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Out-of-Pocket Expenditure in Maternal Health Care in High-Focus States of India

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Abstract

Maternal health is a social index as much as a medical event, where access to and use of maternal and reproductive health care services are influenced by relative factors. The persistence of inequality in health within countries as well as within different socio-economic and demographic groups has led to the failure of reaching the target of Millennium Development Goal (MDG) and thus was replaced by Sustainable Development Goal 3 (SDG-3). The use of maternal health care services is limited in India despite several programmatic efforts for its improvement since the late 1980s. This paper analyzes the economic burden of maternal health care on household expenditure in the EAG (Empowered Action Group) states, comprising Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, Chhattisgarh, Madhya Pradesh, Rajasthan, and Odisha. The data from the 71st round of the National Sample Survey Organization (NSSO-2014) have been used for the study. Out- of- pocket maternal health expenditure was measured by different background. A log linear regression was used due to the nature of the outcome variables. The outcome variables are continuous which are not normal so log linear model is applied. A log linear regression was carried out in order to examine the effects of independent variables on maternal health care expenditure. The result shows that Out of Pocket Expenditure (OOPE) is more in the households living in urban areas. The richest section of the society and the women who are more educated incur more OOPE compared to their counterparts. Government's effort should be made in order to reduce OOPE so that maternal health care don't become burden for the poorest section of the society.

Introduction

The world Health Organization defines Health as "a state of complete physical, mental, social wellbeing and not merely the absence of disease or infirmity." "With decades of global and national effort maternity remains a high risk for the mothers as well for their new born child" (Starrs, 2006). The World Health Organization (2013) estimates that out of 289000 maternal deaths globally around 50,000 deaths occur each year in India. The Maternal mortality rate in India is 190 (World Bank, 2013) and it varies across states with larger concentration in the northern states. Health is a subject matter of state. World Bank Report states that India's total health expenditure constitutes of only 4.7% of GDP with the private and public sectors accounting for 3.3% and 1.4% respectively (2014). In spite of several efforts, the scenario of maternal mortality remains the same in the developing countries. After the failure of Millennium Development Goal to reduce maternal deaths by 75% during 1990-2015, it was replaced by Sustainable Development goal 3. In India, the utilization of maternal health care services is very low and there is need to increase the health care services for the under privileged section of the society.

Maternal Health is a significant aspect for the development of any country for increasing equity & decreasing poverty. In order to solve economic, social and developmental challenges the health of a mother is a vital factor. The use of maternal health care in India is inadequate in spite of efforts made by Government through different programmers', for its improvement since the late 1980's. According to World Bank**, "**Out-of-pocket expenditure is any direct outlay by households, including gratuities and in-kind payments, to health practitioners and suppliers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or enhancement of the health status of individuals or population groups. It is a part of private health expenditure". Despite of there is a relation between the amount of money spent on health and the health outcome, higher income leads to higher per capita health spending and in return leads to better health (Roy and Howard 2007).

According to the World Bank Report 2006, the developed countries spend 30 times more on per capita spending in comparison to the developing countries. Out-of-pocket spending has changed the household budget, beside reducing the consumption of other goods and services it has also leads to decline in utilization of the health care facilities and in return leads the family in financial distress. Financing of healthcare by out-of-pocket expenditure can lead the family into the stage of impoverishment and may affect its social economic status. Many studies revealed that expenditure on maternal care is dire for poor and rural household, low level of education is also an important factor.

In India the OOP expenditure increases with the increase in the better economic status of women, in spite of place of delivery. It has been so because economically better-off make a demand in better quality services and having the ability to pay for the services. On an average, mothers in the richest quintile pay twice than the mothers in the poorest quintile do pay. This paper explains the interstate variation in the out-of-pocket expenditure in the utilization of various maternal health facilities such as Antenatal, Delivery, Post-natal care in the EAG states of India while taking into account how socio-economic – demographic variables has affected into the accessibility, affordability and utilization of these maternal health care services.

