated from unit level data of 25th schedule of NSSO 60th round survey on Morbidity and Health Care, 2004

Table 2.2: Utilization of Ante Natal Care (ANC), Delivery and Post Natal Care (PNC) by Type of Facility across Background Characteristics of Women in Urban India

Background Characteristics	ANC														
Religion	Public	Private	No	Total	No of women	Public	Private	Home	Total	No of women	Public	Private	No	Total	No of women
Hindu	39.5	46.3	14.1	100	2,318	30.3	44.3	25.2	100	1,684	31.1	42.6	26.1	100	1,678
Muslim	34.6	38.1	27.1	100	508	29.0	37.4	33.5	100	387	23.8	40.7	35.4	100	387
Christian	44.5	49	6.3	100	151	46.6	45.9	7.4	100	97	40.0	34.1	25.8	100	94
Others	32.5	44.9	22.4	100	141	46.7	40.2	13	100	94	39.5	27.7	32.6	100	94
MPCE Quintile															
I	46.0	27.6	26.3	100	838	34.6	25.0	40.3	100	650	32.6	31.3	35.9	100	646
II	45.3	36.5	18.0	100	440	38.0	30.6	31.2	100	317	31.4	33.4	35.0	100	315
III	42.8	42.6	14.5	100	590	37.6	35.6	26.7	100	434	36.6	35.4	27.9	100	429
IV	35.5	54.1	10.3	100	636	24.2	60.8	14.8	100	450	26.1	53.5	20.3	100	448
V	19.5	73.2	7.1	100	614	15.5	81.3	3.0	100	411	21.5	64.4	14.0	100	415
Social Groups															
ST	42.4	41.9	15.6	100	214	46.2	21.0	32.6	100	130	35.1	24.1	40.8	100	129
SC	43.9	38.8	17.2	100	498	38.8	25.0	36.0	100	367	32.4	31.5	35.9	100	364
OBC	40.2	43.1	16.6	100	1,133	27.0	42.9	30.0	100	839	32.2	42.4	26.3	100	831
Others	34.1	49.8	15.9	100	1,273	29.8	53.6	16.5	100	926	27.9	47.2	24.7	100	926
Household's main Occupation															
Self employed	36.7	43.6	20.0	100	1,439	26.3	44.0	30.0	100	1,045	27.6	44.2	28.0	100	1,037
Regular wage/salary	36.4	52.2	11.0	100	1,188	29.8	49.0	21.0	100	856	32.2	44.0	24.0	100	854
Casual labour	52.4	29.5	18.0	100	366	48.4	23.4	28.0	100	274	35.2	26.8	38.0	100	274
Others	19.5	56.9	24.0	100	125	24.3	57.7	18.0	100	87	26.1	40.6	33.0	100	87
Age groups															
15-19	40.3	40.8	18.8	100	183	33.2	38.1	28.6	100	116	25.4	37	37.5	100	117

20-24	40.2	44.7	15.0	100	1,283	32.7	40.3	26.8	100	931	32.3	41.3	26.2	100	930
25-29	37.4	48.6	13.8	100	1,034	30.6	48.3	21.0	100	759	30.1	44.3	25.5	100	756
30-34	35.1	44.9	19.8	100	410	26.1	46.2	27.0	100	307	24.6	42.1	33.1	100	304
35-39	41.1	31.4	27.4	100	152	26.1	33.3	40.5	100	112	36.4	29.2	34.3	100	111
40-44	25.9	22.9	51.1	100	36	7.4	16.4	76.1	100	24	17.9	39.3	42.7	100	23
45-49	29.2	40.6	30.1	100	20	54.1	40.9	4.9	100	13	35.4	37.1	27.5	100	12
Educational Attainments															
Not literate+belowprimary	43.7	26.1	30.6	100	874	29.8	21.6	48.5	100	650	27.9	33.3	38.7	100	642
Primary+Middle	42.8	43.6	13.4	100	985	37.8	40.4	21.7	100	710	35.2	38.2	26.4	100	708
Secondary+Diploma	32.1	60.1	7.7	100	771	31.1	59.8	8.9	100	521	29.6	47.9	22.4	100	520
Graduate+Higher	25.7	69.9	4.3	100	488	18	76.5	5.3	100	381	25.9	59.4	14.6	100	383
Total	38.6	44.9	16.4	100	3,118	30.9	43.0	26.0	100	2,262	30.3	41.6	28	100	2,253

Source: Estimated from unit level data of 25th schedule of NSSO 60th round survey on Morbidity and Health Care, 2004

The results depict (Table 2.2 and 2.3) that with increasing household's consumption quintile use of private facility for ANC and PNC had increased both in rural and urban India. For delivery a sharp decline for home delivery can be seen in urban areas with increasing consumption expenditure of the households. But in rural areas home deliveries were preferred by all consumption quintiles. With increasing consumption expenditure the use of private facility for delivery was found to be increased. For PNC services in rural areas the private facility was more preferred over public facility by all consumption quintiles. Over all it was observed from both the analysis (table 2.2 and 2.3) that both in rural and in urban areas with increasing consumption quintiles use of public facilities for Maternal Health Care(ANC, Delivery and PNC) were less preferred .

Women from younger birth cohort utilized antenatal care from public facilities more than older birth cohort. In urban areas not much variation was found across age-groups in receiving ANC services from both public and private facilities. Home deliveries were more preferred in rural areas among all age groups. A huge chunk of women from all age groups delivered child at home, but the proportions were more for older birth cohort compared to younger birth cohort. The proportions of women giving birth at home were found substantially less among younger women than older women in urban areas except for 45-49 age group where only 4.9 percent women delivered at home. Other than home deliveries, private facilities were preferred compared to public facilities. For post natal care private services were sought by women across all age groups both in rural and urban areas compared to public facilities. A large proportions of women both in rural as well as in urban areas did not utilize any PNC services.

With respect to religious characteristics of women it was observed that that in rural areas women who belonged to Christian religion rank highest in preferring private facility for ANC in rural. But in urban areas private providers were preferred over public facilities by all religion groups. In case of delivery at home the results show that about 71 percent Muslim women delivered at their home in rural areas and the percentages for the same were found higher (above 34 percent) in urban India for those women who belonged to Islam religion for the same. The results demonstrate that the large proportion of Muslim women did not receive any ANC and PNC services and also positioned highest in delivering child at home both in rural as well as urban areas.

It was observed (Table 2.2 and 2.3) that across social groups the public facility was more preferred over private providers for ANC services, both for rural and urban women. The proportion was found highest for Scheduled Tribes (ST), in rural and Scheduled Castes in urban areas. Women belonged to other caste households positioned highest followed by OBCs in utilization of ANC from private sources. Same was found true for urban areas. About 79 percent women from Scheduled Tribes delivered at home whereas the percentage was less (57 %) in case of women who belonged to other castes in rural areas. Only 6 percent women of ST and 11 percent women of SC castes gave birth at private hospitals in rural areas and this percentage for the same had increased in urban areas .Both in rural and in urban areas a huge chunk of women belonged to Scheduled Castes (SC) and Scheduled Tribes (ST) did not receive any PNC services. Scheduled Tribes (ST) and Scheduled Castes (SC) women in rural areas sought PNC services from public facilities but women who belonged to Other Backward Caste (OBC) and other castes sought PNC services from private providers in both in rural and urban areas.

With respect to educational attainments of women it was seen that with increasing education of women the use of private facility for receiving antenatal care increased in both rural and urban India. Proportions of delivery at home decreased and use of private facility for delivery had increased with the increasing education of women in both the rural and urban areas. But it is noted that irrespective of women's educational attainments the use of post natal care was preferred in private facility than public facilities and this was so for rural as well as urban areas.

Furthermore, Tables 2.2 and 2.3 show that utilization of antenatal care (ANC), delivery, postnatal care (PNC) across household's main occupation types. In rural areas large proportions of women who belonged to the households of self employed in non-agriculture, agricultural labour as principal occupation delivered at home in rural areas. Non-utilization of ANC was found highest for women belonged to self employed in agriculture followed by agricultural labour in rural areas. Overall it was observed that all women despite their main occupation sought public facility for ANC in rural India. But in urban areas except women from household engaged in casual labour used private facility for ANC services. Deliveries in home outnumbered deliveries in private and public facilities for all households' types in rural areas. About seventy percent women of engaged in agricultural labour type households delivered at their home in rural areas. Proportions of home deliveries were much lower in urban areas compared to rural areas.

For post natal care irrespective of household types both in rural and urban areas public providers were less preferred than private providers.

2.4 Multivariate analysis:

In order to estimate the determinants of utilization of maternal health care by the sources i.e. public and private multinomial six logistic regression analyses were done separately for rural and urban areas. Multinomial logistic regression was the best suitable method for the statistical analysis as the dependent variables were of three categories .Followings are descriptions of variables in brief.

Dependent variables:

Dependent variables for the utilization sources of ANC were: 1. Not received any ANC service (reference category), 2. Received ANC from public sources and 3.Received ANC from private sources.

Dependent variables for place of delivery: 1. Delivered the child at home (reference category), 2.Delivered at public facility, and 3.Delivered at private facility.

Dependent variables for PNC: 1.Not received any PNC service (reference category), 2.Received PNC from public sources and 3.Received PNC from private sources.

Key explanatory variables: The main explanatory variables were the background socio-economic and demographic characteristics of the women who reported being pregnant or delivered a child during 365 days prior to the survey. This includes age group of women, social groups, religion, household's main occupation, and educational attainments of women and monthly per capita consumption expenditure of households.

2.4.1 Antenatal Care: Rural areas

Odd ratios of multinomial logistic regression by the key socio-economic and demographic variables are presented Table 2.4 show that as the level of consumption expenditure

declines the utilization of ANC from public sources had decreased but the order was not clear for the poorest two categories and results were found to be same for the utilization of ANC in private sources in rural areas but the effect was much stronger for utilization in private facilities. Household's main occupation were found to be a significant control variable even after controlling other socio-economic and demographic variables. Women belonged to agricultural labour as main occupation of household in rural areas had significantly less chance of receiving ANC from private sources compared to their reference category and the effect was found less strong than the utilization of ANC from public sources. Education of women was found to be another significant variable for the utilization of ANC from public sources. With increasing education of women the likelihood of utilization of ANC increases and the effect was stronger for higher educated women receiving ANC from private sources. With respect to religious characteristics of women the likelihood of receiving ANC from public sources was observed less for Muslim women than Hindu women and likelihood of receiving ANC was even more less for private sources for Muslim women. Controlling other variables in the model the likelihood of receiving ANC was found less in public facilities and more in private facilities for Christian women followed by Hindu women. Social group of women was another significant control variable. The odd ratios for the utilization of ANC were found less for women who belonged to Scheduled Tribes (ST) followed by Scheduled Castes (SC) and Other Backward Castes (OBC) for private sources but the effect was lower for ANC utilization in public sources. Age groups of women showed strong and significant effect on utilization of ANC but the effect was stronger for public sources. Lower the age groups of women, higher were the chance of receiving ANC.

2.4.2 Delivery care: Rural areas

It was observed from Table 2.5 that the likelihood of delivering in private facilities had increased significantly with increasing consumption expenditure quintiles. The effect was found much stronger for delivery at public sources in rural areas. Controlling other variables in the model the main occupation of the household was found as significant variable. It was observed that giving birth of a child at public sources had increased for the all household types compared to women belonged to self employed in agriculture(reference category) .Though the results were similar for the private sources were significantly less strong public sources. Educational qualifications of women were found to be another strong significant variable even controlling for

the other explanatory variables. The probability of delivering a child in both public and private sources increased with increasing educational attainments of women but the chance was found stronger for delivering a child in private hospitals compared to public hospitals. The likelihood of giving birth of a child in both public and private facilities had increased for those women who belonged to Christians and Others religion compared to Hindu (reference) women but the effect was significantly stronger for private facilities than public in rural areas. The results show that probability of giving birth of a child in public and private facilities were found significantly less among Muslim women. Controlling other variables in the model social groups of women were found to be another significant variable. The probability of giving birth of a child at private hospitals were found significantly less for women belonged to Scheduled Castes and Scheduled Tribes compared to the reference category women belonged to other castes the effect was much stronger for delivery at private facilities compared to public facilities. Age groups of women were observed to be another significant control variable. Lower the age of women higher was the chance of delivering a child in public and private facilities but the effect was much stronger for delivering private facilities.

2.4.3 Post-natal Care: Rural areas

Table 2.6 shows the probability of utilization of Postnatal Care by some socio-economic and demographic characteristics of women in rural India. The monthly per capita consumption quintiles of women did not show any clear pattern of utilization of PNC form both public and private sources. The chance of receiving post natal care from public sources were found significantly 1.2 times higher for women belonged to self employed in non-agriculture compared to women belonged to self employed in agriculture as main occupation. Utilization of PNC from public sources had increased with increasing educational attainment of women and even controlling other key explanatory variables in the model this was found significant. Effect was found stronger for use of PNC in private sources for women with higher education compared to public sources. Women belonged to Muslim religion were found to be a significant variable utilizing PNC from private sources and results showed that their chance of receiving PNC from private sources were found less than the reference category Hindu women. The chance of receiving PNC from private sources was found significantly less for women belonged to scheduled Tribes and Scheduled Castes compared to women belonged to other castes. Higher

the age groups of women lower the probability of receiving PNC utilization and here the effect was found to be stronger for private sources in rural areas.

2.4.4 Antenatal care: Urban areas

Logistic regression (Table 2.7) for utilization of antenatal care by sources in urban India depicts that likelihood of utilization of ANC came down significantly for private sources with increasing level of consumption expenditure. The probability of receiving ANC was found significantly lower for women belonged to other type of household occupation in public sources compared to the reference category women belonged to regular wage/ salary. However this (other) category was not properly dealt by NSSO. Educational attainments of women had a positive and significant effect on ANC utilization. Higher the educational attainments of women, greater were the utilizations and the effects were found to be significantly stronger for the utilization of ANC from private sources. The likelihood of receiving ANC was found to be significantly less among Muslim women. Age groups of women were found to be significant variable even after controlling other explanatory variables in the model. Lower the age groups of women higher the likelihood of utilization of ANC and the effect was stronger for use of private facilities for ANC.

2.4.5 Delivery care: Urban areas

Table 2.8 presents odd ratios of utilization of delivery by sources. Economic condition o household had positive and significant effect on utilization pattern. It was found that with increasing economic status (represented here as monthly per capita consumption expenditure quintiles) the probability of delivering child at private sources had increased significantly. Utilization of private sources declined across all households designated as their main occupation compared to the reference category women belonged to the household of regular wage type. But for public sources the chance of utilization had increased for casual labour as main occupation of households even controlling other variables in the model. Controlling the other variables in the model the educational qualifications of women were found to be significant positive determining factors. Higher the educational attainments greater were the chances of institutional delivery and

the effect was stronger for private sources for urban areas. The probability of use of public facilities for delivery had increased for the women who belonged Sikh, Jain, Buddhists and Zoroastrians and other remaining compared to the reference category women belonged to Hindu religion. Controlling other variables age group of women was found to be another significant variable. The probability of delivering a child in private sources was found highest for women belonged to 25-34 age group followed by women of 15-24 age group.

2.4.6 Post-natal care: Urban areas

The results of logistic analysis of Table 2.9 shows that as the level of monthly consumption expenditure declined the likelihood of use of private facilitates for PNC in urban women had also declined. Controlling other variables in the model the educational attainments of women appeared to be a significant and positive control variable in the model. Higher the educational attainments of women, higher were the probability of utilizations of post natal care. The effect was found to be stronger for Public facilities. With respect to religion and social groups of women it was seen that Muslim women had significant less chance of receiving PNC from public sources and Scheduled Tribes women had lower probability of receiving PNC from private sources compared to their reference category women.

