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SOCIO ECONOMIC DISPARITIES IN UTILIZATION OF MATERNAL HEALTH CARE SERVICES IN RURAL INDIA

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In this paper an attempt is made to examine the factors associated with the utilization of maternal health care services in rural India on the basis of household survey data collected by National Sample survey Organization (NSS) consecutive three rounds (42nd, 52nd and 60th Round).The study is carried out by collecting household level information recorded for prenatal care, delivery care and post natal care visits with 365 days reference period pulling rural sample of the three NSS rounds. Data has been analyzed in two dimensions: viz. cross tabulation analysis and correlation analysis using SPSS. Maternal health care utilization in India especially among the rural household has been improved during the last 18 years before the latest survey. But the decline in use of public facilities for maternal health services raises some question of efficiency of public health delivery system in the rural sector. The study found that the rate of utilization of maternal care services is lower among women/mothers those are illiterate or having very lower level of education in all the select points of time. The socio economic inequality in utilization of maternal care in general and public facilities in particular across the different time points is a matter of concern for policy makers. However, the rate of utilization of public health facilities has improved at the faster rate among the women /mothers belonging to the lower socio economic status. The developed states have shown better performances in utilization of maternal care services. It is found that the maternal morbidly rate is higher among the expectant women/ mothers those are from higher age groups. The grassroots level maternal health care delivery system should be strengthened for achieving the goals of cent percent institutional child birth in rural India. To improve the quality of public health services, the level of investment on rural health infrastructure should be increased for strengthening the existing health system machinery.

Key words : *Prenatal care, Delivery care, Postnatal care, Socio economic difference.*

INTRODUCTION

The success of Government intervention in health sectors depends on the affective implementation of public policies /schemes and utilization of health infrastructure. Considering the importance of health care utilization, the present study focus on the analysis of level trends and correlates of maternal health care services in rural India with respect to regional, household and individual level backgrounds characteristics such as the socio economic status of households, education and age of mothers. Some indicators have been selected to understand the variation in utilization maternal health care services in rural India. Recent study found that social and economic factors are more dominant than the accessibility factors in utilization maternal health care in rural India. Prusty (2015) found that the utilization of maternal health care is more concentrated among the better off sections of households in Orissa. The economic inequality is found to be higher in case of safe delivery. The literacy rate of women is found to the important determinant of health care utilization in Orissa. Some studies identify that transportation and the financial constraints are the main determinant factors of maternal health care utilization. The study also found that the concept of maternal morbidity among the mother is an important component of health services utilization. (Mahapatro 2015). In another study based on DHLS-3 survey(2007-08), it is found that the significant difference in the utilization of maternal health care services by caste, women

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age at first birth, educational attainment, place of residence, economic status and region. The study also reveals that the SC ST women bears multiple social exclusion with regards to the utilization of maternal health care services (Gupta 2015)., In another study in Gujarat, it is found that the caste groups wealth and education were significantly associated with access to minimum three ante natal care visit . The study based on DLHS-3 (Saxena et al 2013).

Some studies identify significant association between the migrants and antenatal care utilization. Multivariate analysis found that migrant women less likely to seek maternal care compared to others. (Yadlapalli 2013). The household socio-economic status and mothers' education were found to be the most important factors associated with the use of ANC and skilled attendant at delivery care whereas the community level variables is an important determinant of Ante Natal care. (Jat T R et al 2011). The utilization of full ANC services at health center was low. Main reasons for inadequate utilization of ANC services were financial, unawareness about ANC services, etc (Singh 2014). Another study revealed low utilization of pregnancy-related health care utilization among the study population; especially in case of antenatal care. The study can provide new insight for policy makers to devote resources for achieving the best possible quality of maternal and child health services (Bhattacherjee, et al. 2013). The analysis of DLHS-3 reveals that the educational level of women, birth order and wealth index are significant predictors in explaining ante-natal and delivery care services. Controlling the effect of other variables, the predictive power of women's educational level, wealth index have been positively associated with antenatal care and also delivery care. (Digambar A. et al 2011.). In a regional level study it is found that the level of assistance from health financing schemes, good road access to health facilities and socio-demographic and obstetric factors are associated with differential use of maternity health services by poor, rural women in Gujarat and Tamil Nadu States of India. (Lora et al 2015).

The level of inequity in coverage of maternal, newborn, and child health (MNCH) care services across household wealth quintiles in India and its states was also examined by different researcher. It is found that the mean overall coverage of maternal and child health care utilization was 45% as estimated at the national level, ranging from 31% for the poorest to 60% for the wealthiest quintile. Almost, half of the Indian states and union territories recorded a 50% coverage in maternal and child health care services which demands special attention (Singh 2013). Women who are in socio-economically advantageous position are much more likely to use maternal and child health care services. Educations of the women as well as economic status of household have strong positive association with health-care utilization (Mahapatro 2012). Different components of social capital that led to differential bridging ties were positively associated with all three types of maternal health care use, whereas components of social capital were negatively associated with the use of preventive care, but positively associated with professional delivery care services in India (Story 2014). Some time quality is a more significant predictor of utilization of maternal health care than access. The successful of health care utilization also depends on how to acquire the quality of health services (Nair and Panda 2011) In an international level study, it is found that female education is an important factors in utilization maternal health care services, household socio economic background, characteristics and access to facilities also determinant of utilization of maternal health in Bangladesh (Chakraborty et al 2003) In an empirical study in Uganda, it is found that urban women are more likely than their rural counterparts to use antenatal care services, receive tetanus toxoid injection and deliver their babies in public health facilities. The same positive association was observed between a woman's educational attainment and visit to antenatal care clinic, place of delivery and tetanus toxoid injection. (Ishmael Kalule et al 2014). On the basis of literature reviews, the study set the following objectives:

To assess the changes in utilization of prenatal care services specially public health servicers in rural India for the periods 1986-87 to 2004-05

To assess the changes in utilization of delivery care in general and public health facilities in particular in rural India for the periods 1986-87 and 2004-05

To examines the changes in utilization of post natal care in general and utilization of public health facilities for post natal care services in particular for the period 1986-87 and 2004-05

To explore the correlates of prenatal, post natal and delivery care utilization in rural India.

To examine the efficiency of public health facilities between the year 1986-87 and 2004-05

Research method and database:

The present study select pregnant women/newborn mothers as the unit of analysis but the case level analysis has been carried out using prenatal, delivery and post natal care visits. The case wise information regarding different component of maternal care analysis has been aggregated for the cross tab analysis. The present study analyses level, trends and correlates of different component of maternal health care utilizations. First, for the assessment of maternal care at the three points of time has been used to understand the changes of utilization rate in general and utilization of public health facilities for maternal care in particular across regional and socio economic groups over the period 1986-87 to 2004-05 using NSS unit record data. Secondly, the unit level data has been aggregated across household, individual, regional level characteristics to get the average values of each indicator to understand the changes of health care utilization ratio over the period concerned. Finally, the study also analyses the correlates of different components of health care utilization using NSSO unit level data. To get coefficient of correlation of following indicators SPSS statistical package has been used. Simple cross tab analyses, ratio, percentage and bivariate Pearson correlation techniques has applied in the present study.