Data and Method

The study uses the 71st round of schedule 25.0 (labelled as 71(25.0)) of the National Sample Survey Organization of India titled as Key Indicators of the Social Consumption in Indian Health" data on Social consumption: health, between January to June 2014. NSSO provides information on hospitalization, extent of receipt of pre- natal, post-natal care by women and expenditure incurred on treatment received from public and private factors. The duration of survey is divided into two sub-rounds of three months' interval each which are as follows: Sub-round 1 :January - March 2014 and sub-round 2 :April - June 2014. Total 65932 households were surveyed in India, out of which 23,385 households is from EAG States- Uttarakhand 672, Rajasthan 2912, Uttar Pradesh 7921, Bihar 3167, Jharkhand 1453, Odisha 2442, Chhattisgarh 1205, Madhya Pradesh 3613. Maternal health care expenditure data is given in a separate block; total maternal health care facilities such as Ante natal, Delivery, Post-natal information are given in brief. The data on maternal health care was collected from all the ever - married women belonging to 15-49 age group who were pregnant during the last 365 days. In India total 19482 women were reported of pregnancy out of which EAG state comprise of 7408 pregnant women. Uttarakhand 202, Rajasthan 937, Uttar Pradesh 2550, Bihar 1023, Jharkhand 517, Odisha 715, Chhattisgarh 370, Madhya Pradesh 1094.

The differentials in OOP expenditure in antenatal care and prenatal care direct variable is given whereas in case of delivery direct variable is not there so we have taken nature of ailment i.e., 88 (Delivery variable) if yes on this information we have calculated direct and indirect OOP for delivery. All analysis is done in regard of socio-economic and demographic characteristics of women. Demographic factors included age of women and residing place. Socio-economic characteristic include educational level of women, religion, social group and wealth quintile. States and the individual characteristics compute the mean cost of delivery for variation in the cost of maternal care. Then the wealth index comprises of five quintiles and used as proxy indicators for economic level of household. To have a clear concept of differentials and determinants of maternal health care (antenatal, delivery, post-natal) log linear regression analysis is done to know the significant predictor of maternal health care (ANC, Delivery, PNC).
The log linear regression model was estimated as OOPE is continuous variable and skewed in nature. The probability modeling is done to know the household incurring expenditure on maternal health care (ANC, Delivery, PNC) using the linear regression model. Three separate probability model have been done for ANC, Delivery, and PNC.

Statistical analysis

Multivariate analysis using log linear regression was carried out to estimate the adjusted effects of the selected covariates on the expenditure on maternal health care. Log linear regression was used due to the nature of the outcome variables. The outcome variables are continuous which is not normal so log linear model is applied. The independent variables are variables are place of residence, age of women, religion, social group, wealth quintile and female educational level. The model is usually put into a more compact form as follows:

$$LN(y) = \beta 0+\beta_1 x_1+\ldots\ldots\ldots\ldots\ldots\ldots + \beta_m x_m+ \epsilon$$

Where β_0 is a constant and $\beta_1 \ldots \beta_M$ are regression coefficients indicating the relative effect of a particular explanatory variable on the outcome.

Results

The analysis is done to see the impact of out-of- pocket expenditure (OOPE) payments on various socio economic variables in the high focused states of India for the year 2014. The average OOPE varies with different socio-economic and demographic characteristics of women. Maternal health care expenditure leads to economic problem for the poor household. In case of place of residence, urban areas have higher OOPE for maternal health care compared to the rural area. There is a clear diversified pattern in OOP expenditure in Antenatal, Delivery and Postnatal care. Table 1 focuses on the OOP expenditure incurred in the EAG states due to antenatal factor. For ANC the highest is in the urban area of Odisha INR 3789. In EAG States maternal health expenditure is more in the young and middle age group. The younger age group spends more than the elder age group. For ANC the out-of-pocket expenditure is highest in the age group 30-34 in the state of Odisha INR 3362.In case of religion, OOPEis more in case of others category compared to the other religious groups; it is highest in the state of Madhya Pradesh INR 8518.By Social group, result shows that the ANC, OOPE is more in ST group INR 6444 it is highest in the social group due to lack of sample size the result is biased compared to its counterparts. Whereas in case of Others category the OOPE is highest in the state of Madhya Pradesh INR 4868.

The result of OOPE by wealth quintile shows that there is a positive relation between the share of OOPE and the level of economic development of states. Economic status of women determines the expenditure incurred in maternal health care. Women from richest quintile pay twice compared to its counterparts as they have the ability to pay for the quality demand. For maternal health care richest section pay more than the other counterparts. For ANC the maximum expenditure incurred by the richest category in the state of Uttar Pradesh i.e., INR 5698. Education is one of the factors that to a large extent have an influence on the utilization of maternal health care. Mothers from good education background have better understanding of maternal care compared to its counterpart. An Educated women demand more for quality care. The results also shows that women who are educated in the group of higher secondary and above spends more compared to the lesser educated group. For ANC, the maximum expenditure incurred of INR 3785 is in the state of Odisha.
Table 2 shows the out-of-pocket expenditure in EAG states due to Delivery factor; the table clearly states that in place of residence the maximum expenditure can be seen in the urban area in the state of Uttar Pradesh INR 11965. In the category of age group the middle age group i.e., 20-39 spends more in case of delivery care compared to the younger and older age group. Muslim women spend more compared to the Hindu women. By social group, the results shows that women from the General caste category spends more compared to its counterparts, the highest can be seen in the state of Chhattisgarh INR 11433. The wealth quintile group shows that economically well off women spend more compared to the women of other categories who are economically deprived. Educated women spends more compared to the illiterate women in this table clearly shows that.