Table 2.4. Multinomial Logistic Regression Showing Likelihood of Utilizing Antenatal Care from Public and Private Sources by some Socio-Economic and Demographic Characteristics of Women in Rural India:

Back ground Characteristics	*Public Health Facility vs. No (Odd ratios)*	*Private Health Facility vs. No (Odd ratios)*
Religion		
Others	0.698*	0.91
Christian	0.687	1.860**
Muslim	0.611***	0.549***
Hindu®	1.000	1.000
MPCE Quintiles		
I	0.666***	0.511***
II	0.55***	0.469***
III	0.703**	0.665**
IV	0.746**	0.672**
V®	1.000	1.000
Social Groups		
ST	0.657***	0.247***
SC	0.560***	0.466***
OBC	0.643***	0.627***
Others®	1.000	1.000
Household's main occupation		
Self employed in non-agriculture	1.390***	1.292*
Agricultural Labourer	1.333***	0.981
Other Labour	1.473***	1.263**
Others	1.431*	1.910***
Self employed in agriculture®	1.000	1.000
Age-Groups		
15-24	2.295***	1.747***
25-34	2.095***	1.522**
35-49®	1.000	1.000
Education		
Higher	1.447**	1.808
Primary/Middle	1.255**	1.100
Not literate®	1.000	1.000

Note: ®= Reference Category; ***$p \leq 0.001$; **$p \leq 0.05$; *$p \leq 0.01$,N=6515 ; Pseudo R^2=0.201

Table 2.5. Multinomial Logistic Regression Showing Likelihood of Giving Birth of a Child in Public and Private Facilities by Some Socio-Economic and Demographic Characteristics of Women in Rural India:

Background Characteristics	*Public Health Facility vs. Home (Odd ratios)*	*Private Health Facility vs. Home (Odd ratios)*
Religion		
Others	1.369	1.794**
Christian	2.187**	2.647**
Muslim	0.594***	0.576***
Hindu®	1.000	1.000.
MPCE Quintiles		
I	0.457***	0.218***
II	0.773***	0.230***
III	0.815	0.429***
IV	1.032	0.596***
V®	1.000	1.000
Social Groups		
ST	0.514***	0.221***
SC	0.717*	0.424***
OBC	0.767**	0.849
Others®	1.000	1.000
Household's main occupation		
Self employed in non-agriculture	1.873***	1.291*
Agricultural Labourer	2.089***	1.236
Other Labour	1.954***	2.375***
Others	2.051***	1.780***
Self employed in agriculture®	1.000	1.000
Age-Groups		
15-24	2.556***	3.068***
25-34	2.187**	2.155***
35-49®	1.000	1.000
Education		
Higher	2.088***	3.102***
Primary/Middle	1.765***	1.708***
Not literate®	1.000	1.000

Note: ®= Reference Category; ***p ≤ 0.001; **p ≤ 0.05; *p ≤ 0.01,N=4686 ; Pseudo R^2=0.221

Table 2.6. Multinomial Logistic Regression Showing Likelihood of Utilizing Postnatal Care from Public and Private Sources by some Socio-Economic and Demographic Characteristics of Women in Rural India:

Background Characteristics	*Public Health Facility vs. No (Odd ratios*	*Private Health Facility vs. No (Odd ratios)*
Religion		
Others	*0.847*	*0.698*
Christian	*1.197*	*1.04*
Muslim	*0.825*	*0.827**
Hindu®	*1.000*	*1.000*
MPCE Quintiles		
I	*1.121*	*1.107*
II	*0.929*	*0.743**
III	*0.797**	*0.691***
IV	*0.981*	*0.881*
V®	*1.000*	*1.000*
Social Groups		
ST	*0.816*	*0.281****
SC	*0.781***	*0.586****
OBC	*1.03*	*0.740***
Others®	*1.000*	*1.000*
Household's main occupation		
Self employed in non-agriculture	*1.203**	*1.095*
Agricultural Labourer	*0.992*	*0.834**
Other Labour	*1.101*	*1.034*
Others	*1.108*	*1.056*
Self employed in agriculture®	*1.000*	*1.000*
Age-Groups		
15-24	*1.584***	*1.236**
25-34	*1.435***	*1.196*
35-49®	*1.000*	*1.000*
Education		
Higher	*1.595***	*1.623****
Primary/Middle	*1.286***	*0.999*
Not literate®	*1.000*	*1.000*

Note: ®= Reference Category; ***p ≤ 0.001; **p ≤ 0.05; *p ≤ 0.01,N=4668; Pseudo R^2=0.239

Table 2.7. Multinomial Logistic Regression Showing Likelihood of Utilizing Antenatal Care from Public and Private Health facilities by some Socio-Economic and Demographic Characteristics of Women in Urban India:

Background Characteristics	*Public Health Facility vs. Home (Odds ratios)*	*Private Health Facility vs. No (Odds ratios)*
Religion		
Others	0.415*	0.515
Christian	1.822	1.282
Muslim	0.610**	0.811
Hindu®	1.000	1.000
MPCE Quintiles		
I	0.049	0.201***
II	0.501	0.367**
III	0.369	0.396**
IV	0.568	0.666
V®	1.000	1.000
Social Groups		
ST	1.149	1.048
SC	1.23	1.363
OBC	1.304	1.405
Others®	1.000	1.000
Household's main occupation		
Self employed	0.715	0.685*
Casual Labour	1.307	0.868
Others	0.300*	0.77
Regular Wage/ Salary®	1.000	1.000
Age-Groups		
15-24	2.194**	2.945**
25-34	1.969**	2.725**
35-49®	1.000	1.000
Education		
Higher	3.204***	4.548***
Primary/Middle	2.677***	2.908***
Not literate®	1.000	1.000

Note: ®= Reference Category; ***$p \leq 0.001$; **$p \leq 0.05$; *$p \leq 0.01$,N=1063; Pseudo R^2=0.220

Table 2.8. Multinomial Logistic Regression Showing Likelihood of Giving Birth of a Child in Public and Private Sources by Some Socio-Economic and Demographic Characteristics of Women in Urban India:

Background Characteristics	*Public Health Facility vs. Home (Odds ratios)*	*Private Health Facility vs. Home (Odds ratios)*
Religion		
Others	0.415*	0.515
Christian	1.822	1.282
Muslim	0.610**	0.811
Hindu®	1.000	1.000
MPCE Quintiles		
I	0.049	0.201***
II	0.501	0.367**
III	0.369	0.396**
IV	0.568	0.666
V®	1.000	1.000
Social Groups		
ST	1.149	1.048
SC	1.23	1.363
OBC	1.304	1.405
Others®	1.000	1.000
Household's main occupation		
Self employed	0.715	0.685*
Casual Labour	1.307	0.868
Others	0.300*	0.77
Regular Wage/ Salary®	1.000	1.000
Age-Groups		
15-24	2.194**	2.945**
25-34	1.969**	2.725**
35-49®	1.000	1.000
Education		
Higher	3.204***	4.548***
Primary/Middle	2.677***	2.908***
Not literate®	1.000	1.000

Note: ®= Reference Category; ***$p \leq 0.001$; **$p \leq 0.05$; *$p \leq 0.01$,N=740; Pseudo R^2=0.201

Table 2.9. Multinomial Logistic Regression Showing Likelihood of Utilizing Postnatal Care from Public and Private Sources by some Socio-Economic and Demographic Characteristics of Women in Urban India:

Background Characteristics	*Public Health Facility vs. No (Odds ratios*	*Private Health Facility vs. No (Odd ratios)*
Religion		
Others	1.183	0.56
Christian	1.196	0.694
Muslim	0.592*	0.873
Hindu®	1.000	1.000
MPCE Quintiles		
I	0.913	0.263***
II	0.858	0.283**
III	1.051	0.312**
IV	0.942	0.614
V®	1.000	1.000
Social Groups		
ST	0.672	0.354*
SC	0.763	0.773
OBC	1.116	1.198
Others®	1.000	1.000
Household's main occupation		
Self employed	0.81	0.977
Casual Labour	0.941	0.729
Others	0.664	0.773
Regular Wage/ Salary®	1.000	1.000
Age-Groups		
15-24	1.207	1.778
25-34	0.956	1.508
35-49®	1.000	1.000
Education		
Higher	2.086**	1.862**
Primary/Middle	1.771**	1.555*
Not literate®	1.000	1.000

Note: ®= Reference Category; ***p ≤ 0.001; **p ≤ 0.05; *p ≤ 0.01,N=736; Pseudo R^2=0.241

2.5 Summary:

This chapter makes an attempt to analyze the patterns of rural-urban variation in utilization of antenatal. Delivery and postnatal care facilities from public and private provisions in India. Along with an attempt was made to explore the interstate variation pattern of maternity services. Utilization of public and private facilities for maternal health care across various socio-economic and demographic stratums of women was done. Multivariate analyses have also done to determine the factors influencing these utilization patterns. The results inferred from bi-variate analyses were supported by multi variate analyses. Private services for maternal health care were preferred over public providers. In rural areas this was only for PNC. Both in rural as well as urban areas of Bihar and Uttar Pradesh private providers were preferred. This might be due to the fact that many public provides are not in function in the state. On the other hand Himachal Pradesh had reported highest users of public facilities for health care services. Kerala reported no home delivery both in rural and urban areas. This might be attributed to higher educational attainment of women as well as relatively better developed and well functioning health care infrastructure. Women from households in richest quintile sought ANC, delivery and PNC often from private facilities than public facilities. In rural areas home deliveries were more preferred even among the richest quintile women. However women in all expenditure quintiles used private provider more than public providers for PNC services. Among the social groups scheduled tribes and scheduled castes which are the vulnerable sections of the society utilized public providers for all maternity services than private providers. With increasing educational attainment of women private providers were more preferred over public providers both in rural and urban areas. Proportions of home deliveries are less among other and Christian religion. Use of public facilities for ANC and delivery were more among all categories of household occupation except others and in urban areas expect casual labour categories of all household types used private facilities for all maternity services. These patterns confirm the fact that, higher the economic position lowers the chance of seeking health care from government sources. All these findings are very important as this chapter is followed by the out of pocket maternal health care spending across states and various socio-economic and demographic stratums of women.

Chapter-III

Out of Pocket Maternal Health Care Payments by Background Characteristics of Women in India

3.1 Introduction:

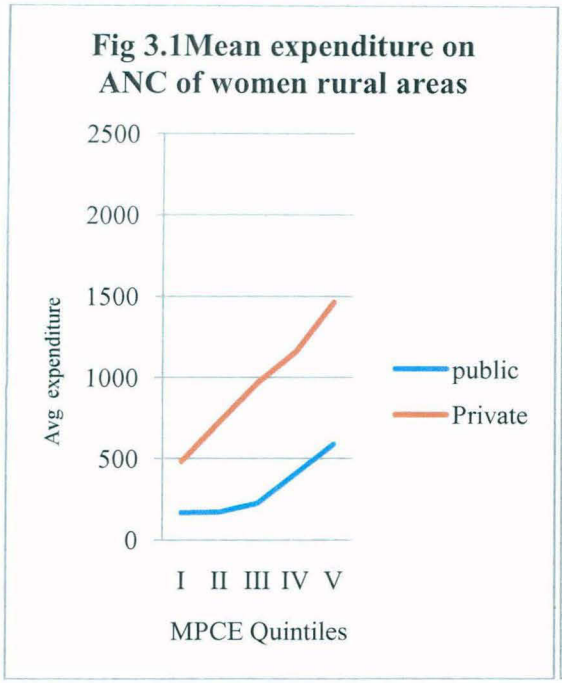
Financing in maternal services is a key determinant of utilization of maternal services (Bonu *et al*, 2009). Universal utilization of maternity services remain a challenge for India, where a sizeable chunk of population still lives below poverty line with a very limited or almost no capacity to pay for health care. India's annual healthcare spending has been low in the comparison of other countries. Furthermore, public investment in health care sector has declined since the initiation Structural Adjustment Program (SAP), as a result of which improvements in health outcomes slowed down and the gap between rural and urban widened (Duggal, 2005). In the name of health sector reforms public health investments became selective and government, largely under international pressure, started spending more money in the disease control programs like HIV-AIDS and other concerns like curative services, hospital care, malaria, tuberculosis and maternity services came on back foot (Gangoli *et. al*, 2005). Another striking impact of post reform policies is seen in the form of increased cost of medicines consequent upon the New Drug Price Control regime. These developments along with the shrinking government budgets for health initiated an era of mass privatization of heath sector, consequently, at present 75 percent of health care expenditure, in India, comes from private health sector (NRHM, 2005-12). Due to reduced affordability of health care service, as underline in the National Rural Health Mission (NRHM) documents, curative services favored the rich. Apart from that, private health care services are easily accessible to the rich population with a higher capacity to pay, whereas poor population with a limited or no capacity to pay remains deprived of quality health care services or suffer serious financial hardships for acquiring proper health care. It is astonishing that presently, in India, a major share of spending—71.6 percent--comes from private sector, while the public sector accounted for 26.7 percent and external funding constituted 1.7 per cent of the total expenditure. It is evident that households per se accounted for more than two-thirds of health spending in India, which largely comes through

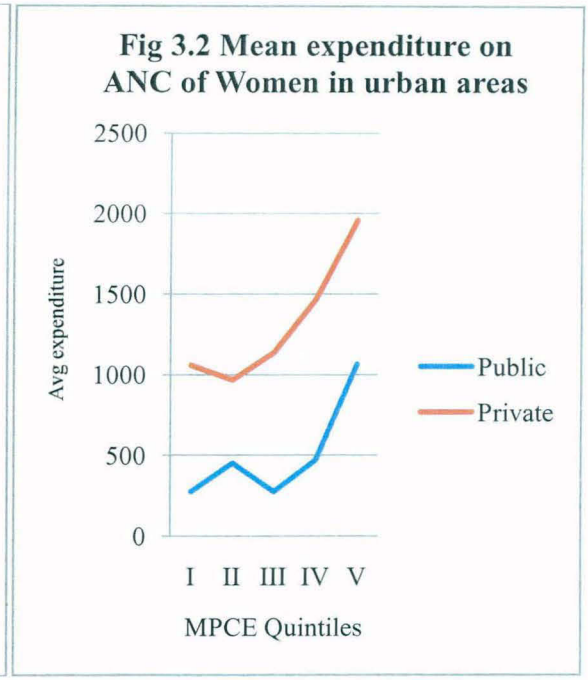
out-of- pocket payments (net payments on health care excluding reimbursement if any). These Out-of-Pocket payments are likely to affect health care utilization and overall health.

Against this backdrop, the current chapter attempts to explore levels and variations of out-of-pocket maternal health care financing in rural and urban India. Apart from that, an assessment of the impact of individual's (household's), socio-economic and demographic, characteristics on maternal health care expenditure pattern is also done.

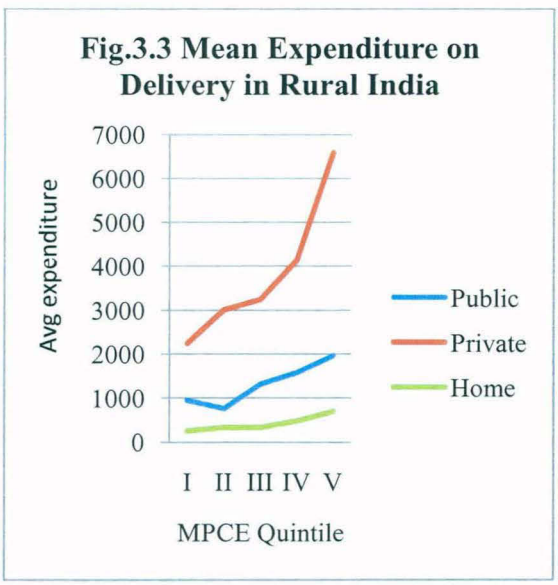
This chapter uses a mix of bivariate and multivariate methods to analyze the data. Bivariate analyses were carried out to show the gross effect of various key explanatory variables on the pattern of maternal health care financing. The independent variables are households' monthly per capita consumption expenditure (MPCE), principal occupation of household, religion, caste, educational attainments and age groups of women. State wise variations in expenditure on ANC, delivery and PNC in rural and urban areas were calculated. Apart from that, in order to estimate the net effects of key explanatory variables on the expenditure of maternal health care (antenatal care, delivery and postnatal care) six Multiple Classification Analyses (MCA) have been done separately for rural and urban areas.

Table-3.1and Table 3.2 demonstrates that the mean expenditure on ANC, delivery and PNC was higher in urban areas compared to its rural counterparts, except for delivery in public facilities where rural households spend more. Results show variations in expenditure pattern on maternal health care (ANC, Delivery and PNC) across socio-economic and demographic characteristics of women. Economic condition of households reflects strong influence in expenditure pattern. Better the economic position (here MPCE quintile) of households higher was the out of pocket expenditure. With increasing monthly per capita consumption quintile the mean OOP expenditure on ANC both in public and private sources had increased in rural India. The mean expenditure for delivery in public facilities in rural India for poorest expenditure quintile was found lower compared to urban India In urban India cost of deliveries in public facilities for consumption quintile IV (richer quintile) was found less the cost of than home delivery.





The figure for rural India shows that steep rising in expenditure with increasing consumption quintile of women. The average OOP expenditure for urban areas were much higher for both the public and private facility in compared to rural areas. It was Rs 275 for poorest quintile in public facility and 1060 for private facility and OOP expenditure on ANC rises with increasing MPCE of women.



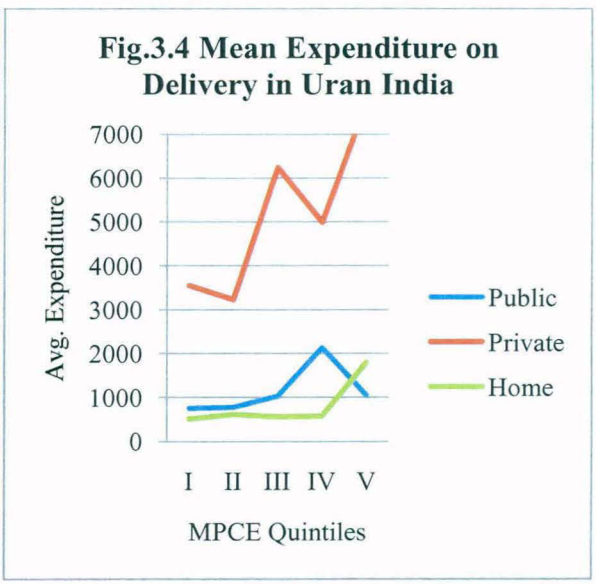


Figure (3.3and 3.4) shows that there was little variation in the cost of home delivery and deliveries both in rural and urban areas. The above figures show that cost of home delivery is higher in urban areas even higher than public facilities. The cost of delivery increases with consumption quintiles of women. The mean cost of deliver was much higher in urban areas than in rural areas.