Ratio of pregnant women registered for Pre Natal Care = (Total number of pregnant women registered for pre natal care visits during 365 days reference period./Total numbers of pregnant women.

Ratio of pre natal care cases received treatment from public health facilities = (Total numbers of prenatal care visits in public health facilities/ Total prenatal care visits during the 365 days reference periods)

Ratio of Institutional child birth = (Total number of Institutional child birth/ Total number of child birth during the 365 days reference periods).

Ratio of mother received delivery care from the public health facilities = (Total numbers of child birth in public health facilities / Total numbers of Institutional child birth)

Ratio of mother of new born received post natal care services = (Total number of new born mother of registered for post natal care/ total numbers of new born mothers).

Ratio of mother registered for post natal care from public health facilities. = (Total number mothers registered for post natal care in public health facilities / Total numbers of post natal care visits.

DISCUSSION

The present study has focused the major components of maternal health care utilization viz. prenatal care visits, Natal care and post natal care visits during the 365 days reference period in rural India. The study has also included the all India figure to get the comparative scenarios of rural health care utilization during 1986-87 to 2004-05. It is the fact that beyond the quantitative method of analysis of maternal health care utilization, there are many qualitative issues that directly or indirectly controls the health care utilization in India. For example, in rural area women literacy rate is very low. Their social beliefs and customs also control the rate of utilization of health care facilities. It is the fact that still in the 21st century, our societal norm playing a dominant role in health care behavior in general and maternal care behavior in particular. The factors like cultural/ societal norms and traditional believes across the socio economic groups in India have influence on maternal health care utilization. But it is difficult to captures this qualitative issues through the quantitative methods of studies. Besides, these issues were not addressed in the schedule prepared by national sample survey for data collection purpose. Therefore, the present study has focused only the exposed cases of information relating to the maternal health care utilization in rural India based on National Sample Survey data of 42nd, 52nd and 60th rounds.

Utilization of Pre Natal Care Services

The present study attempt to explore the correlates of maternal health care utilization in rural India. Before the introduction of the NRHM (2005), rural health sector was facing serious fund crisis. However, the central allocation on the rural health sectors has increased gradually over the period. More emphasis has been given on the reproductive and child health care facilities. The prenatal care services are one of the important aspects of maternal health care services. The present study tries to show that the level of maternal health care utilization has changed tremendously over the last 18 years (1986-2004). It follows that the average ratio of maternal care utilization that is represented by percentage of pregnant women received prenatal care during 365 days recall period is higher among the high incomes states (86% in 2004) compared to the middle (78.3% in 2004) and Low income states (64.4% in 2004) in rural India However, the poor income states have shown the faster improvement in maternal health care utilization during 1986-2004. For example, the average rate of prenatal care utilization has improved by 54.9 percentage point among the poor income states. The corresponding figure for the richer states is found as 43.6 percentage point. In case of all India average, the rate is found slightly lower compared to the rural India. (Table.1)

The study has found social class variation in prenatal care utilization both in the rural and all India level. The households belonging to the lower social strata have shown the lower rate of utilization of prenatal health care services both in the rural and all India level. It is interesting to note that the pregnant women belonging to the ST households has demonstrated improvement in prenatal care utilization (44.1 percentage points) between the year 1986-87 and 2004. The corresponding figure of all India level is 42.7 percentage points during the same Period.

Table 1 also examines the changes in access to pre natal care services across the expenditure quintile in India. It is noted that percentage of pregnant women received prenatal care is higher among the richest expenditure quintile compared to poorest quintile both in the rural and all India level. On the other hand, utilization of pre natal care services has increased at the faster rate among the poorest quintile compared to richer household in all India level. In case of rural area, pre natal care services have increased at the faster rate among the richest quintile compared to poorest quintal and the rate of improvement is better in rural area compared to the all India level.

Table - 1 : Percentage of Women Received Prenatal Care by Household and Individual Background Characteristics During 365 Days Reference Period

	Category	Rural India			All India		
		Mother registered for pre natal care			Mother registered for pre natal care		
		1986-87	1995-96	2004	1986-87	1995-96	2004
Household State of Residence	Low income state	9.5	23.4	64.4	12.0	26.2	65.7
	Medium income state	33.0	67.0	78.3	39.6	68.9	80.0
	High income state	42.4	68.3	86.0	48.2	70.8	86.6
	Total	23.3	41.0	72.7	28.9	45.5	74.5
Social Group	ST	20.6	37.5	64.7	23.0	40.7	65.7
	SC	14.7	40.7	70.3	16.3	41.9	71.9
	OBC	*	*	72.1	*	*	73.8
	Other	25.3	42.3	80.0	32.0	47.5	81.4
	Total	23.3	41.0	72.7	28.9	45.5	74.5
Expenditure Quintile	Poorest Quintile	19.1	34.8	66.8	21.5	35.4	67.0
	Second Quintile	23.8	40.0	70.6	26.5	42.3	71.0
	Third Quintile	25.6	45.5	75.1	28.5	49.4	76.1
	Fourth Quintile	30.5	53.0	83.1	40.4	59.7	84.0
	Richest Quintile	42.4	67.3	85.0	65.2	74.4	88.3
	Total	23.3	41.0	72.7	28.9	45.5	74.5
Education of Mother	Illiterate	17.3	35.6	62.0	19.8	37.1	62.4
	Below Primary	25.8	46.1	75.1	30.1	48.4	75.9
	Primary	33.6	48.2	77.8	37.3	52.3	78.5
	Middle	28.9	44.5	83.6	35.2	51.0	84.8
	Metric	40.1	46.4	87.4	50.4	56.7	88.2
	HS and above	32.9	54.1	91.4	52.9	66.3	92.0
	Total	23.2	41.0	72.7	28.8	45.5	74.5
Age of Mother_CL	Below 20	31.3	45.9	74.5	29.0	49.0	75.2
	20-25	23.2	47.1	76.8	27.8	51.8	78.4
	25-30	22.2	38.7	71.3	28.0	44.6	73.9
	30-35	21.4	30.0	65.2	28.6	33.8	67.8
	Above 35	24.0	21.6	57.6	29.5	23.1	58.8
	Total	23.3	41.0	72.7	28.9	45.5	74.5

Source: NSSO unit record data of 42nd (1986-87), 52nd (1995-96) and 60th round (2004)

For example, access to pre natal care services has increased by 49.4 percentage point in rural area whereas the corresponding figure for the all India average is 45.6 percentage points. It is an important fact that the richest expenditure quintile has reported higher degree of prenatal care utilization compared to the poorest quintile but their differences in changes over time is negligible. The pregnant women belonging to the richest quintile has reported faster improvement in utilization of pre natal care services compared to the poorest quintile in all the points of times. It may be the fact that the affordability in access to prenatal care facilities is higher among the rich both in the rural

and all India level. For example, the 4th quintile has reported the increase in access to pre natal care services by 52.6 percentage point in rural area whereas in case of all India average it has increased by 43.6 percentage point over the same period of time.

Therefore, in terms of percentage point, the level of utilization of pre natal care services has increased marginally higher in rural area compared to all India average. The study has also demonstrated a statistically significant positive correlation between household economic status with rate of utilization of prenatal care services that has shown a strong positive correlation with percentage of treated prenatal care cases throughout the three points of times (See Appendix Table 1 to 3). It means that access to prenatal care services is higher among the richer households in rural India.