Table 3 shows the out-of-pocket expenditure in EAG states due to post-natal factor; the table clearly states that the urban women incur higher expenditure compared to the women of the rural area. The higher expenditure is in the state of Uttar Pradesh INR 2495. In the age group the, the middle aged group spends more on post- natal factor than the other categories. Hindu as well as the women of other categories spends less than the women of the Muslim category. By social group, women belonging to others category spends more on post-natal care compared to its counterparts. Women from richest quintile spend more than the women who are
Economically weak. Women who are educated in the category higher secondary and above spend more compared to the women who are less educated or illiterate.

Table 4 shows the result of log linear regression model of OOPE for ANC, Delivery and PNC. Women living in urban areas are more likely to incur OOPE on ANC (26%), Delivery (8%) and PNC (11%) statistically significant, ((exp (0.231)-1)), ((exp (0.081)-1)) and ((exp (106)-1)) respectively. Women in the higher ages are less likely to use ANC. The OOPE incurred in ANC facilities was 24% lower among women aged 40-49 than that of the women belonging to 15-19 years age group (not statistically significant). Women belonging to 20-29 age groups are less likely to incur OOPE for Delivery care than the reference category (not statistically significant). The OOPE on ANC, Delivery and PNC increases significantly with the economic condition of the household. In comparison to the poorest MPCE, the OOPE on Delivery care among the richest quintile was 2 times

higher ((exp (0.932)-1) statistically significant. The OOPE was higher among women belonging to others category of Social group and with higher educational attainment in all the three groups. In the religion section, women belonging to others category incur higher OOPE in ANC, Delivery and PNC but the values are not statistically significant in case of Delivery and PNC.

Discussion

India is such a diversified country that it's not possible to obtain a consistent OOPE. This study estimated the OOPE incurred by the high focused States of India while considering the maternal health care services by its socio-economic and demographic characteristics. The study shows that though the health care services are free for maternal health care still the poorest section of the society have to face the burden andpay from their expenditure which they keep for their basic necessities. Women from higher wealth quintile, general caste and more educated pay more than their counterparts.

The failure of institutional deliveries has led to high OOPE. In the absence of better facilities in the public hospitals people generally move towards private facilities which in turn put them into the trap of financial catastrophe. Though the poorest section spends the least in maternal care as comparison to richest section but in relative terms they face the highest burden. Despite of various efforts of government as well as non-government organization the condition of maternal care has not been improved (Bonu*et al.,* 2009, Skordis Worral*et al.,* 2011). The health care expenditure can be a determinant of utilization of maternal health care services. Maternal health care expenditure leads to economic problem for the poor household.

The fundamental principle of equity states that there should be equal treatment for all socio-economic groups, and it should not be gender biased. The cost of maternal care is also a demand side barrier for the utilization of maternal care during pregnancy mainly for the poor and people living in the remote areas. If the cost is financed by borrowing, than it reduces the future consumption having long term impact. The economic burden of maternal health is not only in productive or financial term but also has social implication; it creates social tension between partners. Women not receiving any maternal care i.e., ante natal, delivery, post-natal care due to financial crisis may recover less quickly and may suffer physical and mental health problems. There is a wide variation in maternal health care expenditure in India which many studies had revealed that (McCord et al. 2001; Balaji et al. 2003; Duggal 2004 Sharma et al. 2005).

Within a time frame Janani Suraksha Yojana has been successful in getting implemented and defining its objective appropriately. Although there are still some loopholes in the implementation of JSY, when it comes to institutional delivery scheme and the involvement of ASHA.

Conclusion

A significant barrier in accessing services is the inability to meet the maternity cost which may be a determinant of maternal and neonatal mortality and morbidity. Utilization of these services can affect the consumption of other items such as food and education and may have immediate and intergenerational effects on household poverty and the equity of health service delivery. Financial hardship is the main barrier for maternal health care in India despite of the fact that maternal health care is provided free in public health care centers it is because informal payments for antenatal, delivery and postnatal services are widespread in the Indian public health sector, mainly as a result of service bias, social exclusion and impoverishment. This OOP expenditure should be taken into consideration by the health professionals so that it doesn‘t become a hindrance in accessing the facilities for a woman in the near future.