Fig 3.5 Mean Expenditure on PNC in rural India

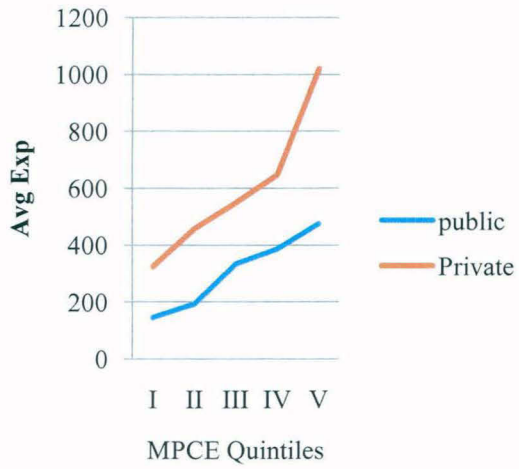
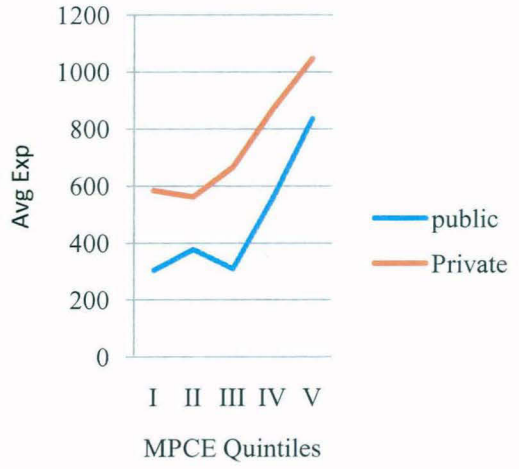


Fig 3.6 Mean Expenditure on PNC in urban India



The figures (3.5and 3.6) show that both in rural and urban areas the mean expenditure on PNC increases with MPCE quintile for both public and private facility. It might be attributed that sometimes home deliveries in urban areas were assisted by physicians or doctors. Average expenditure on Post Natal Care was almost 3-4 times higher in private facilities than public facilities. The pattern was found same for both rural and urban areas.

Table.3.1.Mean Out of Pocket (OOP) Payments on Ante Natal Care, Delivery and Post Natal Care by Background characteristics of women In Rural India:

Background Characteristics	ANC(Rs)				Delivery(Rs)					PNC(Rs)			
Religion	Public	Private	Total	No of women	Public	Private	Home	Total	No of women	Public	Private	Total	No of women
Hindu	260	992	567	5,108	1214	4094	438	1186	3,686	263	544	423	3,647
Muslim	301	838	525	823	942	4510	421	1050	544	250	564	447	537
Christian	1241	1018	1089	349	1478	7730	191	3104	197	473	1218	823	184
Others	674	914	782	238	2292	4559	591	2268	185	659	552	602	179
MPCE Quintile													
I	165	482	277	1,320	941	2246	249	613	1,035	145	325	251	1,028
II	170	727	388	1,462	756	3008	334	734	1,055	193	458	334	1,054
III	223	968	559	1,425	1309	3248	332	1145	1,022	334	549	459	1,014
IV	405	1158	736	1,023	1571	4137	474	1577	702	385	647	532	695
V	587	1463	1021	1,288	1953	6586	694	3135	798	475	1020	812	789
Social Groups													
ST	195	529	284	940	760	3156	294	220	635	369	589	896	624
SC	195	746	408	1,298	961	3295	431	264	957	473	737	255	956
OBC	282	1116	650	2,601	1267	3818	463	274	1,871	619	893	318	1,859
Others	412	993	688	1,679	1589	5564	470	317	1,149	574	891	587	1,141
Household's main Occupation													
Self employed in non agriculture	341	1198	713	1,120	960	4334	508	1243	774	252	732	529	766
Agricultural labour	206	673	360	1,276	876	2606	369	706	957	236	367	303	945
Other labour	271	1259	671	703	1061	4319	409	1399	517	319	647	503	510
Self employed in agriculture	282	923	577	2,780	1665	4514	449	1308	1,947	248	545	428	1,916
Others	495	934	732	636	1894	5598	497	2297	416	513	583	556	412
Age groups													
15-19	274	1026	549	615	1044	3417	351	1055	373	258	580	430	371

20-24	300	993	602	2,617	1188	4508	449	1392	1,866	255	643	478	1,846
25-29	252	950	543	1,819	1243	4280	460	1236	1,316	352	504	429	1,297
30-34	304	994	601	906	1015	4342	455	1132	655	238	526	423	645
35-39	157	954	529	370	2051	3158	344	670	257	166	320	265	255
40-44	779	524	658	123	3290	4350	392	1135	93	164	568	417	86
45-49	510	494	499	68	781	2145	411	578	52	84	211	181	58
Educational Attainments													
Not literate+below primary	197	615	361	3,615	1075	2734	402	717	2,638	226	813	337	2,612
Primary+Middle	328	1535	826	1,989	1210	4864	552	1731	1,350	281	823	571	1,348
Secondary+Diploma	547	1022	822	756	1850	5574	545	3147	518	486	700	622	519
Graduate+Higher	1173	1106	1130	157	1850	5262	484	3961	107	1091	778	852	109
Total	286	973	580	6,518	1218	4280	435	1225	4,612	275	556	439	4558

Source: Estimated from unit level data of 25th schedule of NSSO 60th round survey on Morbidity and Health Care, 2004

Table.3.2.Mean Out of Pocket (OOP) Payments on Ante Natal, Delivery and Post Natal Care by Background characteristics of women in Urban India:

Background Characteristics	ANC(Rs)				Delivery (Rs)					PNC(Rs)			
Religion	Public	Private	Total	No of women	Public	Private	Home	Total	No of women	Public	Private	Total	No of women
Hindu	422	1518	1026	2,318	983	5761	533	3013	1,684	388	834	651	1,678
Muslim	297	1199	799	508	782	4881	638	2284	387	326	505	442	387
Christian	570	1220	865	151	4213	4345	2270	3916	97	1403	868	1099	94
Others	642	700	697	141	837	4551	435	2505	94	606	881	711	94
Social Groups													
ST	579	611	611	214	548	5604	611	1717	130	266	533	337	129
SC	1138	697	697	498	794	5247	697	1801	367	226	717	484	364
OBC	1466	920	920	1,133	864	5270	920	2737	839	328	683	538	831
Others	1571	1191	1191	1,273	1366	5851	1191	3660	926	619	891	798	926
Household's main Occupation													
Self employed	410	1491	1010	1,439	959	5300	425	2778	1,045	372	725	610	1,037
Regular wage/salary	543	1428	1078	1,188	1376	6017	511	3513	856	513	797	665	854
Casual labour	232	1095	556	366	663	4344	650	1465	274	328	879	556	274
Others	234	1825	1300	125	1549	6427	503	4498	87	257	1264	844	87
Age groups of woman													
15-19	220	1685	1026	183	700	7386	467	3252	116	217	857	630	117
20-24	412	1378	931	1,283	895	5041	541	2505	931	406	666	548	930
25-29	369	1304	923	1,034	971	5326	557	3039	759	350	781	625	756
30-34	520	1896	1302	410	1943	6302	460	3525	307	787	1038	930	304
35-39	633	1473	956	152	1001	8319	984	3425	112	380	843	569	111
40-44	16	569	540	36	461	13693	686	3467	24	476	1214	963	23
45-49	1619	1089	1100	20	1373	3222	298	1851	13	447	910	705	12
Educational Attainments of woman													
Not literate+below primary	276	834	484	874	800	3703	571	1314	650	211	608	444	642
Primary+Middle	367	1358	884	985	780	5019	540	2474	710	379	692	535	708

Secondary+Diploma	493	1509	1190	771	1845	4999	533	3682	521	639	846	771	520
Graduate+Higher	1000	1989	1702	488	1224	8144	633	6405	381	637	1055	938	383
Total	410	1430	984	3,118	1042	5542	569	2886	2,262	409	781	632	2,253

Source: Estimated from unit level data of 25th schedule of NSSO 60th round survey on Morbidity and Health Care, 2004

With respect to religious characteristics of women the mean OOP expenditure in private facilities were highest among Christians for ANC, delivery and PNC services in rural areas Expenditures on home deliveries and deliveries in public facilities were highest among Christians and in private facilities .The results showed that the same was highest in case of Hindu followed by Muslims. Lowest mean expenditure on PNC in rural and urban areas were found among Muslims. Variations in expenditure pattern across social groups were also seen. In rural areas mean OOP expenditure for ANC, delivery and PNC services were found lowest for scheduled tribes and scheduled castes in public and private facilities. Highest mean expenditure in private facility for delivery was paid by others castes. According to educational attainments of women it was observed that with increasing educational qualification of women expenditure on public facilities on ANC and PNC decreased both in rural as well as urban areas. Educated women spend more for delivery in private facilities than less educated women both in rural and urban areas. With respect to principal occupation of households in rural areas the mean OOP expenditure was lowest among agricultural labours in public and private facilities for all maternity services. Households with self employed in non agriculture in rural area had highest mean expenditure for deliveries in private facilities. In urban areas mean OOP expenditure was highest for other labours for all maternity services (ANC, Delivery and PNC).This proved the idea that better the household's economic conditions higher is the expenditure on private facility. The table depicts that with increasing age of women the mean expenditure on ANC for private facility decreased both in rural as well as urban areas. Mean OOP expenditure for home deliveries were higher for urban areas compared to rural areas. Average OOP expenditure for deliveries in urban areas was highest for 40-44 yrs age groups in private facilities. This might be due to some complications in delivery at late reproductive period. Mean expenditure on PNC in public facilities was lowest among 45-49 yrs in rural areas and highest mean expenditure in urban areas for PNC services can be seen at the age group of 40-44.

3.2 Maternal Health Care Expenditure in Relation to Household Consumption Expenditure:

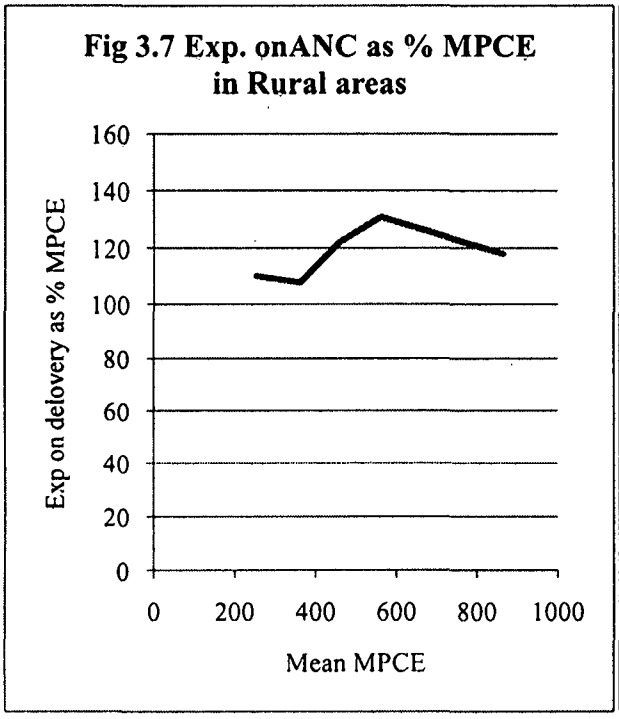


Fig 3.7 Exp. onANC as % MPCE in Rural areas

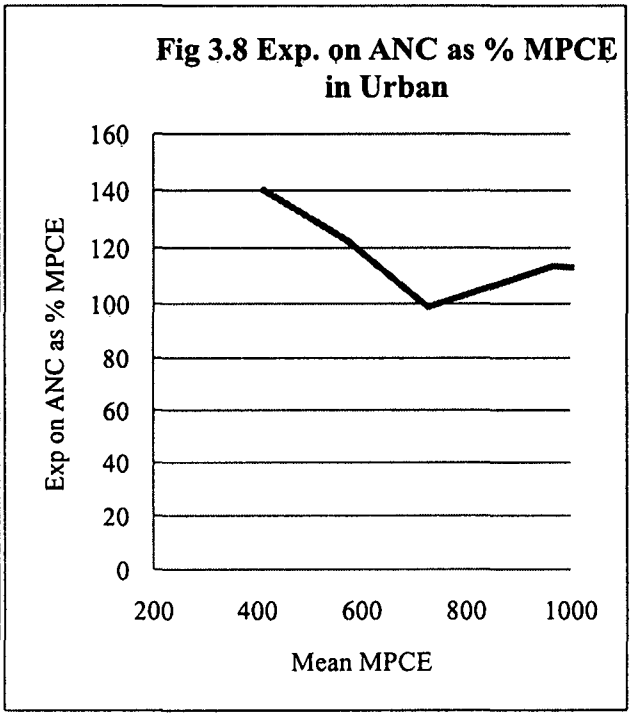


Fig 3.8 Exp. on ANC as % MPCE in Urban

The distribution of OOP payments for antenatal care as a share of monthly per capita consumption expenditure across consumption quintiles was significantly pro-rich both in rural as well as urban India (Table 3.3 and Fig. 3.7 and 3.8). The richest consumption quintile with a mean expenditure of Rs 866 in rural parts of areas had expenditure on ANC as percentage of their MPCE was only Rs 118 .On the other hand poorest consumption quintile in rural areas spend Rs 110 for the same. In urban areas the richest consumption quintile's share for the ANC was even less than the poorest quintiles.

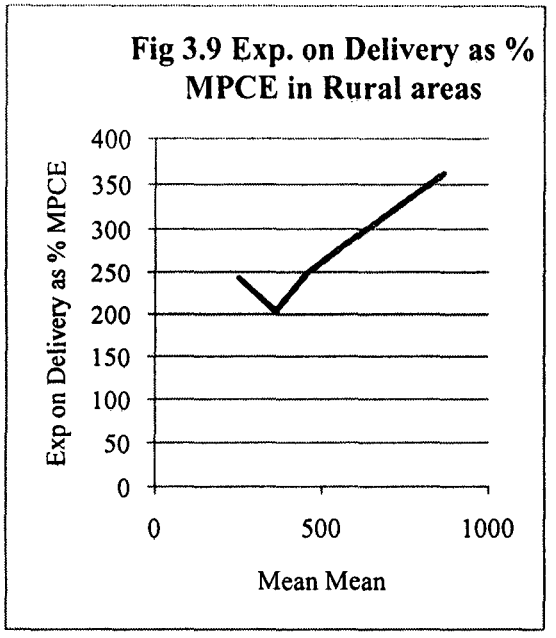


Fig 3.9 Exp. on Delivery as % MPCE in Rural areas
Exp on Delivery as % MPCE
400
350
300
250
200
150
100
50
0
0
500
1000
Mean Mean

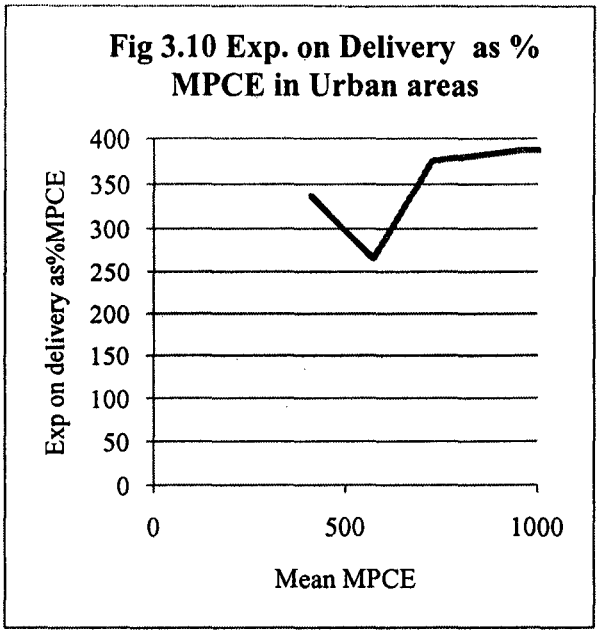


Fig 3.10 Exp. on Delivery as % MPCE in Urban areas
Exp on delivery as%MPCE
400
350
300
250
200
150
100
50
0
0
500
1000
Mean MPCE

Table 3.3 Out of pocket payments for Antenatal, Delivery and Post Natal care as a percentage of household's consumption expenditure:

Rural					Urban				
ANC					ANC				
MPCE Quintiles	Mean MPCE	Mean Expenditure	Exp. on ANC as % MPCE	No of women	MPCE Quintiles	Mean Expenditure	Mean Expenditure	Exp. on ANC as % MPCE	No of women
I	252	278	110	1,320	I	412	578	140	838
II	361	389	108	1,462	II	573	702	123	440
III	458	559	122	1,425	III	726	718	99	590
IV	563	737	131	1,023	IV	966	1095	113	636
V	866	1021	118	1,288	V	1695	1785	105	614
Total	500	580	116	6,518	Total	852	984	115	3,118
Delivery						Delivery			
MPCE Quintiles	Mean MPCE	Mean Expenditure	Exp on Delivery as % MPCE	No of women	MPCE Quintiles	Mean MPCE	Mean Expenditure	Exp. on Delivery as % MPCE	No of women
I	252	613	243	1,035	I	412	1388	337	650
II	361	734	203	1,055	II	573	1522	266	317
III	458	1145	250	1,022	III	726	2729	376	434
IV	563	1578	280	702	IV	966	3743	388	450
V	866	3135	362	798	V	1695	6505	384	411
Total	500	1225	245	4,612	Total	852	2886	338	2,262
PNC						PNC			
MPCE Quintiles	Mean MPCE	Mean Expenditure	Exp on PNC as % MPCE	No of women	MPCE Quintiles	Mean MPCE	Mean Expenditure	Exp. on PNC as % MPCE	No of women
I	252	252	100	1,028	I	412	434	105	646
II	361	335	93	1,054	II	573	471	82	315
III	458	459	100	1,014	III	726	509	70	429
IV	563	533	95	695	IV	966	776	80	448
V	866	812	94	789	V	1695	987	58	415
Total	500	439	87	4,580	Total	852	632	74	2,253

Source: Estimated from unit level data 25th schedule on Morbidity and Health Care of NSSO 60th round survey on Morbidity and Health Care, 2004

The distribution of OOP payments on delivery as a share of monthly per capita consumption expenditure was higher for richer consumption quintiles compared to poorer quintiles both in rural as well as urban areas. Figures (3.9 and 3.10) show that gradient is much steeper in rural areas than in urban areas for the same.