The study further analyses the effect of women education and reproductive age on utilization of prenatal care services in rural India. It is found that the level of education of pregnant women and the rate of utilization of prenatal care services is inversely correlated. It means that if the women come from very poor educational back ground has lower chances in utilizing the medical services at the time their pregnancy. (Table 1) For example, illiterate pregnant women registered for prenatal care was only 17.3 percent in 1986-87 and 62 percent in 2004-05 whereas the women with HS and above qualification has registered for prenatal care services was 32.9 percent in 1986-87 and 91.4 percent in 2004-05. Therefore, both in the rural and all India level, it is noted that the women having higher educational status has utilized pre natal care services at the higher rate compared to those are illiterate or less educated. The study revealed the importance of education specially higher education for higher level of health care utilization both in the rural and all India level . However, the rate of utilization of prenatal care services has increased significantly both among the illiterate and educated pregnant women between the periods 1986 to 2004. Perhaps, significant improvements in utilization of prenatal care services are caused by the improvement in awareness among expectant mothers by the grassroots level health workers in rural India. (Table.1)

The age of mother is also the influential factors on the prenatal care utilization in rural and all India level. An important point has been explored from the analysis is that the pregnant women from lower level of reproductive age has shown the higher rate of prenatal care utilization both in the rural area and all India average across all the point of time. For example, the pregnant women belonging to the age group 20 or below 20 years has shown the prenatal care utilization rate as 31.3 percent in 1986-87, the corresponding figure for the aged 35 and above is 24 percent. It sharply indicates that women with lower age group utilize prenatal care services at the higher rate compared to the higher reproductive age groups both in the rural and the all India level. During the same time, the rate of utilization has increased at the faster rate among the lower age group compared to the higher reproductive age groups, For example, in rural area, the rate of utilization of prenatal care services has increased by 43.2 percentage point between the year 1986-87 to 2004-05 among the below 20 years age group. The corresponding figure for the upper reproductive age groups is 33.6 percent during the same period of time in rural India. The reverse trend is found in case of all India level. One can argues that the urban scenario is different from rural area (Table.1)

Utilization of Public Health Facilities for Prenatal Care Services in Rural India

The study has examined the changing scenario of public health facilities between the period 1986-87 and 2004-05. It follows that the use of public health facilities has reduced significantly between the year 1986 and 2004 and 1995-06 and 2004. A strong negative correlation is found between the economic condition of states and the utilization of public facilities for parental care services both in rural and all India level. The usage of public health facilities has increased marginally

in 2004-05 when it is compared with the year 1986-87. On the other hand, the rate of utilization has decreased significantly when it is compared with the year 1995-96. It means that the utilization of public health facilities have increased in the year 1995-96 and it has been declined again in 2004-05.

Table - 2: Percentage Of Pregnant Women Received Prenatal Care From Public Health Facilities By Household And Individual Background Characteristics During 365 Days Reference Period

		Rural India			All India		
		Prenatal care form public facilities			Public Facility		
		1986-87	1995-96	2004	1986-87	1995-96	2004
Household State of Residence	Low income state	59.2	86.7	60.6	63.2	80.2	59.0
	Medium income state	51.0	65.0	67.6	56.4	60.9	65.1
	High income state	49.6	62.8	63.0	51.1	56.1	59.6
	Total	51.5	70.9	63.1	54.7	64.6	60.8
Social Group	ST	57.0	78.2	81.7	65.3	76.1	80.7
	SC	65.2	84.0	67.7	66.6	81.6	66.6
	OBC	*	*	57.8	*	*	56.4
	Other	49.8	67.6	58.9	52.6	60.5	55.3
	Total	51.5	70.9	63.1	54.7	64.6	60.8
Expenditure Quintile	Poorest Quintile	57.0	81.7	68.7	60.8	80.5	68.5
	Second Quintile	55.5	71.2	64.5	57.3	70.3	64.7
	Third Quintile	44.4	69.2	59.9	55.6	66.7	59.2
	Fourth Quintile	46.5	60.9	59.4	50.1	56.9	57.7
	Richest Quintile	52.9	50.2	49.0	47.5	37.0	41.3
	Total	51.5	70.9	63.1	54.7	64.6	60.8
Education of Mother	Illiterate	58.4	77.4	65.9	63.5	75.6	65.7
	Below Primary	48.9	73.7	69.1	51.7	70.1	68.9
	Primary	53.1	66.9	68.6	57.7	64.1	67.9
	Middle	45.0	62.4	62.5	51.7	58.1	60.8
	Metric	42.0	61.4	53.2	46.1	51.4	50.4
	HS and above	41.7	58.0	44.6	44.5	44.3	39.6
	Total	51.7	70.9	63.1	54.8	64.5	60.8
Age of Mother_ CL	Below 20	27.0	69.4	63.3	26.2	65.4	62.3
	20-25	48.1	67.9	62.9	53.7	63.0	60.9
	25-30	59.8	72.9	62.3	59.3	63.5	58.7
	30-35	48.9	78.4	66.1	54.0	68.9	62.7
	Above 35	50.5	88.0	62.6	53.8	80.5	61.2
	Total	51.4	70.9	63.1	54.7	64.6	60.8

Source: NSSO unit record data of 42nd (1986-87), 52nd (1995-96) and 60th round (2004)

The rate of utilization of public health facilities for the pre natal care has been increased mainly in the year 2004 in rural India but it has reduced by 4.2 percentage points among the low income states in all India level. The rate of utilization of public health facilities for pre natal care is slightly higher among the richer states in rural area but the differences have been reduced in the case of all India level. It might be the fact that health infrastructures in the public sectors has been improved in the low incomes states during the last 18 years, Besides the health awareness among pregnant women has also been improved by the grassroots level workers. As far as the social status of the women is concerned, it is noted that mothers belong to the lower social status has used more public facilities for prenatal care services compared to the higher social status. For example, mother from Scheduled Tribe (ST) background has used public health facilities by 57 percent cases whereas the general caste as represented by the 'others' group in the schedule has used public health facilities only by 49.8 percent in case of rural India. At the same time, the use of public facilities for the prenatal care has increased among the scheduled tribe women from 57 percent to 81.7 percent that is by 24.7 percentage point between the year 1986-87 and 2004-05 in case of rural India. But in case of all India level, the increase is found to be only by 15.4 percentage point. It represent that rural India has achieved the better utilization of public health facilities for prenatal care services among the mother of lower social status. Perhaps, the role Awangwari Workers at the village level has changed the scenario over the period 196-87 to 2004-05 (Table.2).

The study found an inverse association between the utilization of public facilities for pre natal care services and the economic status of mother. It follows that the utilization of public health facilities is higher among the poorest quintile compared to richest quintile both in the rural and all India level in all three points of time. It is an interesting fact that the rural area has reported 11.6 points increase in use of public facilities for the prenatal care services whereas in case of all India average, it has increased only by 6.1 points during the same period of time. In both the rural and all India level, the richest quintile has reported faster decline in utilization of public facilities compared to poorest quintiles. It means that richer household in both the cases have reduced the level of utilization of public health facilities (3.9 point) in rural area and all India level (6.2 points).