Table.1: Out of Pocket (OOP) (Mean in INR) expenditure in high focus states due to ANC in 2014

Background	UTTARAK HAND	RAJASTHAN	UTTAR PRADESH	BIHAR	JHARK HAND	ODISSA	CHHATIS GRAH	MADHYA PRADESH
SECTOR	**INR**	**INR**	**INR**	**INR**	**INR**	**INR**	**INR**	**INR**
Rural	1431	2177	1913	2802	1036	2442	1175	1839
Urban	2849	3104	3465	2617	3046	3789	2177	3490
AGE								
15-19	100	1497	2689	1395	1464	3105	1253	2620
20-24	1800	2666	2614	2870	1608	2712	1476	2449
25-29	2278	2883	2653	2851	2326	2856	1866	3194
30-34	2184	1965	2402	2936	1339	3362	1929	2258
35-40	1919	2680	2074	1685	1450	2685	915	1625
40-45	1300	125	1143	2320	1714	839	483	2620
45-49	0	12000	0	2037	0	0	0	1680
RELIGION								
Muslim	2001	2398	2481	2215	1455	4488	1700	2643
Hindu	2107	2586	2524	2803	1891	2822	1606	2574
Christian	0	0	1770	0	1390	2606	1576	2000
Other	1253	5645	7150	0	1590	2000	3063	8518
SOCIAL GROUP								
SC	1334	1989	1797	2375	1067	2364	2322	1903
ST	6444	799	2756	1835	878	1406	970	1761
OBC	1660	2582	2301	2728	2225	3410	1559	2360
Other	2153	4149	3828	3354	3109	4164	3216	4868
MPCE QUINTILE								
Poorest	1253	1459	1737	2228	1182	1868	1212	1955
Poorer	1495	2088	1893	2964	1641	2920	1736	2086
Middle	3158	2511	2430	2715	1732	3696	1520	2650
Richer	1957	2761	2883	3091	3128	3925	1461	3145
Richest	2950	3858	5698	3452	3587	5354	3160	4993
EDUCATIONAL LEVEL								
Illiterate	2534	1842	1922	2012	1404	1519	1445	1906
Primary	1304	2393	2527	3129	1190	2447	1304	2494
Higher	2095	3595	3142	3522	2547	3785	1961	3305

Table.2: Out Of Pocket (OOP) (Mean in INR) expenditure in high focus states due to Delivery factor in 2014

Background	UTTARAKHAND	RAJASTHAN	UTTAR PRADESH	BIHAR	JHARKHAND	ODISSA	CHHATISGRAH	MADHYA PRADESH
	INR	INR	INR	INR	INR	INR	INR	INR
SECTOR								
Rural	2689	3895	5730	7356	4194	5704	4002	3337
Urban	6396	6196	11965	7971	9290	9439	9738	7509
AGE								
15-19	395	4932	8497	7333	5653	8669	22242	2563
20-29	3540	4158	7190	7101	5180	6281	4804	4583
30-39	4299	5358	5697	8628	4653	6063	4778	3279
40-49	4327	5425	4796	7122	4623	2410	0	3239
RELIGION								
Muslim	2232	2949	7374	6430	4138	6437	17267	4686
Hindu	3810	4462	6701	7584	5506	6245	5136	4266
Christian	0	0	10460	0	4072	6395	8500	14550
other	5033	16678	16240	0	2390	1650	19436	16054
SOCIAL GROUP								
SC	2950	4046	3911	8407	3024	5656	9697	3578
ST	8838	1610	3681	1177	3480	3910	4416	1985
OBC	3824	4211	6899	6631	5734	6846	4534	4548
Other	3612	7810	9772	9762	8526	8235	11433	7385
MPCE QUINTILE								
Poorest	2885	2646	3852	7606	4456	4498	2644	2949
Poorer	3432	3177	4922	6033	4228	7008	4985	3780
Middle	3340	3593	7707	8051	6375	8268	8768	4725
Richer	3237	5215	11531	8641	9347	10010	10287	6024
Richest	5569	8085	16763	13938	6855	11114	15739	10147
EDUCATIONAL LEVEL								
Illiterate	1926	3243	4764	4326	3887	2773	1989	2312
Primary	2384	3624	4940	11088	3582	4936	4180	3700
Higher	4597	6272	8606	9599	6761	8086	7800	6089

Table 3: Out Of Pocket (OOP) (Mean in INR) expenditure in high focus states due to PNC in 2014