Fig 3.11. Exp on PNC as % MPCE in Rural areas

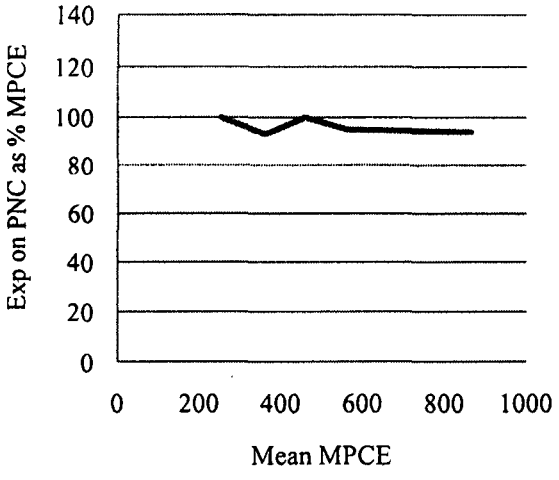
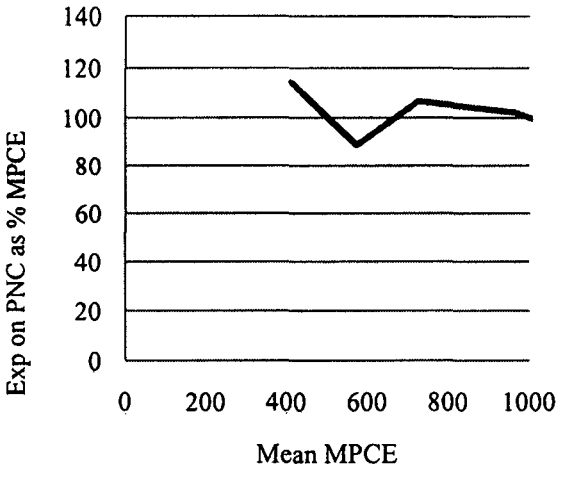


Fig 3.12. Exp. on PNC as % MPCE in Urban areas



Again the distribution of OOP payments for post natal care as a share of monthly per capita consumption expenditure was in favour of rich both in rural as well as urban areas. Spending was significantly come down for richest consumption quintiles. The poor consumption quintiles spent more and the above figures show that gradient is steeper for urban areas compared to rural areas.

3.3 Interstate Variations in Maternal Health Care Expenditure

Table 3.4 explores the State wise variations in expenditure on ANC, delivery and PNC in rural and urban areas.

3.3.1 Antenatal care in rural areas:

The mean expenditure in public facility for ANC in rural areas was the highest (Rs 1585) in Kerala and the lowest in Gujarat (Rs 66). Variation in expenditure on ANC can be found

among rich states, *i.e*, in rural Punjab the mean expenditure in public facility was Rs 980, whereas it was Rs 167 in Maharashtra for the same. Tamil Nadu with a lower mean public expenditure on ANC Rs 115 in public facility had a highest coefficient of variation (Rs 477). The mean expenditure in private facilities was highest in Himachal Pradesh and lowest in Bihar. The economically prosperous states like Punjab, Gujarat, Maharashtra Kerala, Karnataka, and Tamil Nadu had a higher mean expenditure on private facilities where as the demographically and economically poor performing stares had a lower mean expenditure on private facilities. Kerala with a greater mean expenditure of (Rs 1519) in private facilities had lowest coefficient of variation (Rs 89).

3.3.2 Delivery in rural areas:

Mean expenditure on delivery in public facility was found to be lower in private facility in rural areas. The mean expenditure on delivery in public facilities was the highest in Punjab (Rs3482) and the lowest in Karnataka (Rs 340). Assam with higher mean expenditure (Rs 1253) had lowest coefficient of variation (Rs 52). On the other hand Punjab had relatively lower CV (Rs 67) despite of having highest mean OOP expenditure in public facilities. The average expenditure in private facilities is highest in Himachal Pradesh (Rs 7832) and lowest in Bihar (Rs 2187). This might be one reason of preference of private facilities over public facilities in Bihar. The other EAG states like Rajasthan had mean expenditure in private hospital of Rs 3449. The coefficient of variation in private hospitals was lower among EAG states than the economically and demographically rich states. The mean expenditure on home delivery was lowest in Karnataka (Rs 195) and highest in Punjab (Rs 862).

3.3.3 Post Natal Care in rural areas:

Again substantial variations in expenditure on PNC were seen in rural parts of states. The mean expenditure on PNC in rural areas is the highest in Punjab and the lowest in Tamil Nadu and in private facilities it highest in Gujarat and lowest in Bihar. Kerala with a highest mean expenditure (Rs1388) in private facilities on PNC had a lower coefficient of variation (Rs 105).

Table 3.4 State wise Variations in Mean OOP expenditure in Ante Natal (ANC), Delivery and Post Natal Care in Rural and Urban India:

States	*Andhra Pradesh*	*Assam*	*Bihar*	*Gujarat*	*Haryana*	*HP*	*Karnataka*	*Kerala*	*Orissa*	*Punjab*	*Rajasthan*	*TN*	*UP*	*WB*
Rural														
ANC														
Mean exp public	472	272	485	66	196	481	112	1585	249	980	368	115	158	348
C.V	227	102	254	369	278	232	212	201	182	239	259	477	254	153
Mean exp private	1452	678	477	1871	876	1912	947	1519	768	1694	883	1730	662	685
C.V	113	254	125	217	172	112	166	89	91	205	165	121	277	90
Delivery														
Mean exp public	967	1253	2327	1415	2786	3437	340	2217	1612	3482	1714	482	1917	861
C.V	152	52	87	87	265	87	177	86	109	67	135	181	102	123
Mean exp private	3218	4524	2187	3221	5240	7832	4442	6597	2267	5770	3449	5200	4428	4388
C.V	86	145	184	110	72	92	82	168	195	95	154	80	106	97
Mean exp Home	368	369	410	386	400	753	195	_	223	862	457	202	529	353
C.V	142	102	84	115	78	83	202	_	243	63	79	88	116	60
PNC														
Mean exp public	254	357	260	146	320	531	178	845	368	689	598	63	237	172
C.V	160	92	93	152	190	119	309	130	223	120	171	380	320	127
Mean exp private	489	431	346	1781	1245	804	478	1388	421	587	874	596	398	372
C.V	92	130	276	304	157	104	53	105	63	80	128	96	182	92
URBAN														
ANC														
Mean exp public	684	450	292	365	426	131	292	1436	772	398	601	126	298	473
C.V	181	168	87	344	167	150	128	168	144	97	197	281	163	159
Mean exp private	1632	686	622	1568	1141	858	1270	1920	915	2282	1784	1738	760	1339
C.V	62	94	125	84	111	74	85	95	76	86	115	113	145	105
Delivery														
Mean exp public	787	1003	1443	500	1096	430	483	2336	1046	2352	2900	374	1719	1082

C.V	109	120	145	202	251	100	149	61	60	115	259	196	89	135
Mean exp private	5249	7104	1813	4861	4520	8226	6937	6376	6930	5806	6345	6744	4365	6551
C.V	104	36	88	78	84	56	82	96	77	93	123	124	107	65
Mean exp Home	219	100	453	389	507	650	319	_	402	459	899	543	662	436
C.V	85	100	118	120	71	88	151	_	131	62	105	165	95	71
PNC														
Mean exp public	376	513	522	246	287	164	236	1759	192	682	924	130	349	515
C.V	184	156	68	150	229	125	181	80	117	120	241	299	120	121
Mean exp private	540	1662	355	955	1303	383	867	1355	1540	877	1805	732	477	708
C.V	83	40	89	100	85	173	105	102	81	173	150	151	135	84

Source: Estimated from unit level data 25th schedule on Morbidity and Health Care of NSSO 60th round survey on Morbidity and Health Care, 2004

Note: HP =Himachal Pradesh, UP= Uttar Pradesh, MP= Madhya Pradesh, TN=Tamil Nadu, WB=West Bengal.

3.3.4 Antenatal care in urban areas:

Wide range of variations in states in expenditure on ANC in public facilities in urban areas was also found. It was the highest in Kerala (Rs 1436) and the lowest in Tamil Nadu (Rs 126). Not much variation on mean expenditure can be found in EAG states for public facilities. The coefficient of variation was highest in Tamil Nadu for public facilities (Rs 281) which had a lower mean expenditure (Rs 126) for the same. The mean expenditure in public facilities in urban areas was higher than rural areas. The rich states like Punjab, Haryana, Tamil Nadu, Kerala, Gujarat, and Andhra Pradesh had mean expenditure in private facilities ranges from about Rs 1100-2300.

3.3.5 Delivery in urban areas:

Mean expenditure on delivery in public facility was found to be lower than private facility in urban parts of the states. The expenditure on delivery in public facility was highest in Punjab (Rs 2352). Urban parts of EAG states like Uttar Pradesh, Bihar, Rajasthan and Orissa also had substantial average expenditure on delivery. The lowest mean expenditure in public facility was found in Himachal Pradesh. Punjab had a higher average expenditure in public facilities but had a lowest CV (Rs 115) for the same. The highest average OOP expenditure was found in Himachal Pradesh and lowest in Bihar. Assam had lowest expenditure (Rs 100) on home delivery.

3.3.6 Post Natal Care in urban areas:

Expenditure on PNC in private facility was the highest in Assam (Rs 1662). The lowest coefficient of variation was found in Assam though Assam had highest spending in private provisions. The highest mean expenditure in private facilities can be found Kerala.

3.4 Multi variate analysis:

In order to estimate the net effect of back ground socio-economic and demographic variables, *i.e*, age groups of women, monthly per capita consumption quintiles, education of women, religion and social groups and types of the households on expenditure of maternal health care(antenatal care, delivery and postnatal care) multivariate analyses were done separately for

rural and urban areas. Under multivariate analysis, multiple classification analysis has been done. Multiple Classification Analysis (MCA) combines the features of analysis of variance and multiple regressions (Andrews *et al*, 1973). This technique is useful to assess the effects of a number of categorized explanatory variables on a numeric dependent variable. The explanatory variables could be interrelated or associated and one could obtain the net effects. MCA gives unadjusted and adjusted means of the dependent variable for each category. The unadjusted are raw means (gross) that one gets directly from the data. The adjusted means like predicted values in regression controlled for other factors/independent variables. For each of the factor or variable two summary measures, (eta) and (beta) are calculated. The eta value indicates the gross effect of the factor on the dependent variable and the beta value indicates the net effect of the factors on dependent variable. The dependent variables (OOP payments for ANC, delivery and PNC) were numeric and control variables were socio-economic and demographic (MPCE quintiles, types of household, educational attainments of women, religion and social groups and age groups of women) characteristic of women.

3.4.1 Expenditure on Antenatal Care: Rural Areas

The MCA for Table 3.5 shows that unadjusted and adjusted deviations of mean expenditures on antenatal care by the key background characteristics of women in rural India. The consumption expenditure quintiles of women were found to be a significant variable controlling expenditure pattern. The OOP payments increased with increasing MPCE of women, even after controlling other explanatory variables in the model. Social groups of women were also found to be a significant variable and women who belonged to SC/ST and OBC categories did spend less than the other castes. Religion of women was another significant control variable. After controlling other variables the women who belonged to Christian religion spent highest amount of OOP payments compared to all religions in the model. Women of higher educational attainments did spend more on ANC than women of lower education and after controlling for the other variables same pattern had seen but with narrower gaps. The spurt proportions of spending were on account of other factors, yet a clear education effect remained. Women who belonged to agricultural labourer as principal household's occupation in rural areas spent lowest amount on ANC compared to the women of all household types.

3.4.2 Expenditure on Delivery: Rural Areas

The Multiple Classification Analysis (Table 3.6) which was carried out to show the net effect of key explanatory variables on the delivery expenditure in rural India demonstrates that with increasing age groups of women the mean spending on delivery increased and even after controlling other variables the pattern remained same. The consumptions expenditure of women was found to be a significant controlling variable. Expenditure on delivery had increased with increasing MPCE quintile, the spurt proportions of spending were account of other factors, yet a clear effect of MPCE remained. Social groups of women were also found to be a significant variables and women who belonged to scheduled castes and scheduled tribes and OBC categories did spend less the other castes. Even after controlling other variables in the model the pattern remained same. Women who belonged to Muslim religion significantly spent lowest amount of OOP payments compared to all religions. Women of higher educational attainments did spend more than women of lower education and after controlling for the other variables same pattern can be seen but with narrower gaps. Women who belonged to agricultural labourer as principal household occupation in rural areas spent lowest amount on delivery and controlling other variables the remained as a significant variable.

3.4.3 Expenditure on Post natal Care: Rural Areas

The unadjusted and adjusted deviations of mean expenditures on PNC in rural India presents in Table 3.7 depicts that significant variables influencing OOP sending on PNC were MPCE quintiles , educational attainments of women and of the household's main occupation . The OOP payments increased with increasing MPCE of women, even after controlling other explanatory variables in the model. Women of lower educational attainments did spend less than women of higher education and after controlling for the other variables. Agricultural labour as principal occupation of household spent less compared to all households in rural areas and even after control for the other variables the same pattern can be observe.

3.4.4 Expenditure on Antenatal Care: Urban Areas

The unadjusted and adjusted deviations demonstrated in Table 3.8 of mean expenditures on antenatal care by the background characteristics of women in urban India and the significant control variables for were MPCE quintiles, educational attainments of women and of the household's main occupation. Women with poorest MPCE spent less on ANC compared to rich and richest MPCE quintile women but the poorer and middle MPCE quintiles did not show any clear pattern and even after controlling other variables the pattern remained the same. Educational attainments of women had a clear, positive and significant control variable. Women belonged to other type of household spent the highest amount on ANC and lowest amount were spent by the women belonged to casual labour as main occupation households. After controlling other variables one can easily capture the same pattern.

3.4.5 Expenditure on Delivery: Urban Areas

The MCA for Table 3.9 shows the unadjusted and adjusted deviations of mean expenditures on delivery by including the background characteristics of women as explanatory variables in urban India and the significant control variables for the model were MPCE quintiles, educational attainments of women, religion and of the household's main occupation. The OOP payments increased with increasing consumption expenditure of women, even after controlling other explanatory variables in the model the pattern remained the same. Educational attainments of women which was found significant variable showed that higher educated women spent more on delivery than lower educated women. Even controlling other variables the pattern did not change. The increased proportions of education were account of other variables in the model. Women belonged to Hindu religion spent significantly lowest mean amount of OOP on delivery and highest amounts were paid by women belonged to Christian religion and after controlling deviations adjusted for other variables the effect remained unchanged.

3.4.6 Expenditure on Post natal Care: Urban Areas

Table 3.10 provides the unadjusted and adjusted relationship between the background characteristics of women and spending on Post Natal Care in urban India. MPCE quintiles of women were found to be only significant control variable. Mean spending on PNC was found to be less for women with poorer MPCE than the richer MPCE and even after controlling other variables the pattern did not change.