The exit of public facilities is higher in case of all India level compared to rural area. One may explored the cause of faster exit of public facilities in all India level because of inclusion of urban area. The exit from the public health facilities is more in urban area compared to the rural area in case of pre natal care utilization. It is natural that the higher income groups prefer private nursing home as their affordability in access to prenatal care services is higher. Besides, they are also more quality concern in regards to the maternal health care services. Therefore, the exits of public health facilities is higher among the richer household and in the richer states. (Table-3) The correlation between the household economic status and use of public facilities for prenatal care services has shown as the strongly negative and statistically significant throughout the three points of time (See Appendix Table 1 to 3). It means that the use of public facilities for prenatal care services is lower among the richer households in rural India. (Vide Appendix Table 1 to 3)

The present study made an attempt to find out the dimension of association between the age and education of the pregnant women with the level of utilization of public health facilities in rural India. It is found that the level of utilization of public health facilities is much higher among the illiterate women compared to the women having higher educational status in rural India. The similar trends are also found in case of all India level. For example, 58.7 percent pregnant women have used public health facilities for prenatal care services in the year 1986-87, the corresponding figure for the HS and above qualified pregnant women are only 41.7 percent. The utilization of public health facilities has drastically reduced over the period concerned. The maternal health sector has also

witnessed the same trends. The rate of utilization of public health facilities for prenatal care services has declined by 7.5 percentage points between the year 1986-87 and 2004-05 among the illiterate pregnant women in rural India. The corresponding figure for the all India average is 2.2 percentage points. But in case of women with higher educational status, the association is found to be different. In case of rural India, the rate of utilization of public health facilities has increased by 2.9 percentage points but in case of all India average the utilization rate has declined by 4.9 percentage points. Therefore on may conclude that in rural sector, people still depends on the public health facilities for the maternal care services irrespective of the quality of the services . It is because they don't have any other options except public facilities (Table 2).

The age of pregnant women and the rate of utilization of public health facilities is positively correlated. It means that the women from the lower age group has a higher probability in using public health facilities for prenatal care services in all the three point of time both in the rural and all India level. An interesting point is noted that the rate of utilization of public health facilities for prenatal care has increased at the faster rate among the younger women (eg 20 years and lower) both in rural and the all India level. For example, the rate of use of public health facilities has been increased by 36.3 percentage points in rural India and 36.1 percentage point in all India level between the year 1986-87 and 2004-05.

In case pregnant women 30+ and above, the rate of utilization of public health institution has increased by 17.2 percent and 12.1 percent respectively. The corresponding figure for the all India level is 8.7 percent and 7 percent respectively among the 20-35 and 35+ and above aged groups of pregnant women both in the rural and all India level. It represent that the demand for public institution for treatment of prenatal care services has increased substantially between the year 1986-87 and 2004-05. It might be the case that in rural sector, there is no alternative among the pregnant women except Govt. health facilities as no private health institutions are available in rural areas.

Utilization of Delivery Care

The study also attempts to identify the effectiveness of the present health care system especially about the quality of delivery care system in rural India. It examines the socio-economic differences in utilization of delivery care services between the 1986-87 and 2004-05. The analysis is based on the national sample survey on child birth with 365 days reference period. The information has been recorded about the child birth, place of birth and whether the delivery was assisted by any medical attendant. However, the present analysis has focused on the two aspects of delivery care services whether the child birth is institutional and whether the existing public health facilities have been used by the expectant mother. It is the fact that the institutional delivery is the better option for the expectant mothers. But ignorance of the family head or mother or financial problems influence them not to prefer institutional delivery in the rural areas. However, under different centrally sponsored schemes, expectant mother are frequently being motivated by the grassroots level health workers such ASAH, Awanwadi Workers to utilize the institutional delivery services. As per national Sample Survey rounds, the percentage of institutional delivery has been increased from 21 percent in 1986-87 to 43.4 percent in 2014-05 at the all India level, The corresponding improvement in rural India was from 13.5 percent to 34.8 percent. The present section focus on the utilization of delivery care with respect to household and individual level background characteristics such as economic status of households, educational level, age and caste backgrounds of the mothers.

Table - 4 : Percentage of Institutional Delivery by Household and Individual Background of Mother 1986-87, 1995-96 And 2004.

		Rural			All India		
		Institutional delivery			Institutional delivery		
		1986-87	1995-96	2004	1986-87	1995-96	2004
Household State of Residence	Low income state	5.33	8.4	18.8	8.9	12.3	24.4
	Medium income state	17.47	28.4	51.7	26.4	36.7	59.0
	High income state	25.97	37.0	60.8	36.3	47.7	69.0
	Total	13.42	17.9	34.8	20.9	25.4	43.2
Social Group	ST	4.74	13.8	21.0	7.6	18.0	24.8
	SC	8.86	6.4	31.1	13.4	9.2	36.7
	OBC	*	*	36.1	*	*	43.1
	Other	16.03	21.1	43.0	24.6	30.0	55.6
	Total	13.42	17.9	34.8	20.9	25.4	43.2
Expenditure Quintile	Poorest Quintile	8.80	9.5	23.9	11.4	11.5	25.5
	Second Quintile	12.99	18.0	34.6	17.1	22.1	38.0
	Third Quintile	15.31	25.0	43.8	19.7	31.4	49.7
	Fourth Quintile	24.38	32.9	54.7	38.5	45.9	63.6
	Richest Quintile	38.13	55.6	78.5	66.2	72.5	89.6
	Total	13.42	17.9	34.8	20.9	25.4	43.2
Education of Mother	Illiterate	7.5	11.7	22.0	10.6	14.6	24.9
	Below Primary	18.4	20.8	39.4	23.4	25.9	45.2
	Primary	20.5	22.1	42.7	26.2	29.5	50.1
	Middle	22.0	26.8	54.7	31.4	36.1	62.1
	Metric	28.2	30.1	67.7	43.9	45.3	76.2
	HS and above	26.5	35.6	75.2	54.5	56.7	85.8
	Total	13.5	17.9	34.8	20.9	25.4	43.2
Age of Mother_CL	Below 20	11.0	21.5	37.6	9.9	26.9	43.3
	20-25	15.2	22.4	39.6	20.5	30.5	47.8
	25-30	11.0	15.9	34.4	19.9	25.2	44.9
	30-35	11.7	10.4	23.9	21.5	16.6	33.7
	Above 35	14.6	6.4	15.8	21.6	9.6	20.9
	Total	13.5	17.9	34.8	21.0	25.4	43.2

Source: NSSO unit record data of 42nd (1986-87), 52nd (1995-96) and 60th round (2004)

It is an attempt to assess the impact of economic condition of states on the utilization of maternal health care facilities especially in delivery care services. It follows that the ratio of mother received institutional delivery services is higher among the high income states in comparison to the states those are economically poor as represented by the lower GDP growth rate. Here states are classified as low, medium and high income based on the per capita GSDP.(Gross State Domestic Product).