Table 3.5: Unadjusted and Adjusted Deviations of Mean Expenditure on Antenatal Care by Background characteristics of Women in Rural India:

Variable+ Category	*No of cases*	*Unadjusted Deviations*	*Eta*	*Deviations adjusted for independents and covariates*	*Beta*	*Adjusted mean*
Grand Mean	3924					578
Religion			0.057		0.044*	
Hindu	3276	-9		9		587
Muslim	485	-52		-114		464
Christian	74	512		333		910
Others	89	205		11		589
MPCE Quintiles			0.19		0.159***	
I	831	-301		-241		337
II	868	-189		-162		416
III	885	-18		-35		542
IV	584	159		150		727
V	756	446		376		954
Social Groups			0.1		0.076***	
Scheduled Tribes	318	-294		-217		361
Scheduled Castes	877	-169		-131		447
Other Backward Caste	1649	74		84		662
Others	1080	110		41		619
Household 's main occupation			0.098	106		
Self employed in non-agriculture	780	136			0.061***	684
Agricultural Labourer	950	-218		-77		501
Other Labour	494	94		141		718
Self employed in agriculture	1352	0.37		-48		530
Others	347	155		-43		535
Age Groups			0.011		0.013	
15-24	2074	14		3		581
25-34	1612	-15		-13		565
35-49	238	-21		65		643
Educational attainments			0.103		0.053***	
Not literate	1874	-110		-39		539
Primary/Middle	1508	21		-16		561
Secondary/ Higher	543	322		180		758

Note: ***p ≤ 0.001; **p ≤ 0.05; *p ≤ 0.01 ; Multiple R=0.37; R^2=0.101

Table 3.6: Unadjusted and Adjusted Deviations of Mean Expenditure on Delivery by Background characteristics of Women in Rural India:

Variable+ Category	*No of cases*	*Unadjusted Deviations*	*Eta*	*Deviations adjusted for independents and covariates*	*Beta*	*Adjusted mean*
Grand Mean	4475					1226
Religion			0.099		0.076***	
Hindu	3702	-38		36		1261
Muslim	596	-174		-423		802
Christian	72	1879		1246		2471
Others	105	1043		282		1508
MPCE Quintiles			0.273		0.211***	
I	1186	-614		-394		832
II	1137	-491		-396		830
III	980	-79		-149		1077
IV	562	352		264		1490
V	610	1910		1499		2725
Social Groups			0.142		0.108***	
Scheduled Tribes	461	-674		-525		701
Scheduled Castes	1109	-360		-300		925
Other Backward Caste	1861	8		39		1264
Others	1044	666		482		1707
Household main occupation			0.134		0.061***	
Self employed in non-agriculture	839	18		-16		1209
Agricultural Labourer	1159	-519		-140		1086
Other Labour	584	173		299		1524
Self employed in agriculture	1562	84		-92		1133
Others	331	1072		440		1666
Age Groups			0.053		0.031*	
15-24	2203	108		78		1304
25-34	1872	-26		-41		1185
35-49	400	-470		-237		989
Educational attainments			0.166		0.084**	
Not literate	2405	-352		-165		1060
Primary/Middle	1568	139		44		1269
Secondary/ Higher	502	1254		655		1881

Note: ***p ≤ 0.001; **p ≤ 0.05; *p ≤ 0.01 , Multiple R=0.22; R^2=0.049

Table 3.7: Unadjusted and Adjusted Deviations of Mean Expenditure on Post Natal Care by Background characteristics of Women in Rural India:

Variable+ Category	*No of cases*	*Unadjusted Deviations*	*Eta*	*Deviations adjusted for independents and covariates*	*Beta*	*Adjusted mean*
Grand Mean	2663					438
Religion			0.052		0.027	
Hindu	2208	-14		-6		431
Muslim	354	10		16		454
Christian	45	386		214		651
Others	55	165		-34		403
MPCE Quintiles			0.169		0.146***	
I	705	-185		-158		279
II	653	-103		-83		354
III	558	23		5		442
IV	338	95		84		522
V	409	375		329		766
Social Groups			0.056		0.035	
Scheduled Tribes	215	-160		-96		342
Scheduled Castes	629	-54		-20		418
Other Backward Caste	1157	31		37		474
Others	662	49		-15		423
Household's main occupation			0.08		0.050***	514
Self employed in non-agriculture	507	92		77		
Agricultural Labourer	649	-134		-63		375
Other Labour	352	66		74		511
Self employed in agriculture	944	-9		-28		409
Others	211	119		11		448
Age Groups			0.045		0.03	
15-24	1331	33		23		460
25-34	1119	-10		-7		430
35-49	213	-152		-103		335
Educational attainments			0.097		0.067**	
Not literate	1358	-36		12		449
Primary/Middle	960	-49		-74		363
Secondary/ Higher	345	278		161		598

Note: ***$p \leq 0.001$; **$p \leq 0.05$; *$p \leq 0.01$, Multiple R=0.28; R^2=0.079

Table 3.8: Unadjusted and Adjusted Deviations of Mean Expenditure on Antenatal Care by Background characteristics of Women in Urban India:

Variable+ Category	*No of cases*	*Unadjusted Deviations*	*Eta*	*Deviations adjusted for independents and covariates*	*Beta*	*Adjusted mean*
Grand Mean	2401					981
Religion			0.053		0.028	
Hindu	1859	45		15		995
Muslim	352	-172		-2		978
Christian	99	-114		-221		760
Others	91	-283		-187		793
MPCE Quintiles			0.253		0.202***	
I	573	-399		-294		686
II	331	-278		-190		790
III	457	-263		-240		740
IV	522	115		57		1037
V	518	804		655		1635
Social Groups			0.111		0.045	
Scheduled Tribes	120	-368		-428		553
Scheduled Castes	373	-283		-22		958
Other Backward Caste	903	-61		8		989
Others	1005	216		35		1015
Household's main occupation			0.1		0.034***	
Self Employed	1102	30		29		1009
Regular wage/ salary	933	98		-23		958
Casual labour	269	-424		-81		900
Others	97	319		292		1272
Age Groups			0.025		0.025	
15-24	1162	-38		37		1018
25-34	1117	51		-32		948
35-49	122	-60		-134		846
Educational attainments			0.2		0.114**	
Not literate	509	-392		-227		753
Primary/Middle	982	-199		-110		870
Secondary/ Higher	910	456		258		1239

Note: ***$p \leq 0.001$; **$p \leq 0.05$; *$p \leq 0.01$, Multiple R=0.40; R^2=0.166

Table 3.9: Unadjusted and Adjusted Deviations of Mean Expenditure on Delivery by Background characteristics of Women in Urban India:

Variable+ Category	*No of cases*	*Unadjusted Deviations*	*Eta*	*Deviations adjusted for independents and covariates*	*Beta*	*Adjusted mean*
Grand Mean	2180					2888
Religion			0.067		0.019*	
Hindu	1625	123		-2		2886
Muslim	372	-586		43		2931
Christian	88	1032		304		3192
Others	86	-383		-422		2466
MPCE Quintiles			0.385		0.331***	
I	626	-1496		-1228		1660
II	307	-1366		-1167		1721
III	417	-159		-224		2664
IV	430	855		672		3560
V	391	3633		3183		6071
Social Groups			0.155		0.063	
Scheduled Tribes	112	-1170		-1293		1595
Scheduled Castes	355	-1087		-278		2610
Other Backward Caste	815	-156		104		2992
Others	889	788		144		3032
Household's main occupation			0.155		0.057**	
Self Employed	1005	-110		-139		2749
Regular wage/ salary	822	628		181		3069
Casual labour	262	-1422		-216		2672
Others	82	1611		1338		4226
Age Groups			0.066		0.03	
15-24	1012	-308		-67		2821
25-34	1023	305		7		2895
35-49	136	321		551		3439
Educational attainments			0.261		0.094**	
Not literate	533	-1523		-645		2243
Primary/Middle	870	-290		18		2906
Secondary/ Higher	768	1571		490		3378

Note: ***p ≤ 0.001; **p ≤ 0.05; *p ≤ 0.01, Multiple R=0.25; R^2=0.065

Table 3.10: Unadjusted and Adjusted Deviations of Mean Expenditure on Post Care by Background characteristics of Women in Urban India:

Variable+ Category	No of cases	Unadjusted Deviations	Eta	Deviations adjusted for independents and covariates	Beta	Adjusted mean
Grand Mean	1540					629
Religion			0.099		0.089	
Hindu	1172	21		13		642
Muslim	240	-183		-150		480
Christian	63	470		448		1078
Others	65	82		137		766
MPCE Quintiles			0.209		0.173**	
I	392	-194		-153		477
II	204	-158		-169		460
III	302	-121		-92		538
IV	315	147		146		775
V	327	356		277		907
Social Groups			0.144		0.117	
Scheduled Tribes	80	-293		-417		212
Scheduled Castes	226	-145		-111		519
Other Backward Caste	589	-94		-49		581
Others	645	173		123		753
Household's main occupation			0.048		0.051	
Self Employed	707	-19		-29		601
Regular wage/ salary	609	34		-8		622
Casual labour	163	-73		81		711
Others	61	215		248		878
Age Groups			0.073		0.049	
15-24	713	-73		-50		579
25-34	733	79		48		677
35-49	94	14		74		703
Educational attainments			0.111		0.018	
Not literate	330	-118		28		657
Primary/Middle	611	-71		-20		610
Secondary/ Higher	599	143		5		634

Note: ***p ≤ 0.001; **p ≤ 0.05; *p ≤ 0.01, Multiple R=0.26; R^2=0.059

3.5 Summary

Based on a nationally representative data collected in 2004 by National Sample Survey Organization the study has done an extensive analysis on the variation of out of pocket expenditure on maternal health care (ANC, delivery and PNC) in rural and urban India. The study also explored the background socio-economic and demographic factors that influenced this variation pattern.

This chapter makes a complete understanding of sector wise (rural-urban) interstate variation of out of pocket maternal health care spending. Further some bivariate and multi variate analyses on maternal health care payments has been carried out across some socio-economic and demographic background characteristics of women. Although India spends about 6% of its GDP on health, public (central, state and local government) expenditure as a percentage of total health expenditure amounts to merge 20% while households amount for almost 70 % of total health expenditure, almost all of which are out of pocket. The out of pocket expenditure leads into catastrophic burden of households and further plunge the household into poverty. This is the main backdrop of this chapter. The brief findings are as: private sources are expensive than public sources. The results showed a positive relationship between share of out of pocket maternal health care expenditure and level of socio-economic development. The distribution of share of out of pocket spending was pro-rich for all maternity services. Health care in India is a state's affair. Households in Bihar, Uttar Pradesh met a huge share of OOP maternal health care in private sector. In other states, which have strong public health systems such as in Himachal Pradesh, Tamil Nadu, Karnataka household's spending for maternal health care was relatively less. Spending on all maternal health care was higher in urban areas compared to rural areas. Private facilities were more expensive than public facilities. But the average maternal expenditure for a birth at public sector facility was Rs 945 in rural and Rs 755 in urban areas in poorest expenditure quintile. This was higher than the annual capacity to pay leading to 79 percent in rural and 40.3 percent home deliveries in urban areas.

Reducing cost for the poor should be the major area of intervention in utilizing the universal maternity service. Government should introduce some financial correction mechanisms and coping strategies like insurance coverage so that it would give some relief to the household's financial burden.

Chapter-IV

Incidence, Intensity and Determinants of Catastrophic Maternal Health Care Payments in India

4.1 Introduction:

The previous chapter gives a snapshot of maternal health care financing, *i.e* , expenditures on ANC, delivery and PNC by the type of facilities (public and private) in rural and urban India. Out of Pocket (OOP) expenditure can pose huge economic burden on households may further may lead to financial catastrophe (Wagstaff and van Doorslaer, 2003a, O'Donnell *et al.* 2005, Garg and Karan, 2009). The burden of out of pocket spending on maternal health care across different socio-economic and demographic background characteristics of women pave the way for further analysis of 'catastrophic 'incidence and intensity of maternal health care payments. 'Catastrophic' conditions on health care payments occur when the medical bills exceeds certain proportion of households income or total expenditures/ non food expenditure in a given period usually taken as one year period (Wagstaff and van Doorsaler 2003b; Xu *et al.* 2003a, O'Donnel *et al.* 2009a). The idea behind the concept is that beyond this level one household have to resort opportunity costs like selling of assets, incur debts, cut of consumption of other goods and services. Against this backdrop the present chapter aims to analyze the incidence and intensity of catastrophic maternal health care financing in India across various socio-economic and demographic characteristics of the women based on the unit level data from 25th schedule on 'Morbidity and Health Care of 60th round survey in 2004. Further two multi-variate logistic analyses were done separately for rural and urban India to assess the determinants of catastrophic maternal health care expenditure.

4.2 Defining Catastrophic Maternal Health Care Expenditure:

One way for measuring economic distress of health care payments is to compute catastrophic burden of out of pocket health care spending. Catastrophic health expenditure is concerned with high levels of OOP health expenditure which might affect household's standard of living. Catastrophic expenditure in the health financing literatures defined as that level of

OOP health expenditure which exceeds some fixed proportion of household income or household's capacity to pay (Pal, 2010a). Berki in 1986 first proposed the concept of catastrophic health shocks. Since then different authors had proposed different definitions of catastrophic expenditures. (Pal 2010b). According to Berki (1986), catastrophic OOP expenditure is one which constitutes large part of household budget and thus, affects household's ability to maintain customary standard of living. The idea behind this approach is that if health care spending constitutes large portion in household budget, then it will affect consumption of other items. Berki (1986), Wagstaff and van Doorslaer (2003) defined catastrophic OOP health expenditure as health expenditure that exceeds some fixed proportion of total household expenditure. This threshold level is set arbitrarily. According to Donnel *et.al* (2009b) researchers should not impose their own judgment but rather should present results for a range of values of thresholds and let the reader choose the suitable threshold value. Wagstaff and van Doorslaer (2003c) set this threshold at 10 percent of total household budget. But taking same threshold level for rich and poor creates some problem. Xu *et al.* (2003b) argues that share of OOP expenditure should be taken in terms of household's capacity to pay. Households spending more than 40 percent of their capacity to pay on health care are said to experience catastrophic health expenditure (Xu *et al.* 2003c). World Health Organization suggests that if household spend 40 % of non-food expenditure then they are making catastrophic payments (O'Donnell 2007). World Health Organization researchers have used 40% (Xu *et al.* 2003) capacity to pay (non food expenditure) as catastrophic threshold. Khan *et al.* (2009) to determine household costs of obtaining maternal and newborn care in rural Bangladesh took 10 and 40% as thresholds. Bonu *et al.* (2009a) to measure the incidence of catastrophic headcounts for maternal health care using NSS 60^{th} round survey used two different thresholds, *i.e,* 10% of household's annual consumption expenditures and 40% of capacity to pay and showed that for the developing country like India where a large number of people living below poverty, measuring maternal health care as a proportion of 'capacity to pay' is a better method to show the incidence of catastrophe. Another judgment in taking 40% of capacity to pay is that maternal health care expenditures spread over nine months and the household have to spend more amount than the households usually spend for general health care.

4.3. Measuring Catastrophic Incidence and Intensity:

The present study included the threshold level of catastrophe as 40% of annual capacity to pay.

The study defined total maternal expenditure by adding total expenditures on ante natal care, delivery and post natal care to show how much financial burden has to face by the households due to pregnancy and child birth. Households with a pregnant woman (Child birth not taken place) seeking only antenatal care has also been taken to consideration. Woman with MPCE quintile just above the poverty line expenditures have also very little capacity to pay for health care and with very small amount of payments can leads to catastrophic payments for them.

'Capacity to pay' is calculated as total annual consumption annual household consumption expenditure minus subsistence expenditure such as on food and other basic needs. The 'capacity to pay' of the household was derived by subtracting state-wise household poverty-line expenditure adjusted to household size from household consumption expenditure 'Capacity to pay' was adjusted to zero for households below the poverty line(Bonu *et al.* 2009b). As NSSO did not give differentiation between food and non food item in the 60th round survey taking poverty line as subsistence expenditure is the best way to measure capacity to pay. The national poverty line data of 2004-05 as given by Planning Commission was multiplied by household size to calculate the capacity to pay (Bonu et al. 2009c).

As maternal health care payments are spread over nine months, the present study took annual poverty line expenditure and annual monthly per capita expenditure by multiplying poverty line expenditures and household total consumption into twelve. Although the methodology is simple there is a need to clarify certain conceptual issues regarding the ensuing analysis. We consider pregnancy as the unit of study and the rationale behind the concept is that how much catastrophic expenditure incurred by the household for one case of pregnancy. So the expenditure taken here on per capita basis not household per se.

NSSO did not provide data on reimbursement, borrowing, selling of assets or any other financial coping mechanism for OOP maternal health care in 60th round (25th schedule) for this reason we were not able to do any financial correction mechanisms.

A household pays catastrophic expenditure if its total maternal health care expenditure is more than 40% of capacity to pay. All those households are coded as '1' and '0' if total maternal health care expenditure is equal to less than 40% (Bonu et al. 2009c). The catastrophic head

count is the percentage of the households incurred maternal health care expenditure more than 40% of annual capacity to pay.

Another measure, the 'catastrophic payments overshoot' captures the depth of catastrophic payments by which the maternal health care expenditure exceeds the threshold (40% of annual capacity to pay). This method captures the intensity of catastrophic maternal health care expenditure.

If T_i represents total out-of- pocket (OOP) maternal health care expenditure , X_i is the total annual per capita consumption expenditure of the $i\ th$ household and f represents the annual per capita poverty line expenditure , then capacity to pay of the household is $(X_i\text{-}f)$. If the household consumption expenditure is less than the poverty line, capacity to pay is treated as, 0.

Z_{cat} denotes the cut- off based on proportion to capacity to pay of the household, it is taken as 0.4 here.

Now, let $Ei = 1$ *if* $Ti / (X_i\text{-}f) > Z_{cat}$, *and* $= 0$ otherwise.

Then the catastrophic head count is $\sum E_i$, where sum is over all the households N. The catastrophic head count ratio is now $\sum E_i / N$

If O_i is the 'catastrophic overshoot' which is measured as
$T_i - (X_i\text{-}f) . Z_{cat}$ *if* $T_i / (X_i\text{-}f) > Z_{cat}$, and 0 otherwise

The catastrophic overshoot captures the average depth by which maternal health care payments exceeds the threshold Z_{cat}, and then mean catastrophic overshoot is given by ,

$$\frac{\left[\sum T_i - (X_i\text{-}f) . Z_{ca} \right]}{N}$$

Table: 4.1 Percentages of Household incurred Catastrophic Payments for Maternal Health Care by the Background Characteristics of Women in Rural and Urban India:

Background Characteristics	*Rural*	*Urban*	*No of Women*	
	Catastrophic Head Count	*Catastrophic Head Count*	*Rural*	*Urban*
Religion				
Hindu	61.7	33.6	5,115	2,325
Muslim	64.6	48.6	825	510
Christian	84.3	23	352	151
Others	75.6	32.4	241	142
MPCE Quintiles				
I	76.4	79.1	1,324	842
II	54.7	52.9	1,464	442
III	14.6	14.2	1,430	593
IV	8.7	8.5	1,024	637
V	5.2	2.6	1,291	614
Social Groups				
ST	44.1	28.5	945	215
SC	42.9	47.2	1,302	499
OBC	36.6	40.4	2,605	1,137
Others	29.4	26.7	1,681	1,277
Household's Principal Occupation				
1	35.4	34.3	1,123	1,443
2	48.2	29.5	1,276	1,191
3	40.7	54.8	706	369
4	31.3	43.2	2,787	121
5	26.1	-	638	-
Age-groups				
15-19	36.1	37.5	617	183
20-24	35.6	34.8	2,621	1,289
25-29	35.6	35.2	1,824	1,037
30-34	42.4	40.3	908	410
35-39	38.1	40.4	371	152
40-45	49.9	25.9	123	36
45-49	39	25.6	69	21
Educational attainments				
Not literale+Below Primry	42	52.3	3,624	879
Primary+Middle	30.8	36.1	1,993	988
Secondary+Diploma	25.5	23.8	758	771
Graduation+Higher	13.3	14.1	157	489
Total	*37.1*	*35.9*	*6,533*	*3,217*

Source: Estimated from unit level data of 25th schedule (Morbidity and Health Care) of NSSO 60th round survey, 2004

Note: Household's principal occupation : Rural 1: Self employed in non agriculture, 2. Agricultural Labour , 3. Other labour, 4. Self employed in agriculture, 5. Others : Urban: 1. Self employed, 2. Regular wage/ salary earnings, 3. Casual labour , 4. Others

Applying the methodology discussed above the Table No. 4.1 demonstrates the intensity (percentages of households incurred catastrophic maternal health care payments) in rural and urban India by their socio-economic and demographic characteristics. The percentage of catastrophic head counts was higher in rural areas than urban areas. According to religious groups the highest amount of catastrophic payments were incurred by Christians in rural and Muslims in urban areas. Across consumption quintiles it is seen that lower economic quintiles bear the disproportionate burden of catastrophic payments.

Concentration Index and Concentration Curve:

In order to determine whether poor households incur more catastrophic payments than rich households, the concentration index (CI) was calculated. The concentration curves plots cumulative percentage of health variable (Y axis) against the cumulative percentage of population, ranked by living standards, beginning with poorest ending with richest in X axis. Positive values of CI indicate a greater tendency for rich households to exceed the threshold, while negative vales indicate a greater tendency for poor households to exceed the threshold.

To denote degree of inequality across MPCE two quintile concentration curves had drawn both for rural (Figure 4.1) and urban (Figure4.2) areas. A negative index (-0.423 for rural and -0.478 for urban areas) means that poor economic groups were more likely to bear the burden of catastrophic maternal health care expenditures more than their counterparts of higher economic groups.

Fig 4.1.Concentration Curve for Catastrophic Head Count in Rural India

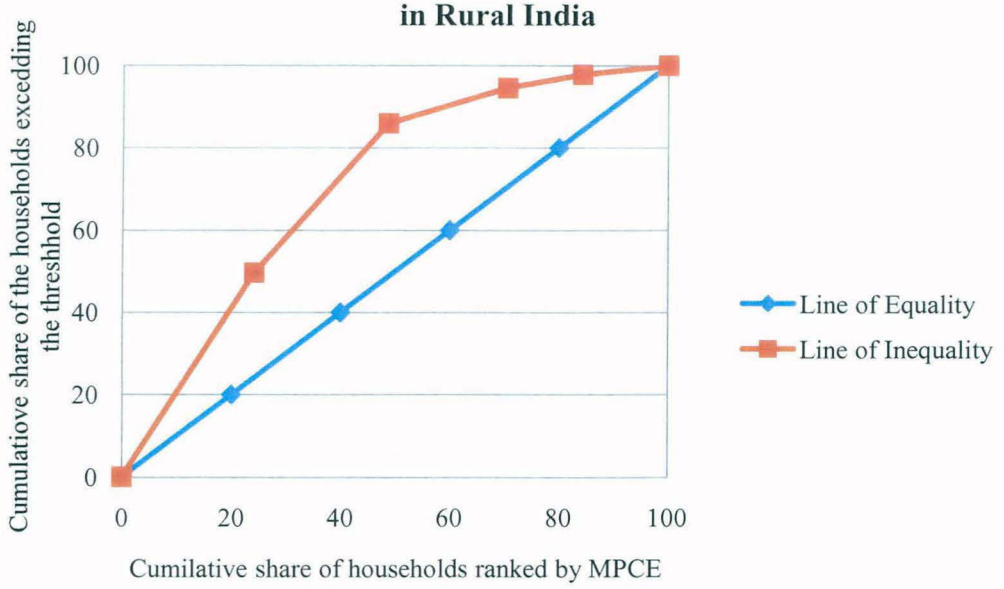
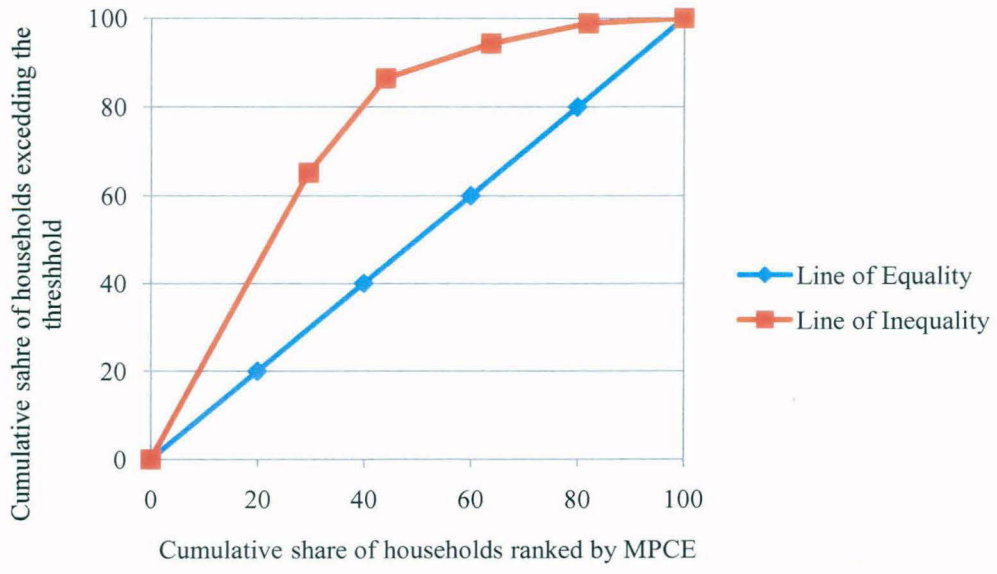


Fig 4.2 Concentration Curve for the Catastrophic Head Count In Urban India



Socially deprived groups, *i.e*, scheduled castes followed by scheduled tribes, and other backward castes had paid larger amount of catastrophic payments in both rural and urban areas. With increasing educational attainments of women catastrophic payments on maternal health care was decreased in both rural and urban India. No clear pattern was shown by age groups of women both rural and urban India. Households with main occupation of agricultural labour in rural areas and households with casual labour as main occupation in urban areas composed the highest burden of catastrophic head count for maternal health care expenditures.

Table 4.2: Mean catastrophic Overshoot for Maternal Health Care Expenditure by the Background Characteristics of Women in Rural and Urban India:

Background Characteristics	Rural	Urban	No of Women	
	Mean Overshoot(Rs)	Mean Overshoot(Rs)	Rural	Urban
Religion				
Hindu	575	892	5,115	2,325
Muslim	499	1313	825	510
Christian	1182	1434	352	151
Others	426	400	241	142
MPCE Quintiles				
I	722	1561	1,324	842
II	663	1194	1,464	442
III	459	980	1,430	593
IV	374	561	1,024	637
V	530	159	1,291	614
Social Groups				
ST	627	340	945	215
SC	1060	450	1,302	499
OBC	1107	653	2,605	1,137
Others	790	649	1,681	1,277
Household's principal occupation				
1	591	799	1,123	1,443
2	503	1020	1,276	1,191
3	762	1107	706	369
4	514	2202	2,787	121
5	710	-	638	-
Age groups				
15-19	497	1650	617	183
20-24	614	804	2,621	1,289
25-29	541	956	1,824	1,037
30-34	594	1176	908	410
35-39	468	969	371	152
40-44	854	599	123	36
45-49	281	877	69	21
Educational Attainments				
Not literale+Below Primry	831	441	3,624	879
Primary+Middle	1094	773	1,993	988
Secondary+Diploma	950	926	758	771
Graduation+Higher	960	549	157	489
Total	572	959	6,533	3,217

Source: Estimated from unit level data of 25th schedule on (Morbidity and Health Care) of NSSO 60th round survey, 2004

Note: Household's principal occupation : Rural 1: Self employed in non agriculture, 2. Agricultural Labour , 3. Other labour, 4. Self employed in agriculture, 5. Others : Urban: 1. Self employed, 2. Regular wage/ salary earnings, 3. Casual labour , 4. Others

Table 4.2 shows the depth of catastrophic burden of maternal health care across various socio-economic and demographic characteristics of households in rural and urban India. The mean overshoot was higher in urban households compared to their counterparts living in rural areas. The depth of catastrophic expenditure was found to be more for lower MPCE quintiles compared to higher consumption quintiles households both in rural and urban areas .Among religion the depth of financial burden was highest for women of Christian households in rural areas, and in urban areas Christian households were followed by and women belonged to Muslim households. With respect to social groups the average overshoot was highest for women belonged to other backward class followed by SC's in rural areas and others in urban areas. With regard to educational attainments, illiterate women and women with education below primary were lest affected. This pattern was same for both rural and urban areas. There is no clear pattern was found across age groups of women in rural areas. Same was true for urban areas. Women belonged to the households with main occupation as other labours were found to be most vulnerable in rural areas. The depth of financial burden was higher for 'others' consisting of mostly pensioner and remittance receipts followed by regular wage as principal occupation of the households in urban India.

Table 4.3 describes the state wise and sector wise variations of catastrophic head count and depth of catastrophic payments for maternal health care. The results for rural areas depict that West Bengal bore the highest burden of catastrophic payment head counts followed by demographically and economically poor states like Bihar, Orissa Uttar Pradesh, and Rajasthan. Rural parts of the rich states like Punjab, Haryana, and Karnataka paid least burden of catastrophic head counts. The mean overshoot was found to be highest for the rural parts of higher income states like Kerala followed by Tamil Nadu, Punjab and Gujarat.

Table 4.3: Incidence (Head Count) and Intensity (Over shoot) of Catastrophic Payments for Maternal Health Care in Major States of India:

Large states	*Rural*	*Urban*	*Rural*	*Urban*	*No of Women*	
	Catastrophic MHC (HC)	*Catastrophic MHC(HC)*	*Mean Over shoot(Rs)*	*Mean Over shoot(Rs)*	*Rural*	*Urban*
Andhra Pradesh	30.5	27.6	704	926	321	191
Bihar	45.2	45.7	504	686	495	71
Gujarat	30.3	25.7	799	723	206	156
Haryana	20.3	25	314	636	152	76
Himachal Pradesh	25.0	11.0	674	235	162	22
Karnataka	18.5	40	486	1018	214	174
Kerala	38.1	41.5	2204	1774	218	117
Madhya Pradesh	33.6	50.3	839	1384	295	174
Maharashtra	32.6	34.1	510	1202	322	325
Orissa	42.9	47.3	445	842	219	57
Punjab	23.8	17.5	852	496	101	66
Rajasthan	38.3	43.3	532	2511	343	146
Tamil Nadu	33.6	35.7	1047	1242	255	258
Uttar Pradesh	39.8	34.6	464	619	1,404	468
West Bengal	49.2	19.3	513	261	399	174
Overall(Total)	37.1	35.9	572	959	5,333	2,506

Source: Estimated from unit level data of 25th schedule on(Morbidity and Health Care) of NSSO 60th round survey, 2004

Due to less than 50 sample women in urban Assam was not included in the study .

Note: MHC: Maternal Health Care
HC= Head Count

On the other hand, urban parts of Madhya Pradesh bore the highest burden of catastrophic head count followed by other demographically and economically poor states like Orissa, Bihar and Rajasthan. A significant proportions of catastrophic incidence occurred in urban parts of states like Kerala, Karnataka. Urban parts of the rich states like Punjab, Haryana faced the least burden of catastrophic incidence. The depths of the catastrophic burdens were also found to be the highest for urban parts of Kerala followed by Madhya Pradesh, Maharashtra, and Karnataka.

4.4 Determinants of Catastrophic Payments:

The analysis of household's maternal health care expenditure has produced certain facts regarding the incidence of economic burden. In other words, there were certain individual and household characteristic that determined whether health spending was catastrophic.

Table 4.4: Logistic Regression Showing Determinants of Catastrophic Maternal Health Care Payments by Some Socio-Economic and Demographic Characteristics of Household in Rural and Urban India

Background Characteristics	*Odds Ratios*	*Odds Ratios*
	Rural	*Urban*
Religion		
Hindu ®	1.000	1.000
Muslim	1.037	1.367**
Christian	1.23	0.609
Others	1.125	0.636
MPCE Quintiles		
I®	1.000	1.000
II	0.341***	0.267***
III	0.042***	0.030***
IV	0.023***	0.018***
V	0.010***	0.005***
Social Groups		
Others®	1.000	1.000
OBC	1.346	1.213
SC	1.429	1.229
ST	1.688***	0.851
Household's Principal Occupation		
1®	1.000	1.000
2	1.222**	0.665***
3	1.809***	1.074
4	1.481***	0.917
5	0.510***	_
Age-groups		
35-49®	1.000	1.000
25-34	1.368***	2.089***
15-24	1.466***	1.697***
Educational attainments		
Not literate®	1.000	1.000
Primary/Middle	0.687***	0.567**
Higher	0.867***	0.765***

Note: *Household's Principal Occupation:* Rural: 1. Self employed in agriculture, 2. Self employed in non-agriculture, 3. Agricultural labour, 4. other labour, 5. others. Urban: 1. Self employed, 2. Regular wage/ salary earnings, 3. Casual labour, 4. others

®= Reference category Level of significance: Note: ***p ≤ 0.001; **p ≤ 0.05; *p ≤ 0.01: N (Rural) = 6109; (Urban) = 2897; Pseudo R^2 =0.309(rural) and 0.307(urban)

Two separate binary logistic regression analyses were used to identify the determinants of catastrophic maternal health care spending. The main predictor variables (both for rural and urban) in the models were: 0 = non catastrophic and 1= catastrophic payment head count. Other control variables included in the models were religion, social groups, and educational attainments of women, age groups of women, MPCE quintiles and household's principal occupation. Table 4.4 presents the results of both the models. Monthly per capita consumption of household was found to be a significant control variable in both the models for rural and urban areas. Compared to the poorest consumption quintile women with richer consumption quintiles households had lower odds of incurring catastrophic payments on maternal health care. Women belonged Scheduled Tribes (ST) were found to be another significant control variable. The likelihood of incurring catastrophic payments were 1.6 times higher than their reference category women belonged other castes. Compared to the reference category women who belonged to Muslim religion in urban areas had significantly 1.3 times higher chance of incurring catastrophic payments. With respect of women of households with self employed, women of households with regular wage were found to be a significant control variable with lower chance of incurring catastrophic payments in urban areas. Household's principal occupation was found to be a significant predictor variable in rural area except women belonged to others type of households as main occupation, women of household's with main occupation as self employed in non- agriculture, agricultural labour, other labour had higher chance of incurring catastrophic head counts. With respect to the reference category of women with age group of 35-49 women with lower age groups had significantly higher chance of incurring catastrophic payments. Educational attainments of women were found to have a positive influence .Women with higher education had less chance of incurring catastrophic expenditures compared to those women who were not literate. This pattern was similar both for rural as well as urban areas.

4.5 Summary:

This chapter does an extensive analysis of catastrophic maternal health care expenditure in rural and urban India on the basis of unit level data from 25th schedule on Morbidity and Health Care of 60th round of National Sample Survey in 2004. This chapter examined influences of demographic, social and economic characteristics of households on maternal health care expenditure. State wise variations of catastrophic expenditure were also analyzed. Using

concentration index and concentration curve with in wealth group's variations is also calculated. Further two binary logistic analyses were used to determine the factors controlling catastrophic payments. The findings were as follows: The percentage of catastrophic head counts was higher for rural areas than urban areas but the mean overshoot was higher for the urban households compared to their counterparts living in rural areas. Distinct socio-economic variations pattern was seen both in rural and urban parts of India. Across consumption quintiles it was seen that lower economic quintiles bear the disproportionate burden of catastrophic payments. The concentration index and curve showed the distribution of catastrophic payment was pro rich. With respect to social groups like scheduled castes followed by scheduled tribes, and other backward castes paid larger amount of catastrophic payments in both rural and urban areas. According to religious groups the highest amount of catastrophic payments were incurred by Christians in rural and Muslims in urban areas. With regard to educational attainments, illiterate women and women with education below primary were lest affected. This pattern was same for both rural and urban areas. With increasing age groups of women the probability of incurring catastrophic payments had increased. Women belonging to the households with main occupation as other labours were found to be most vulnerable in rural areas. The depth of financial burden was higher for 'others' consisting of mostly pensioner and remittance receipts followed by regular wage as principal occupation of the households in urban India. The main significant influencing variables for catastrophic payments were religion, educational attainments, age groups of women, MPCE quintiles and household's main occupation in urban households and in rural India except religion all other variables were found to be significant controlling catastrophic maternal health care spending. The pattern that emerged in state wise analysis showed that rural parts of West Bengal paid the highest burden of catastrophic payments followed by Bihar, Orissa Uttar Pradesh, and Rajasthan. Depths of catastrophic payments were found to be higher for the rural parts of the states of Kerala followed by Tamil Nadu, Punjab and Gujarat. Urban parts Madhya Pradesh were found to be most vulnerable state followed by Orissa and Bihar. Urban parts of Kerala bore highest mean overshoot of catastrophic payments. Finally given the picture that has emerged from the above analyses, the most important aspect of policy response is to allocate more resources (direct cash transfer) and protective insurance coverage to the vulnerable households.