The study has found an association between the economic condition of a region/state and the ratio of institutional delivery. It is noted that rate the of institutional delivery is higher among the high income states compared to the states those are economically backwards in rural India in the year 1986-87. Similar trends are followed in the year 1995-96 and 2004-05. As far as improvement rate of institutional delivery is concerned, it follows that the rate of increment is faster among the

high income states compared to poor states in rural India. For example, the rate of improvement in institutional delivery is 13.47 percentage points among the poor states between the year 1986-87 and 2004-05 in rural India. The corresponding figure for high income state is 34.83 percentage points. Similar rate of improvement is followed in case of all India level.

The level of institutional child birth also varies with the social status of mothers. It follows that the mothers belonging to lower social class reported lower ratio of institutional delivery. The present study has selected few indicators relating to use of maternal health care services in three points of time across the social class in India. The improvement of institutional delivery is faster among the general castes compared to the Scheduled Caste and Scheduled tribe mothers.

The association between the access to delivery care and the respondent' economic status is positively correlated. It is found that rate of institutional delivery is much higher among the economically richer sections of mothers compared to the poorer section in rural India in all three points of times. Similarly the rate of improvement is faster among the richer section compared to the poor. For example, the rate of improvements in instructional delivery is 15.1 points between the year 1986-87 and 2004-05 in rural India. The corresponding figure for the richest expenditure quintile is 40.37 percentages points. The rate of improvement is comparatively lower in all India level. It is found that the rate of institutional delivery is 14.1 percent among the poorer section whereas the rate is 23.4 percent among the richer expenditure quintile in all India level. The study also reveals a significantly strong positive correlation between MPCE and ratio of institutional delivery which represent that the level institutional delivery is higher among the richer household both in rural and all India level in all three points of time. (Appendix Table 1 to 3).

The level of delivery care services is also varies with the level education of pregnant mothers. The level of institutional delivery is relatively higher among the mothers those are higher educated compared to those are illiterate. The targeted mother those are qualified higher secondary and above have reported 26.5 percent institutional child birth in 1986-87. On the contrary, the percentage of institutional child birth among the illiterate mother is reported as 7.7 percent which is much below the average figure. However, the ratio of institutional childbirth has increased significantly both in the rural India and all India level in 1995-96 and 2004 respectively

The study explored an inverse association between the age of mothers and the rate of institutional delivery. It means that the rate of institutional delivery is higher among the lower aged mother (20+ and below years.). But the year 1986-87 has shown the positive association between the rates of institutional delivery and the age of mothers. For example, the rate of institutional delivery is 21.5 percent among the 20+ and below aged mothers in the years 1995-96 in rural India. The corresponding figure for the higher aged (35+ and above) mothers is 6.4 percent only. It means that the rate of institutional delivery is higher among the lower aged mother compared to those are higher aged. Similar trends are followed in case of al India level.

Utilization of Public Health Facilities For Delivery Care

The study also found the social class variation in utilization of public health facilities in rural India. It sharply indicate that the mother from the lower social strata are more likely to use public health facilities for the delivery care compared to those who are belonging the higher social status in all the three point of time. The exit rate of public facilities also higher among mothers belonging to higher social status. For example, the utilization of public facilities for the delivery care has reduced by 3.4 point among the ST mothers in rural India, the corresponding figure for the general caste is 13.8 point during the same period of time. Therefore, the study explored that fact the upper caste

mother use more private health facilities such as nursing home private doctor medical attendant during child birth. It may be the income affect of upper caste mothers for more utilization of private health care facilities for accessing the delivery care services over the period.

The study found an inverse association between the economic status of mothers and utilization rate of public health facilities for delivery care services. It is found that use of public health facilities for delivery care is higher among the mothers from the poorest expenditure quintile compared to richest groups in all three points of times. The use of public hospital for delivery care has decreased at the faster rate among the household of richest quintiles compared to poorest quintiles both in the rural and all India level over the period.

Table - 5 :Percentage of Public Health Facilities Used for Child Birth by Household and Individual Background Characteristics of Mothers.

		Rural			All India		
		Child birth in public facilities			Child birth in public facilities		
		1986-87	1995-96	2004	1986-87	1995-96	2004
Household State of Residence	Low income state	83.5	69.7	53.4	78.0	65.2	47.6
	Medium income state	67.8	63.0	60.5	67.3	57.9	59.5
	High income state	55.8	50.1	45.6	54.0	46.5	42.3
	Total	64.9	59.3	52.3	62.7	54.7	48.5
Social Group	ST	75.0	70.6	71.1	74.8	68.8	70.6
	SC	75.2	70.7	64.4	62.0	67.1	63.3
	OBC	*	*	48.1	*	*	44.9
	Other	63.0	56.3	45.1	60.9	51.5	40.7
	Total	64.9	59.3	52.3	62.7	54.6	48.5
Expenditure Quintile	Poorest Quintile	70.4	72.9	66.2	72.3	71.9	67.0
	Second Quintile	70.6	65.4	58.0	68.4	65.3	58.1
	Third Quintile	63.2	53.4	46.8	69.1	54.5	48.4
	Fourth Quintile	56.2	50.9	36.5	56.8	48.5	41.7
	Richest Quintile	51.3	37.2	19.5	44.5	30.7	19.1
	Total	64.9	59.3	52.3	62.7	54.7	48.5
Education of Mother	Illiterate	75.8	65.3	59.1	76.7	64.6	58.9
	Below Primary	60.7	59.0	69.1	62.2	59.9	65.3
	Primary	63.7	57.4	59.9	65.3	55.9	58.8
	Middle	65.5	52.1	50.4	62.9	49.6	48.0
	Metric	46.8	51.9	38.2	48.6	45.7	39.6
	HS and above	51.5	60.5	21.8	45.3	43.4	20.6
	Total	65.1	59.3	52.3	62.7	54.7	48.5
Age of Mother_CL	Below 20	59.7	63.1	53.1	64.2	60.4	51.1
	20-25	67.1	56.7	50.4	68.1	53.5	48.4
	25-30	69.9	59.0	52.4	63.3	51.8	46.1
	30-35	62.9	60.2	61.7	58.5	54.1	49.4
	Above 35	63.6	76.5	52.1	62.6	66.7	52.3
	Total	64.8	59.3	52.3	62.6	54.7	48.5

Source: NSSO unit record data of 42nd (1986-87), 52nd (1995-96) and 60th round (2004)

The ratio of mother used public hospital for child birth has decreased by 19 points among the richest household in rural India. The corresponding figure for the poorest quintile is 9.8 percentage points. It is the fact that the poorest quintile in rural India cannot access costly private facilities because of lower affordability. Therefore, exit of public facilities for delivery care is lower among the poorest quintiles compared to richest quintiles booth in the rural and all India level. It is quite natural that richer people always prefer private facilities both for the curative and maternal care because of qualitative perception over public health services. Besides, the affordability to access private facility is also higher among the richer household (Table 5). The correlation between the economic status of households and utilization rate of public facilities has shown as the strongly negative and statistically significant throughout the three point of times (See Appendix Table no. 1 to 3). It means that use of public facilities for institutional delivery is lower among the richer household in rural India.