Chapter-V

Impoverishment Effect of Maternal Health Care Payments in India

5.1 Introduction:

The previous chapters showed that the out of pocket payments on maternal health care pose serious economic burden to the households. These high medical expenditures are associated with some negative consequences like financial catastrophe and hardship. Studies from India and outside established the fact that health care expenditure induces impoverishment (Wagstaff and Van Doorrsaler 2003a, Van Doorrsaler *et al.* 2006, Chowdhury 2009, Gupta 2009a, Ghosh 2010). Asian Developmental Bank analysis found that nearly 40 million people in India were below the poverty line as a result of health payments (Bonu *et al,* 2007). The ill effects of OOP payments can also be noticed for maternal health where medical expenses can be large, uncertain, and unexpected (Asian Development Bank, 2008). This makes sense that such high spending implies an excessive opportunity cost of other consumption any also may leads to under estimation of poverty (Berki, 1986). Maternity is a very important part of which every household has to pass through and so maternal health care expenditure comprises a very important part of household expenditure. A household with maternity face huge health care expenses and may not be classified as poor simply because their health care expenses placed them above poverty and they are not counted as poor. The subtraction of all health spending from household expenditure before estimating poverty will result in overestimation of poverty. Meeting maternity expenditure can easily force spending on other goods and services below the poverty threshold level. Some household simply not classified as non poor because high spending on vital health care positioned them above poverty line (Wagstaff and Van Doorsaler, 2003b). Studies of India analyze health care payments inducing poverty relationship by taking general health expenditure per se. Impoverishment due to maternal health care in India has not been explored earlier. Against this backdrop the current chapter analyses the maternal health care induced poverty head count and poverty gap in India and major states. Socio-economic differentials in poverty head counts and poverty gaps are also calculated.

5.2 Measuring Impoverishment of Maternal Health Care payments

Impoverishment due to out-of-pocket maternal health expenditure is computed by enumerating the number of individuals who fall below poverty line after paying for maternal health care. The study borrowed the methodology from work of O' Donnell et al. (2008) published by World Bank entitled "Analyzing Health Equity Using Household Survey Data. It gives in details the options available to practitioners and researchers for adjusting measures of poverty to take into account expenditure on health care. The cruxes of these are (a) OOP payments are completely non-discretionary, and (b) total households resources are fixed (Gupta 2009b).

In other words, if household expenditures before maternal health payments, the head count ratio can be written in the following manner:

If x_i is the total consumption expenditure of household i, then (the gross of maternal health care payments) poverty head count ratio is:

$$H^{gross} = \frac{\sum_{i=1}^{N} s_i p_i^{gross}}{\sum_{i=1}^{N} S_i}$$

Where $p^{gross} = 1$ *i* if $x_i < PL$ and is 0 otherwise, where s_i is the household size. N is the number of households in the sample, and PL is the poverty line.

The poverty gap gross of individual level poverty gross of maternal health care payments is $g_i^{gross} = P_i^{gross}(PL-x_i)$ and the mean of this gap is:

$$G^{gross} = \frac{\sum_{i=1}^{N} S_i g_i^{gross}}{\sum_{i=1}^{N} S_i}$$

The net of individual level health payment poverty gap can be obtained by using $g_i^{net} = P_i^{net}(PL-(x_i-T_i))$ where T_i is the out of pocket maternal expenditure.

The net of health payments head count is obtained by :

replacing pi ^{gross} with pi ^{net} =1 , if (x_i-T_i)<PL (otherwise), where T_i is total maternal health care expenditure

There are some methodological issues need to be cleared as total maternal health care (ANC, Delivery and PNC) spreads over nine months we also multiplied monthly per capita expenditure and monthly poverty line expenditure(inflation adjusted planning commission's estimates for the year 2004-05) by twelve to obtain annual per capita expenditure and annual poverty line expenditure.

In addition, maps have been prepared to reveal marked state-wise variations in pre and post maternal health care payments poverty head counts for rural and urban areas separately, using a Geographical Information System (GIS) package.

Table 5.1. Increase in Poverty due to Maternal Health Care Expenditure in rural and urban parts of India

	Poverty Head count (%)			*Mean Poverty Gap (Rs)*			*No of women*
	Pre payment	*Post payments*	*Difference*	*Pre payment*	*Post payments*	*Difference*	
Rural	35.3	53.8	18.5	329	784	455	6533
Urban	32.7	52.4	19.7	452	1218	766	3127

Source: Estimated from unit level data of NSSO 60th round survey on Morbidity and Health Care, 2004

Applying the methodology discussed above Table 5.1 shows that out of pocket health expenditures raised the poverty head count in rural India from 35.8 to 53.8 percentages; it means poverty head count in rural India has increased by 18.5 percentage points. In urban India the poverty head count before and after maternal health payments were 32.7 and 52.4 percentages respectively; that mean it has raised the poverty head count by 19.7 percentage points. The mean poverty gap has also increased by Rs 455 in rural and Rs 766 in urban areas respectively.

Table 5.2.Increase in Poverty due to Maternal Health Care Expenditure in rural parts of major states of India

States	Poverty Head Count (%)			Mean Poverty Gap(in Rs)			No of women
	Pre Payment	Post Payment	Difference	Pre Payment	Post Payment	Difference	
Andhra Pradesh	17.1	52.1	35.0	112	645	533	321
Bihar	41.7	58.2	16.5	369	827	458	459
Gujarat	17.8	40.3	22.5	149	546	397	206
Haryana	13.9	32.0	18.1	140	469	329	152
Himachal Pradesh	15.6	38.8	23.2	166	865	699	162
Karnataka	29.0	48.0	19.0	185	539	354	214
Kerala	13.7	60.2	46.5	103	1166	1063	218
Madhya Pradesh	38.2	55.6	17.4	366	924	558	295
Maharashtra	29.0	47.5	18.5	268	690	422	322
Orissa	59.3	69.5	10.2	738	1104	366	219
Punjab	8.8	29.1	20.3	104	520	416	101
Rajasthan	33.1	50.6	17.5	283	727	444	343
Tamil Nadu	24.0	51.5	27.5	196	830	634	255
Uttar Pradesh	41.3	55.8	14.5	409	780	371	1,040
West Bengal	44.9	62.9	18.0	416	924	508	399
Overall	35.3	53.8	18.5	329	784	455	5,333

Source: Estimated from unit level data of 25th schedule of NSSO 60th round survey on Morbidity and Health Care, 2004

Assam was not included in the study due to less than 50 samples of women in urban Assam.

Table 5.2 reveals the interstate (rural) variation pattern of maternal health care induced impoverishment in India. One can easily capture from the figure 5.1 that after subtracting maternal health care expenditures from household's consumption expenditures rural parts of Kerala showed highest increase in poverty head count followed by Andhra Pradesh, Tamil Nadu and Himachal Pradesh.

Rural Kerala was found to be most vulnerable as it showed the highest increase in depth of poverty. Substantial increase in incidence of poverty was found for the rich states like Gujarat, Punjab and Maharashtra.

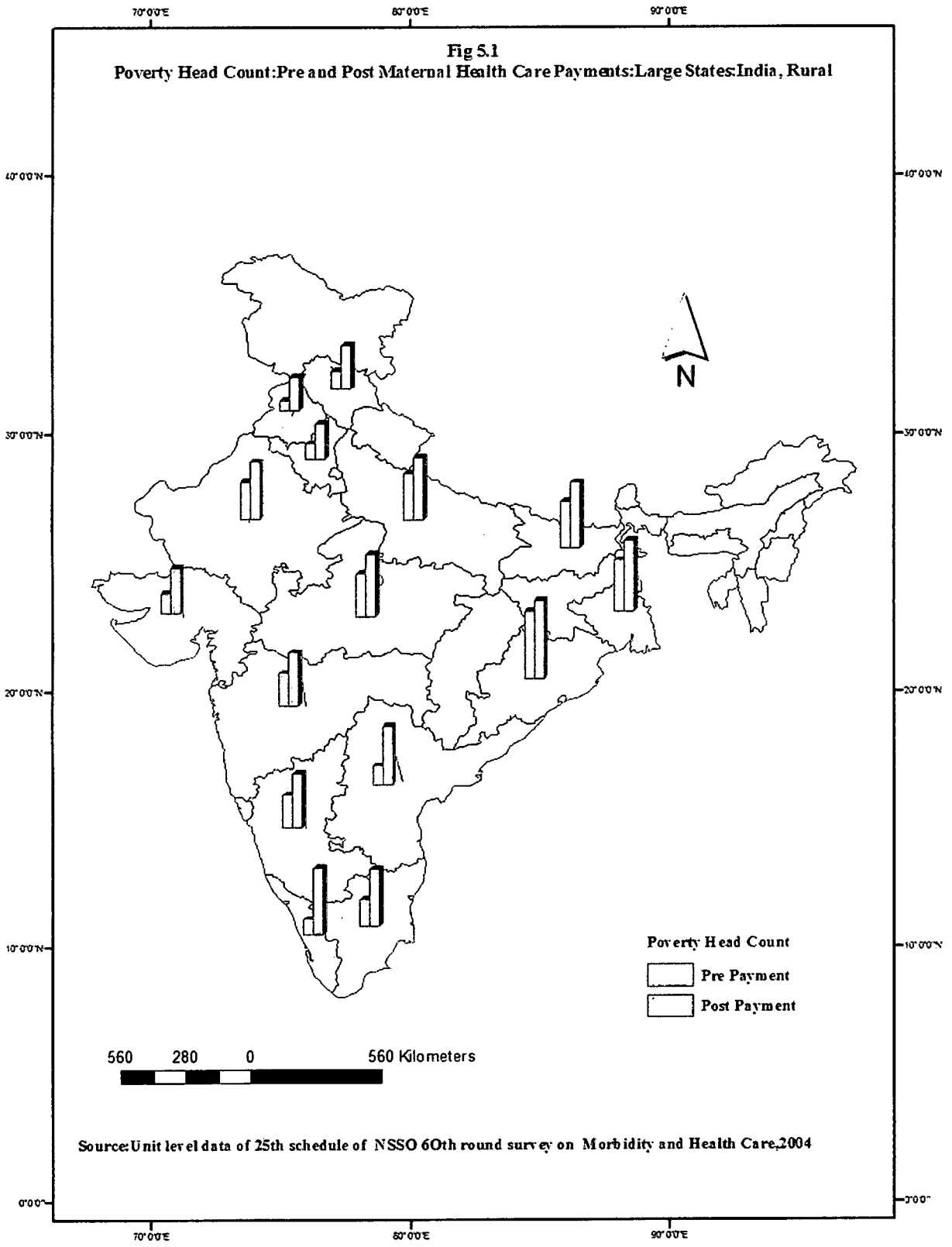


Fig 5.1
Poverty Head Count:Pre and Post Maternal Health Care Payments:Large States:India, Rural

Source:Unit level data of 25th schedule of NSSO 60th round survey on Morbidity and Health Care,2004

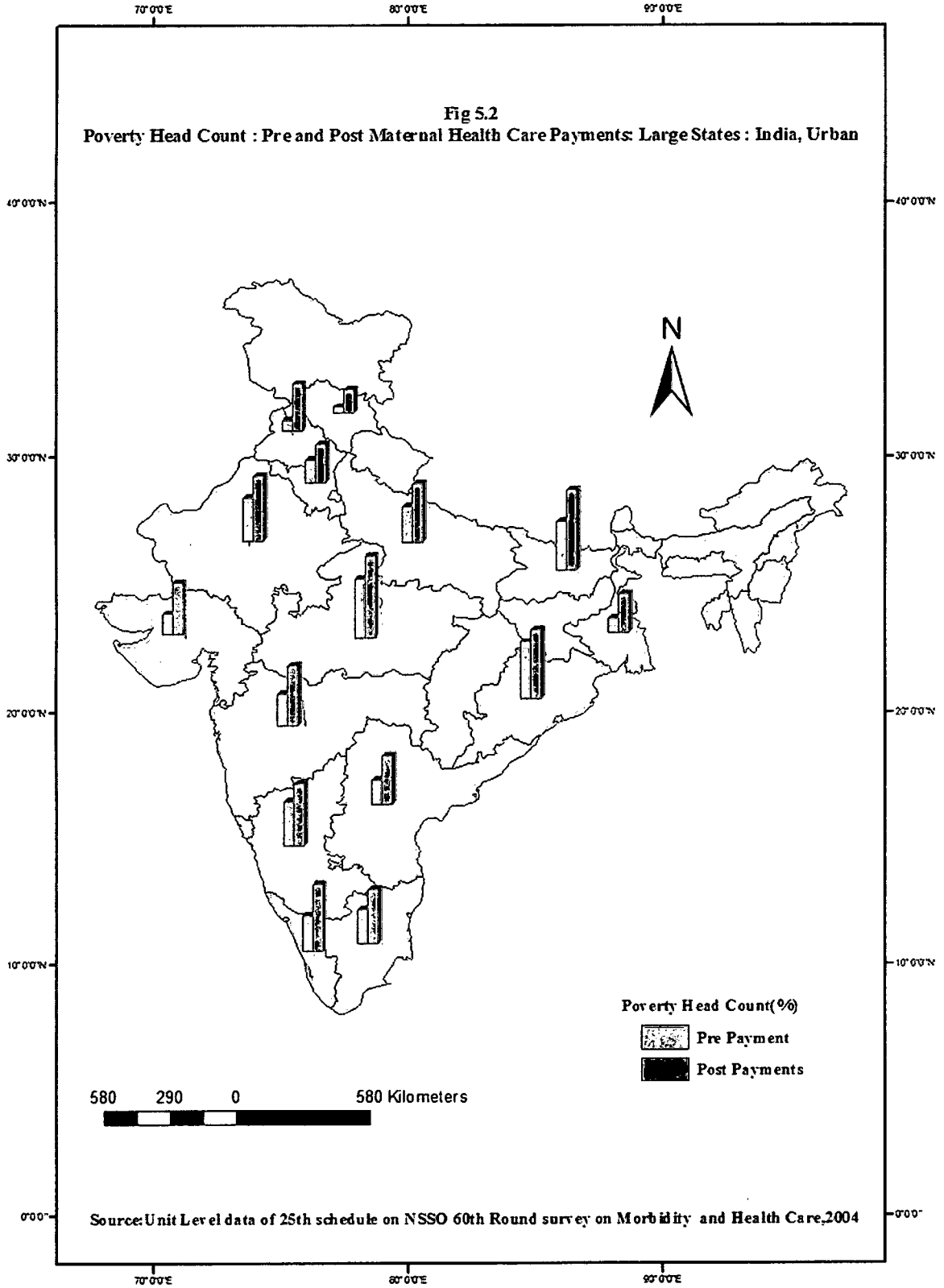
Table 5.3.Increase in Poverty due to Maternal Health Care Expenditure in urban parts of major states of India

States	Poverty Head Count (%)			Mean Poverty Gap(in Rs)			
	Pre Payment	Post Payments	Difference	Pre Payment	Post Payment	Difference	No of women
Andhra Pradesh	21.1	43.1	22	289	1129	840	191
Bihar	42.7	71.2	28.5	659	1606	947	71
Gujarat	17.7	45.2	27.5	218	1123	905	156
Haryana	20.0	33.5	13.5	126	823	697	76
Himachal Pradesh	5.5	20.6	15.1	7	164	157	22
Karnataka	39.5	55.6	16.1	806	1636	830	174
Kerala	31.7	60.5	28.8	455	1868	1413	117
Madhya Pradesh	51.9	72.2	20.3	916	1909	993	174
Maharashtra	28.8	53.5	24.7	567	1542	975	325
Orissa	50.1	60.7	10.6	818	1489	671	57
Punjab	9.0	40.9	31.9	69	764	695	66
Rajasthan	38.9	58.1	19.2	525	1318	793	146
Tamil Nadu	30.4	48.4	18.0	488	1324	836	258
Uttar Pradesh	32.1	52.4	20.3	420	992	572	468
West Bengal	12.8	34.3	21.5	202	552	350	174
Overall	32.7	52.4	19.7	452	1218	766	2,506

Source: Estimated from unit level data of NSSO 60th round survey on Morbidity and Health Care, 2004

Note: Assam was not included in the study due to less than 50 samples of women in urban Assam.

Fig 5.2
Poverty Head Count : Pre and Post Maternal Health Care Payments: Large States : India, Urban



Source: Unit Level data of 25th schedule on NSSO 60th Round survey on Morbidity and Health Care,2004

It is observed from the figure 5.2 that maternal health care induced poverty head count in urban India was found to be the highest in Punjab followed by Kerala, Bihar and Gujarat. Urban parts of Punjab was found to be most vulnerable where huge percentages of population were thrown into the hardship after paying maternal health care.

Table 5.3 depicts that Maternal Health care induced depth of poverty was the highest for Kerala followed by Madhya Pradesh and Bihar

This section analyses the maternal health care payment induced impoverishment in rural and urban India across various socio-economic and demographic groups of women. This analysis is very important in respect to policy perspective in the sense that it identifies the vulnerable section of the society. Table 5.4 describes the increase in poverty head count (number of person fell below poverty) and poverty gap (depth of poverty) due to maternal health care expenditure in rural and urban India. Hindu women were most vulnerable to maternal health care induced poverty head count after deducting maternal health care payments in rural India and in urban India the same is true for households which belonged to 'other' religion mostly comprised of Sikh, Jain , Buddhists , Zoroastrianism and remaining religion in urban areas. The head count increased by 19.3 percent among Hindu in rural areas due to OOP payments on maternal health care. The incidence of poverty induced by OOP payments for maternal health care was found to be the highest for second poorest consumption expenditure quintile. This was primarily because this category consisted predominantly those households who were very close to poverty line. Generally individual who belonged to lowest expenditure quintiles were already below poverty line but their depth of poverty increased due to maternal health care payments. This pattern was similar for both rural and urban areas. With respect to social groups the increase in poverty head count was found to highest for women belonged to other (general) castes households both in rural and in urban areas. With respect to household's principal occupation women who belonged to the households of other labourer were found to be most vulnerable due to maternal health care spending in the sense poverty headcount increased by 23 percentage points in rural areas. But the highest depth of poverty increased was seen for households with main occupation of 'other' as

these types of households comprised of pensioner or remittance. This was also true for urban areas. Among the age group of women the highest increase in poverty head count was found for the age groups of 15-24 in rural and 25-34 in urban areas.

Table 5.4.Increase in Poverty due to Maternal Health Care Expenditure in rural and urban India:

Background Characteristics	Rural							Urban						
	Poverty Head Count (%)			Mean Poverty Gap(Rs)			Rural	Poverty Head count (%)			Mean Poverty Gap(Rs)			No of women
Religion	Pre Payments	Post Payments	Difference	Pre Payments	Post Payments	Difference	No of women	Pre Payments	Post Payments	Difference	Pre Payments	Post Payments	Difference	Difference
Hindu	32.6	53.7	21.1	338	770	432	5,115	28.2	50	21.8	416	1155	739	2,325
Muslim	30	49.3	19.3	314	696	382	825	41.5	66.3	24.8	679	1588	909	510
Christian	11.9	21.5	9.6	208	455	247	352	9.2	33.8	24.6	145	815	670	151
Others	17.8	34.8	17.0	163	689	526	241	21.8	50.5	28.7	337	1077	740	142
MPCE Quintiles														
I	100	100	0.0	1249	1779	530	1,324	100	100	0	1514	2504	990	842
II	45.5	76.1	30.6	112	632	520	1,464	19.6	71.3	51.7	30	813	405	442
III	0.0	28.2	28.2	0	409	297	1,430	0.0	27.2	27.2	0	1294	666	593
IV	0.0	18.6	18.6	0	303	303	1,024	0.0	25.4	25.4	0	1409	866	637
V	0.0	14.3	14.3	0	209	209	1,291	0.0	14.1	14.1	0	1025	742	614
Social Groups														
ST	54.2	64.1	9.9	587	888	301	945	27.5	36.9	9.4	408	813	405	215
SC	42.3	60.1	17.8	397	798	401	1,302	44.7	61.6	16.9	628	1294	666	499
OBC	33.1	53.3	20.2	298	747	449	2,605	36.7	57.2	20.5	543	1409	866	1,137
Others	24.3	44.4	20.1	208	644	436	1,681	22.7	44.7	22	283	1025	742	1,277
Household's main Occupation														
1	31.0	53.8	22.8	257	697	440	1,123	33.1	54.6	21.5	456	1187	731	1,443
2	49.6	62.4	12.8	509	887	378	1,276	22.5	44	21.5	278	1068	790	1,191
3	35.1	58.1	23.0	295	775	480	706	53.5	70.4	16.9	833	1613	780	369
4	31.1	49.2	18.1	284	680	396	2,787	38.3	56.2	17.9	564	1535	971	121
5	19.0	40.5	21.5	189	699	510	638	-	-	-		-	-	-
Age groups														
15-24	32.1	52.2	20.1	276	705	429	3238	32.3	50.7	18.4	380	1113	733	1472
25-34	36.1	53.8	17.7	360	791	431	2,732	30.3	53	22.7	488	1292	804	1447

34-49	49.9	62.8	12.9	490	790	300	563	48.6	63.9	15.3	829	1680	851	208
Educational Attainments														
Not Literate+Below Primary	44.6	59	14.4	430	795	365	3,624	40.6	71.5	30.9	927	1587	660	879
Primary+Middle	23	47.2	24.2	191	689	498	1,993	50.1	70.8	20.7	339	1160	821	988
Secondary+Diploma	11.3	42.1	30.8	74	671	597	758	39.1	86.9	47.8	150	1079	929	771
Graduation +Higher	4.4	27.7	23.3	33	362	329	157	32.2	94.9	62.7	41	669	628	489
Total	35.3	53.8	18.5	329	748	419	*6,533*	32.7	52.4	19.7	449	1218	766	3,217

Source: Estimated from unit level data of 25th schedule on (Morbidity and Health Care) of NSSO 60th round survey, 2004

Note: The estimated figures show gross and net maternal health care payments annual poverty head counts and poverty gaps.

Inflation adjusted poverty line (rural and urban) as given by Planning Commission for 2004-05 has taken for the analysis. As the consumptions expenditure

Quintile -I comes below poverty line expenditure as given by planning commission all households were considered as poor here.

Note: Household's main occupation : Rural 1: Self employed in non agriculture, 2. Agricultural Labour , 3. Other labour, 4. Self employed in agriculture, 5. Others : Urban: 1. Self employed, 2. Regular wage/ salary earnings, 3. Casual labour , 4. Others

The depth of poverty was found to be higher (increased) for the women who belonged to 25-34 age groups. The net of maternal health care induced poverty were found to be higher for the women who were not literate or literate up to primary education. The net depth of poverty was found to be higher for women with educational attainments of secondary or diploma. This pattern was similar for both rural as well as urban India.

5.3 Summary:

The chapter shows that the cost of maternal health care is a formidable barrier in accessing the maternity services for women. The study gets specific socio-economic variation of medical induced hardship and very distinct rural –urban pattern has also emerged from the study. This chapter put light on substantial disparity of interstate variation pattern of incidence and intensity of maternal health care induced poverty. Rural parts of Kerala and urban parts of Punjab were found most vulnerable due to maternal health care expenditure. Double burden of poverty was experienced by second poorest consumption quintile. Hindu households in rural and women who belonged to other (general) castes households were found most sensitive. The highest depth of poverty increase was seen for women who belonged to household with main occupation of 'other' as these types of households comprised of pensioner or remittance receiver both in rural as well as in urban areas. At policy level increase financial protection, better insurance coverage, enhance public investment in health care sector and direct cash transfer can in turn change this situation.

Chapter- VI

Summary and Conclusion

6.1 Back ground and Scope:

More than half a million women from the developing countries die each year due to causes related to pregnancy and childbirth. It is evidenced that there are about 500 maternal deaths for every 100,000 live births, and around 10 per cent of the pregnancies are at high-risk (UNFPA, 1995). An important proximate determinant of maternal mortality is access to and use of quality health care services (Fauveau *et al*, 1991). Utilization of institution and home based antenatal care (ANC), delivery and post natal care (PNC) continues to be low, especially in remote areas. The utilization of maternity services is largely depending on the cost associated with it. The financial cost of maternal health care and its universal utilization largely remains a challenge for the country like India where a large proportion of population lives below poverty line with a very low or almost with no capacity to pay for health care. This is also the biggest barrier to achieve the Millennium Development Goal-5 which addressees to halve the maternal mortality by 2015. Health care cost and spending on maternity services may be key determinants of maternal health care. After so many decades of Alma Ata declaration (1978) health care facility and utilization of it still remains in the grasp of those who can pay for it. Universal coverage of it is still a dream. Public health services are not sufficient enough to satisfy the needs of the people. The quality of services of public sector differs in its quality in rural and urban areas. Public investment in health sector has declined since the implementation of Structural Adjustment Program (SAP), improvement in health outcomes slowed down and the gap between rural and urban widened (Duggal, 2005). At the time of independence there was a significant number of individual private practioners, nonetheless private hospital sector was not dominant (Duggal 2000, Baru 2003).

Mass privatization of health care services in the country is a recent phenomenon and the country today has a most privatized health sector in the world. Households per se accounted for more than two-thirds of health care expenditure in India. These out of pocket OOP payments are likely to affect health care utilization and overall health. These huge burdens of out of pocket

expenditure cutting across different socio-economic stratum can pose serious economic consequences for the households by bringing financial catastrophe and hardship. The concept of catastrophic health expenditure has been defined as occurring once out of pocket payments cross estimated threshold share of household expenditure at which the household is forced to sacrifice other basic needs, sell assets, incur debt or be impoverished. Against this back ground the current study attempt to explore the cost of maternal health care, its determinants and economic consequences in India.

6.2 Summary:

The second chapter has analysed the use of public-private facilities for maternal health care (ANC, delivery and PNC) by the back ground socio-economic and demographic characteristics of women who had experienced pregnancy as well as given birth during 365 days prior to the survey. Interstate (major states) variation pattern of public-private facilities for ANC, delivery and PNC had also emerged from the analysis. Private providers were preferred over public providers for all maternity services - ANC, delivery and PNC. In rural areas this was only for PNC. Both in rural as well as in urban Bihar private providers were preferred over public providers for all maternity services. On the other hand Himachal Pradesh had reported highest users of public facilities for the same. Kerala was reported full institutional delivery. This might be attributed to higher educational attainment of women as well as relatively better, developed and well functioning health care infrastructure. Higher utilization of private facilities for maternity services in Bihar may be the reason for malfunctioning of public health sector. Women belongs households of richest quintile sought ANC, delivery and PNC often from private facilities compared to public facilities in urban areas. In rural areas home deliveries were more preferred. Women with higher education, Christian religion and woman belonged to other castes sought private facilities for maternity services compared to their counterparts. These patterns confirm the fact that, with increasing economic position the chance of seeking health care from government sources lowers.

The findings of the second chapter were very important for further analysis of the third chapter which explored out of pocket payments on maternal health care and its determinants. The out of pocket expenditure means the spending net of reimbursement if any. But the study did not subtract the reimbursement as NSSO 25th schedule (0n Morbidity and Health Care) of 60th round did not provide any reimbursement data for maternity service expenditure. Total maternal expenditure was generated by adding total expenditures on ante natal care, delivery and post natal care to show how much financial burden has to face by the households due to pregnancy and child birth. Households with a pregnant women (Child birth not taken place) seeking only antenatal care has also taken into consideration. The out of pocket payments for all maternity services(ANC, delivery and PNC) were found higher in urban areas than rural areas except for delivery in public facilities in rural areas. The average expenditure for delivery in rural areas was Rs 4280 in private hospitals and the amount was less (Rs 1218) for delivery in public hospitals. The average spending for delivery in urban areas for private hospitals was Rs 5542 and in public hospital it was Rs 1042 for the same. Wide variations in the expenditure in antenatal and post natal care were found in rural areas among public and private facilities. Same was also true for urban areas. Mean OOP expenditure on maternity care varied according to women's socio-economic and demographic characteristics. The results showed a positive relationship between share of out of pocket maternal health care expenditure and level of socio-economic development. The distribution of share of out of pocket spending was pro-rich for all maternity services. To assess the net effect of back ground socio-economic and demographic variables six Multiple Classification Analyses were done separately for rural and urban areas. MCA gives unadjusted and adjusted means of the dependent variable for each category. The dependent variables were the expenditure on ANC, delivery and PNC. The significant variables determining the mean expenditure on ANC were households MPCE quintiles of women, social groups, religion, educational attainments of women and household's principal occupation in rural areas and households MPCE quintiles of women, educational attainments of women and household's principal occupation in urban areas. The age groups of women were found as a significant variable in rural areas for delivery expenditure where the mean expenditure on delivery found lowest for the older (35-49) age groups. Household's consumption quintiles of women were another significant variable determining all maternal health care expenditures both for rural and urban India. With increasing consumption quintile the

mean spending on delivery increased. Household's main occupation also determines expenditure on delivery. The lowest mean expenditure on delivery was paid by households whose main occupation was agricultural labour in rural and casual labour in urban areas. Educational attainments of women had a clear, positive and significant control variable. Those women with higher education spent more on all maternal health care than women of lower education. Even after control for other variables the pattern did not change. Women belonged to Hindu religion in urban and Muslim religion in rural India spent lowest mean amount of OOP on delivery and highest amounts were paid by women belonged to Christian religion and after controlling deviations adjusted for other variables the effect remained unchanged. The mean OOP payments in urban India on PNC increased from middle MPCE quintile to richest MPCE quintile but the OOP spending was found to be less for women with poorer MPCE than the poorest MPCE and even after controlling other variables the pattern did not changed. Household's consumption quintiles, educational attainments and principal occupation of household of women largely determine the expenditure pattern on PNC in rural India. Expenditure pattern for ANC, delivery and PNC got a distinct identification when it analyzed state wise. The mean expenditure in public facility for ANC in rural areas was highest (Rs 1585) in Kerala and lowest in Gujarat (Rs 66). Variation in expenditure on ANC can be found among rich states i.e. in rural Punjab the mean expenditure in public facility was 980 Rs, whereas it was 167 Rs in Maharashtra for the same. The rich states like Punjab, Haryana, Tamil Nadu, Kerala, Gujarat, and Andhra Pradesh had mean expenditure in private facilities ranges from about Rs 1100-2300. The expenditure on delivery in public facilities was highest in both rural and urban Punjab (Rs 2352). The mean expenditure on PNC in rural India was highest in Punjab and lowest in Tamil Nadu and in private facilities it highest in Gujarat and lowest in Bihar.

These huge burdens of out of pocket expenditure on maternal health care pose serious economic consequences – financial catastrophe and impoverishment for the households. The subsequent chapters dealt with these issues. The present study classifies the out of pocket payment for maternal healthcare as catastrophic if it exceeds 40 percent of annual household non-food expenditure (capacity to pay), considered as the cut-off level (Khan *et al.*2005, Bonu *et al.* 2009). Another measure, the 'catastrophic payments overshoot' captures the depth of catastrophic payments by which the maternal health care expenditure exceeds the threshold (40%

of annual capacity to pay). This method captures the intensity of catastrophic maternal health care expenditure. In order to determine whether poor households incur more catastrophic payments than rich households, the concentration index and concentration curve were calculated. The distribution of catastrophic burden of household's maternal health care expenditure was computed from distribution of household's capacity to pay. The socio-economic correlates of catastrophic maternal health care expenditure were analyzed with the help of binary logistic analysis. The percentage of catastrophic head counts was higher for rural areas than urban areas but the mean overshoot was higher for the urban households compared to their counterparts living in rural areas. A distinct socio-economic variation was seen both in rural and urban parts of India. The concentration index and curve showed the distribution of catastrophic payment was pro rich. Women belonged to Muslim religion , lower MPCE quintiles , Scheduled castes in urban and Scheduled tribes in rural areas, households with other labour in rural and casual labour in urban as main occupation in urban areas were more likely to be affected by catastrophic maternal health care payments.

The last chapter of the study explored another economic consequence of maternal health care expenditure which in extreme brought financial hardship for the households in India. This part of the study had not been explored earlier in India. But this is very important in the sense that such high spending may lead to over-estimation or under-estimation of level of poverty (for a given period of time) measured on the basis of total household's consumption expenditure. Impoverishment effect of maternal health care was calculated by recalculated poverty headcount and poverty gap before and after maternal health care payments. With respect to socio-economic condition of the households the bivariate analysis showed that after subtracting maternal health care expenditure from household's consumption expenditure households belonged to Hindu religion in rural and households belonged to 'other' religion mostly comprised of Sikh, Jain , Buddhists , Zoroastrianism and remaining religion in urban areas , households with general castes ,other labours as main occupation in rural areas and households in the second poorest consumption quintile were found most vulnerable . Rural Kerala and urban parts of Punjab were found most venerable due to increase in maternal health care induced poverty head count and depth.

This NSSO 60th round was carried out in 2004, before the NRHM (National Rural Health Mission) was launched. The Janani Suraksha Yojana (JSY) under NRHM, making constant effort in proving direct cash transfer to the poor. The Government of India provides Rs 1400 to women for institutional delivery. The NRHM was expected to bring about a change. We should able to see, from the later rounds of NSSO (or other data) if the pattern of maternal health care has changed and if catastrophic expenditures reduced.

6.3 Limitations of the study:

This current study did not subtract any reimbursement of cash in calculating out of pocket expenditure maternal health care expenditure as NSSO 25th schedule (on Morbidity and Health Care) of 60th round in 2004- did not give any data on it. For the same reason the no financial correction mechanism had done in calculating financial catastrophe and hardship.

6.4 Recommendations:

The results highlighted some significant problems of financing in maternal health care. However, it also suggests some policy implications. Reducing cost for maternity services the poor should be the major area of intervention in utilizing the universal maternity service. In order to have an impact on maternal mortality and utilization of maternity services it would have to subsidize services to achieve affordable prices. Encouraging able household to save for obstetric care, as planned in the intervention would be useful. Introducing voucher scheme for total maternal health care (integrated package for ANC, delivery and PNC) in a subsidized price should encourage more households. Government should introduce some financial correction mechanisms and some coping strategies so that it would give some relief to the household's financial burden. The results showed that the delivery cost of poorest quintile women in public sector is higher than their capacity to pay. This may be the reason for the low institutional delivery of women in this quintile. The study has shown that huge chunk of women delivered at home. Cost associated in institutional deliveries may also be attributed to this reason. Direct cash transfer to these vulnerable sections of the society is an urgent need as it is one of the important

interventions to neonatal mortality. The Janani Suraskha Yojona (JSY) under NRHM launched by Government of India (GOI) in 2005 pay cash to the Below-Poverty-Line (BPL) pregnant women who have their deliveries in institutions. The NRHM faces a number of challenges in ensuring effective utilization in transferring cash, improving capacity buildings and producing quality health services (Chatterjee, 2006). Most of the public facilities for health care in our country are dysfunctional and not well equipped. So despite higher expenditure in private facilities, a substantial proportion of women from poorest quintile in urban (25%) areas opted for private facilities for delivery. This may be due to good quality treatment and improved facilities. There is also state wise variation in utilization of maternity services. Bihar and Himachal Pradesh accounted for the utilization of highest private and public facilities for maternal health care.

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