The level education of mothers and household head is an influential factor for determining the utilization of public health facilities for the delivery care. An inverse association between mother literacy rate and utilization rate of public health facilities for the delivery care is found both in the rural and all India level. For example, illiterate mother used public health facilities for delivery care by 75.8 percentage point in the year 1986-87. The corresponding figure for the HS and above qualified mother is 51.5 percentage points. The similar trends are also followed in case of all India level. But the rate of exit from the public facilities is faster among the educated mother in comparison to the mothers those are illiterate. (Table 5)

The age composition of mothers also affects the utilization of public health facilities for the delivery care both in the rural and the all India level. The present study has classified mother as per age groups. From below 20 years to above 35 years. An interesting point is found from the data analysis is that mothers from lower age group less likely to seek care from public facilities for any delivery care in comparison to the mother belonging to the higher age group both in the rural and the all India level. It may be the fact that incidence of unemployment is higher among lower aged mother, Besides as far as women autonomy is concerned lower aged mother enjoyed lower level of women autonomy. It may influence them to utilize the public facilities rather than the private medical facilities for any delivery care services both in the rural and all India level. But in case of the exit of public facilities the lower aged mother has the shown the faster movement from public to private facilities (10.7 percentage point) compared to the above 30+ aged mother (5,6 percentage points) . In case of all India level, the average figure more or less remain same over the period 1986-87 and 24-05 (Table 5).

Utilisation of Post Natal Care

The present study also the examines the pattern of maternal care utilization especially post natal care services. The post natal registration is an important part of maternal health care services. The incidence of maternal morbidity may be reduced through the proper utilization of post natal care services. Therefore, equal emphasis should be given on the post natal care (PNC) utilization The level of utilization of PNC services has been analyzed by household and individual level background characterizes such age, social and economic status of households, education and age of new born mother and the economic condition of the states.

The study attempt to establish the relationship between the utilization rate and the social status of the households. There is no much variation in the rate of utilization of post natal care services across the social status of households both in the rural and the all India level. However, the rate of improvement of post natal care utilization has been achieved at the slower rate among the mothers with lower social

strata in comparison to higher caste mothers. For example, the rate of utilization of post natal care services has increased by 40 percentage points between the year 1986-87 and 2004-05 among the ST mother in rural area, the corresponding figure for the higher caste mothers is 51.6 percentage points. In case of all India level, the utilization rate has been improved by 39.6 percent among the ST households whereas the higher caste mothers have reported the improvement rate by 50.3 percent.

The rate of utilization of prenatal care services also varies with the change in economic status of the households. The economic status of households influences the affordability of maternal health care facilities. The new born mothers from the poorest economic background has reported 14.5 percent utilization of post natal care services in the year 1986-87,The corresponding figure for the richest quintile is 20.6 percentage points. The level of utilization of post natal care services has also improved between the year 1995-96 and 2004-05. For example, the utilization rate of post natal care services has improved by 47.3 percentage points in rural India between the year 1986-87 and 2004-05. The corresponding figure for the upper income groups is 46.2 percent during the same period of time. The similar trends also followed in case all India level. The rate of improvement of post natal care survives has achieved at the faster rate among the poorer households in comparison to the mothers belonging the richer economic section.

The study examines the degree of association between the educational status of new born mother with the rate of utilization of post natal care services in rural and all India level. Mothers from the higher educational status have shown the better improvement in post natal care services compare to those is illiterate. It is quite natural fact that the educated people prefer quality health care services compared to illiterate mothers. The study revealed that mother education is an important determinant of post natal care utilization in rural India. For example, illiterate mothers sought post natal care from formal health facilities was 13 percent in the year 1986-87 in rural India and the corresponding figure higher educated mother was 14 percent. It means that the gap between the illiterate and literate mothers was very insignificant in rural India with regards to the utilization of post natal care services. However, the rate of improvement of utilization of prenatal care is faster among the higher educated mother compare to those who are illiterate or educationally backward.

For example, the rate of utilization of post natal care services has been increased by 45.5 percentage point among the illiterate mothers between the year 1986-87 and 2004-05 and the corresponding improvement among the higher educated mothers is 63.5 percentage points. Similarly, the figure for the all India is slightly lower in case of illiterate mothers viz 44.7 percentage points and the corresponding figure for the higher educated mothers is 50.4 percentage points.

An attempt has been made to establish the association between the ages of new born mother and the rate of utilization of post natal care services. It is found that the rate of utilization of post natal care services is higher among the aged mothers compared to those who are relatively younger. This trend is followed between the years 1986-87 and 1995-95 in rural India. But the gap has been narrowed down over the years. For example, the rate of utilization of post natal care services among the below 20 years mothers was 27.1 percent in rural India in the year 1986-87 and the corresponding figure for the above 35 years aged mother was 49.9 percent. It might be the fact that the incidence of maternal morbidity is higher among the aged (above 35) mothers compared to the younger mothers. But in 2004, the differences in utilization rate have been reduced between the younger and the aged mothers in rural sector in India. Similar trends are followed in case of all India average. It is also found that the rate of utilization has been improved at the faster rate among the younger mothers when compared to the relatively aged mother by 37.9 percentage points. Here the rate has increased by 36 percentages points between the years 1986-87 and 2004 where as among the aged mothers (35 + years) the rate has been increased by 36.3 percentage points during the same period of time.

Table - 6 : Percentage of Mother Registered for Post Natal Care by Household And Individual Backgrounds Characteristics.

		Rural India	All India				
		Mother taken post natal care	Mother taken post natal care				
		1986-87	1995-96	2004	1986-87	1995-96	2004
Household State of Residence Social Group Expenditure Quintile Education of Mother Age of Mother_CL	Low income state	8.5	16.3	63.3	9.4	18.2	64.3
	Medium income state	18.4	32.3	61.5	20.3	34.8	63.8
	High income state	26.9	45.6	66.0	30.0	46.5	67.7
	Total	15.5	25.4	63.5	18.0	28.3	65.1
	ST	12.6	22.5	52.6	14.0	24.1	53.6
	SC	13.2	28.9	62.0	13.8	29.4	62.9
	OBC	*	*	65.1	*	*	66.4
	Other	16.7	25.9	68.3	19.6	29.5	69.9
	Total	15.5	25.4	63.5	18.0	28.3	65.1
	Poorest Quintile	14.5	21.7	61.8	15.5	22.1	61.7
	Second Quintile	15.6	25.3	61.0	16.1	26.6	61.8
	Third Quintile	14.1	28.0	65.1	15.3	30.5	65.8
	Fourth Quintile	20.9	31.9	68.8	25.5	37.7	70.7
	Richest Quintile	20.6	47.2	71.3	35.4	51.2	76.7
	Total	15.5	25.4	63.5	18.0	28.3	65.1
	Illiterate	13.0	21.5	58.5	14.0	22.3	58.7
	Below Primary	15.4	26.7	61.7	16.8	28.1	62.6
	Primary	17.8	29.8	63.2	19.2	32.1	64.3
	Middle	21.8	28.8	69.6	23.7	33.1	70.7
	Metric	24.9	30.7	74.4	29.5	37.6	75.9
	HS and above	14.0	41.3	77.5	28.5	46.9	78.9
	Total	15.3	25.4	63.5	17.8	28.3	65.1
	Below 20	23.9	28.1	61.8	22.4	29.8	62.8
	20-25	14.5	28.4	65.6	14.9	31.3	66.9
	25-30	16.1	24.0	64.9	18.8	27.9	66.7
	30-35	15.4	20.7	62.6	19.1	23.5	64.8
	Above 35	15.3	16.9	51.6	17.9	18.3	53.2
	Total	15.5	25.4	63.5	18.0	28.3	65.1

Source: NSSO unit record data of 42nd (1986-87), 52nd (1995-96) and 60th round (2004)

Utilization of Public Health Facilities for Post Natal Care

Utilization of public facilities for post natal care is influenced by different household, individual and regional level factors like prenatal care and delivery care services, the utilization rate of public health facilities is higher among the low incomes states. Compared to the states that has demonstrated higher economic growth. But the scenarios have been changed in the year 2004-05. It is found that the level of utilization of public health facilities is higher among the high incomes states in comparison to the poorer states. The main reason behind the reverse trends of utilization of public health care facilities is that the health care infrastructure specially in public health infrastructure has been improved in the majority of the Indian states specially in the southern developed states Because

of qualitative improvements of the public health facilities, the utilization rate has improved among these states. However, the use of public facilities for post natal cares has been reduced significantly over yours. But the lower incomes groups witnessed the faster decline in utilization of public health facilities compared to the states demonstrated higher economic growth both in the rural sector and the all India level. For example, the rate of utilization of public facilities has been declined by 12.2 percentage point among the poor incomes states in rural sector in India between the 1986-87 and 2004-05. But it has been increased by 0.08 percentages in case high incomes states. As far as social status is concerned no significant difference is found between lower and upper social status in regards to the utilization of public health facilities for the delivery care between the 1986-87 and 1995-96. But the situation has been changed in the year 2004-05.

Table - 7 : Percentage of Mother Registered for Post Natal Care in Public Health Facilities by Household and Individual Backgrounds Characteristics

		Rural	ALL India				
		Mother taken post natal care from public facilities	Mother taken post natal care from public facilities				
		1986-87	1995-96	2004	1986-87	1995-96	2004
Household State of Residence Social Group Expenditure Quintile Education of Mother Age of Mother_CL	Low income state	54.1	89.8	38.97	59.5	84.4	39.06
	Medium income state	48.1	73.7	54.14	47.8	68.7	52.93
	High income state	51.5	84.4	50.84	50.1	79.8	47.33
	Total	51.1	83.8	44.91	51.3	78.8	44.24
	ST	52.3	85.1	63.50	55.8	85.1	63.10
	SC	51.8	89.6	44.97	50.7	87.0	46.00
	OBC	*	*	45.55	*	*	44.80
	Other	50.8	83.0	37.10	50.8	76.7	37.13
	Total	51.1	83.8	44.91	51.3	78.8	44.24
	Poorest Quintile	59.4	88.6	46.48	58.8	87.6	46.54
	Second Quintile	54.4	87.0	47.64	57.7	85.7	49.06
	Third Quintile	47.9	81.4	42.27	55.3	78.7	43.44
	Fourth Quintile	42.5	83.0	39.14	47.8	76.9	42.47
	Richest Quintile	31.5	57.7	37.07	30.9	50.4	29.23
	Total	51.1	83.8	44.91	51.3	78.8	44.24
	Illiterate	58.9	88.3	43.85	61.0	86.5	44.01
	Below Primary	46.8	87.2	49.96	48.9	84.6	49.05
	Primary	44.9	83.0	51.09	50.7	79.8	53.23
	Middle	57.9	73.4	47.82	54.1	72.4	45.96
	Metric	34.7	66.2	39.45	37.9	64.2	40.25
	HS and above	37.9	90.9	34.20	41.8	70.8	32.28
	Total	51.6	83.8	44.91	51.6	78.8	44.23
	Below 20	27.1	83.0	47.87	32.8	80.0	47.07
	20-25	47.9	82.0	45.36	51.9	77.9	45.10
	25-30	64.8	87.0	46.50	59.6	78.6	44.26
	30-35	39.8	80.7	34.79	48.1	77.3	36.07
	Above 35	49.9	93.8	40.61	49.3	88.2	41.10
	Total	51.2	83.8	44.91	51.3	78.8	44.24

Source: NSSO unit record data of 42nd (1986-87), 52nd (1995-96) and 60th round (2004)

It is found that the rate of utilization of the prenatal care services has been increased in the year 2004-05 by 70.2 percentage point among the ST mothers whereas the rate has increased only by 43.4 percent among the general caste mothers in rural India. It means that the exit rate of public health faculties is faster among the mothers belonging to the upper social status in comparisons to the mothers those who are from lower social strata in rural India. For example, the rate of utilization of public health facilities for post natal care has been reduced by 17.9 percentage point between the 1986-87 and 2004-05. The corresponding figure for mothers belonging to the upper social status has been increased by only 7.4 percent. Therefore, one can argue that the rate of utilization of public health facilities is higher among the lower social status. At the same time, use of public facilities has been declined at the same rate. Economic status of mothers also influences the utilization rate of public health facilities especially for the post natal care. It follows that the rate utilization of public health facilities is higher among the mothers belonging to the lower economics status. On the others hand, mother from the higher economic status are less likely to use public health facilities throughout all the three point of times. It may represent that the level of affordability in using the private health care facilities is higher among the richer section of the new born mothers in rural India. However, the use of public health facilities has been declined at the faster rate among the relatively richer section of mother in comparison to the poorer sections. For example, the rate of utilization of public health facilities has been reduced by 10.9 percentage points among the poorer mothers between the year 1986-87 and 2004-05. The corresponding figure for the richest expenditure quintiles is 13.7 percentage points. Therefore, exit from public facilities for any type maternal care is found to be higher among the richer household as the affordability level is also higher among them.

Educational status of mother also playing as an influential factor in determine the rate of utilization of public health facilities for the post natal care in rural India. It follows that rate of utilization of public health facilities for post natal care services are relatively higher among the illiterate mothers. The mother form the higher educational backgrounds are less likely to use public health facilities in rural India. For example, illiterate mothers have used public health facilities for post natal care services by 58.9 percent in rural India in the year 1986-87. The corresponding figure from the mother who is from higher educational status has shown only 37.9 percent in the same years. It is surprising to note that mother from higher educational background has not shown significant exit from the public health facilities. Perhaps, higher educated mothers are mostly employed and they have employees health scheme with a reimbursement provisions, this might drive them to higher utilization of public facilities for the post natal care services. Since the illiterate mother has shown the decline in the utilization of public health facilities, by 11.7 percentages point between the years 1986-87 and 2004-05. On the contrary, the higher educational qualified mothers have demonstrated increase in use of public facilities is by 1.8 percentage point. It means that the utilization of the public health facilities has increased, slightly among the mother those are from the lower educational backgrounds.

The study also found the significant association between the age of new born mother and the utilization rate of public health facilities for the post natal care services. It is found that the utilization of public health facilities for the post natal care is lower among the relatively younger mother when compared with the higher age groups throughout all the point of time in rural India. Perhaps, higher utilization rate is found among the higher age groups because of higher maternal morbidity rate. An interesting point to be noted that the utilization rate of public facilities for post natal care services has been increased by 20.4 percentage point among the new born mother those are from the 20+ years age groups. On the other hand, the aged mother has demonstrated decline in utilization of public facilities for delivery care by 2.3 percentage point. Therefore, it can be concluded that mother from the younger age groups are more likely to seek care from public health facilities for any kind

of post natal care services in rural India. The opposite dimension of association found in case aged mother and the utilization rate of public health facilities in rural India between the year 1986-87 and 2004-05. (Table 7)

CONCLUSION AND POLICY IMPLICATION

The present study attempt to explore the correlates of maternal health care utilization in rural India. It is found that mother belonging to lower social status have exposed the lower rate of utilization of maternal health care services. The ratio of pregnant women received maternal care services is found to be higher among the richest expenditure quintile. The rate of utilization of maternal health care services among the poor mother has increased significantly in rural India during 1986-2004 and the performance of maternal health care initiatives is also found better in rural areas. The study has also exhibited statistically significant positive association between the household economic status and the rate of utilization of maternal care services in all the points of time. The level of education of pregnant women is found to be an important influential factor on utilization of maternal health care in rural India. The women comes from very poor educational back grounds are less likely to seek health care at the time their pregnancy and post natal care.

Higher income states also experiences better utilization of maternal health care services. The study also highlighted the pattern of utilization of public health facilities for maternal care. It is found that the level of utilization public health infrastructure for maternal care is slightly higher among the richer states in rural area but the differences have been reduced in the case of all India level. As far as the social status of the women is concerned, it is noted that mothers belonging to the lower social status has utilized more public facilities compared to the higher social status. The women belonging to the poorest group have exposed higher rate of utilization of public health facilities compared to those are from richer expenditure quintile in all three points of time. It is found that the level of utilization of public health facilities for different components of maternal care services is much higher among the illiterate women compared to the women having higher educational status in rural India. But the rate of utilization of public health facilities has declined by 7.5 percentage points between the year 1986-87 and 2004-05 among the illiterate pregnant women. The utilization of public health facilities is also found to be higher among relatively younger mothers compared to those are aged and it has been increased at the faster rate among the younger mother(e.g 20 years and lower). Therefore, literacy rate and health awareness/campaign among the rural women should be improved for better utilization of existing health care facilities for maternal care. Besides, grassroots level maternal health care delivery system should be strengthened for achieving the goals of cent percent institutional child birth in rural sector. To improve the quality of public health services in the rural area, the level of investment in rural health sector should be enhanced for strengthening the existing health system machinery. The public private partnership mechanism may improve the quality of public health system in rural sector. Therefore, to reduce the level of maternal morbidity and mortality rate, higher ratio of pre and post natal care registration are the pre condition. Theses should be the focus issues for the new health policy for the improvement of material health care delivery system in rural India.

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APPENDIX

Table - 1. Correlation matrix of select health indicators and household and individual level background characteristics (2004-05)

Reference Period: 365 days	Ratio of pregnant women received prenatal care during reference period	Ratio of pregnant of women received prenatal care from public facilities.	Ratio of child birth institutional.	Ratio of institutional child birth accessed public health facilities.	Ratio of new born mother received post natal care	Ratio of mother used public facilities for post natal care public facilities.
Household state of Residence Index.	.207(**)	.030(*)	.316(**)	-0.007	0.025	.106(**)
Whether household is SC/ST (0,1)	-.075(**)	.143(**)	-.107(**)	.165(**)	-.072(**)	.118(**)
Per capita Monthly Consumer Expenditure (Rs)	.082(**)	-.094(**)	.138(**)	-.126(**)	0.029	-0.017
Household Educational Index	.233(**)	-.125(**)	.307(**)	-.128(**)	.134(**)	-.048(*)
Household Employment Index	-0.009	.083(**)	-.044(**)	0.004	-0.021	.071(**)
Ratio of adult educated female member (18 yrs & above) in household.	.200(**)	-.127(**)	.283(**)	-.146(**)	.126(**)	-.066(**)
Female headed household.	.037(**)	-.040(**)	.053(**)	-0.014	0.002	-.045(*)
Education of Mother/ Pregnant women	-.264(**)	-.177(**)	.405(**)	-.201(**)	.160(**)	-.074(**)
Age of mothers	.094(**)	-0.015	-.075(**)	0.004	-0.023	-0.011

Source. NSSO Unit level data 2004-05

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table - 2. Correlation matrix of select health indicators and household and individual level background characteristics **(1995-96)**

Reference Period: 365 days	Ratio of pregnant women received prenatal care during last 365 days	Ratio of mother used prenatal care from public facilities.	Ratio of mother received institutional care for child birth.	Ratio of mother used public facilities for child birth.	Ratio of new born mother received post natal care	Ratio of mother used post natal care from public health facilities.
Household State of Residence Index.	.398(**)	-.164(**)	.341(**)	-.143(**)	.261(**)	-.126(**)
SC_ST household. (Household Social Status) (1,0)	-.076(**)	.121(**)	-.149(**)	.137(**)	-.052(**)	.116(**)
Household per capita monthly consumer expenditure(Rs.)	.161(**)	-.156(**)	.254(**)	-.201(**)	.105(**)	-.182(**)
Household Educational Index.	.248(**)	-.145(**)	.313(**)	-.121(**)	.173(**)	-.156(**)
Household Employment Index	-.016(*)	0.001	-.084(**)	0.010	0.004	0.001
Ratio adult educated female member (at least middle school passed_18 years).	.180(**)	-.145(**)	.264(**)	-.080(**)	.126(**)	-.151(**)
Education of Mother	.242(**)	-.210(**)	-.352(**)	-.166(**)	.183(**)	-.209(**)
Age of Mothers	-.123(**)	.014	.096(**)	-0.013	-.063(**)	0.022

Source. NSSO Unit level data 1995-96

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table - 3. Correlation matrix of select health indicators and household and individual level background characteristics **(1986-87)**

Reference Period: 365 days	Ratio of pregnant women received prenatal care.	Ratio of pregnant women used public facility for prenatal visit	Ratio of mother used health institution for child birth.	Ratio of mother used Public facility for child birth	Ratio of new born mother received post natal care during 365 days ref period.	Ratio of mother used public facility for post natal care
Household State of Residence Index.	.329(**)	0.00	.190(**)	-.144(**)	.218(**)	0.04
Social Group	.066(**)	-.123(**)	.081(**)	-.113(**)	0.02	-0.06
Monthly Per capita Consumer Expenditure.	.041(**)	-0.05	.078(**)	0.00	.032(*)	0.04
Household educational Index.	.270(**)	-0.07	.275(**)	-.197(**)	.168(**)	-.105(*)
Household Employment Index.	.081(**)	0.02	.087(**)	-0.02	.045(**)	0.06
Percentage of educated adult female member in the household (Middle school & above)	.233(**)	-0.06	.242(**)	-.169(**)	.154(**)	-.142(**)
Education of Mother	-.257(**)	.129(**)	-.323(**)	-.184(**)	.154(**)	-.111(**)
Age of Mothers	-0.017	.046(*)	-.047(**)	-0.044	-0.010	-0.063

Source. NSSO unit level data 1986-87

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).