Background	UTTARAKHAND	RAJASTHAN	UTTAR PRADESH	BIHAR	JHARKHAND	ODISSA	CHHATISGRAH	MADHYA PRADESH
	INR	INR	INR	INR	INR	INR	INR	INR
SECTOR								
Rural	967	1642	1866	1833	915	1426	1079	1482
Urban	1534	2197	2495	1801	1822	2297	1702	2385
AGE								
15-19	0	1049	1706	2744	1089	2036	1913	1663
20-24	1280	1997	2005	1780	1104	1390	1320	1672
25-29	1301	1875	2056	1741	1510	1967	1611	2367
30-34	1047	1978	2274	1751	1205	2046	1315	1770
35-40	1213	2253	2588	1265	1249	1156	670	959
40-45	375	1375	2673	2127	1995	685	500	7663
45-49	0	5000	3612	5022	0	700	0	2000
RELIGION								
Muslim	1854	1627	2547	2116	1018	1517	1211	2021
Hindu	1108	1987	1999	1774	1378	1690	1393	1834
Christian	0	0	2220	0	914	900	2200	500
Other	1786	1532	4933	0	884	500	1500	8000
SOCIAL GROUP								
SC	1078	925	1685	1128	1060	2026	1416	1508
ST	2167	1015	2795	1258	756	1231	957	1511
OBC	1778	2040	1967	2006	1494	1659	1195	1812
Other	1033	2965	2931	1969	1828	1852	2641	3020
MPCE QUINTILE								
Poorest	916	1892	1476	1546	1016	1186	1069	1642
Poorer	1014	1404	1655	1899	1170	1599	1494	1747
Middle	1460	1475	2339	1545	1331	1936	1666	2154
Richer	1490	2187	3218	2989	1573	1813	978	1762
Richest	1457	2623	2923	2351	2200	3815	2320	2789
EDUCATIONAL LEVEL								
Illiterate	1082	1395	2004	1593	1060	1189	989	1421
Primary	841	1616	2088	1781	966	1470	1366	1586
Higher	1432	2575	2285	2185	1666	2035	1626	2547

Table 4: Regression coefficient and 95% confidence interval of OOPE on maternal expenditure with different background characteristics in high-focus states, 2014

Background	ANC		Delivery		PNC	
SECTOR	**Coefficients**	**[95% Conf. Interval]**	**Coefficients**	**[95% Conf. Interval]**	**Coefficients**	**[95% Conf. Interval]**
Rural						
Urban	0.231***	[0.176, 0.286]	0.081	[-0.005, 0.167]	0.106***	[0.052, 0.161]
AGE						
15-19						
20-29	0.036	[-0.101, 0.174]	-0.136	[-0.357,0.083]	-0.156**	[-0.300, -0.012]
30-39	-0.032	[-0.178, 0.114]	-0.112	[-0.344, 0.119]	-0.148	[-0.299, 0.002]
40-49	-0.270*	[-0.503, -0.036]	0.021	[-0.387, 0.430]	0.129	[-0.101, 0.361]
RELIGION						
Muslim						
Hindu	0.193***	[0.117, 0.268]	0.014	[-0.111, 0.140]	0.011	[-0.064, 0.087]
Christian	0.312**	[0.009, 0.615]	0.311	[-0.183, 0.807]	-0.355**	[-0.671, -0.039]
Other	0.529***	[0.295,0.763]	0.303	[-0.075, 0.682]	0.142	[-0.094, 0.378]
SOCIAL GROUP						
SC						
ST	-0.218***	[-0.318, -0.117]	-0.169*	[-0.319, -0.020]	-0.077	[-0.178, 0.024]
OBC	0.162***	[0.092, 0.232]	0.162**	[0.056, 0.269]	0.142***	[0.072, 0.213]
Other	0.498***	[0.414, 0.581]	0.430***	[0.302, 0.558]	0.336***	[0.252, 0.419]
MPCE QUINTILE						
Poorest						
Poorer	0.154***	[0.084, 0.225]	-0.012	[-0.121, 0.096]	0.032	[-0.038, 0.102]
Middle	0.197***	[0.125, 0.270]	0.190**	[0.078, 0.301]	0.149***	[0.076, 0.223]
Richer	0.250***	[0.164, 0.336]	0.549***	[0.416, 0.683]	0.255***	[0.169, 0.342]
Richest	0.503***	[0.409, 0.597]	0.932***	[0.784, 1.081]	0.303***	[0.208, 0.398]
EDUCATIONAL LEVEL						
Illiterate						
Primary	0.130***	[0.062, 0.197]	0.055	[-0.056, 0.167]	0.019	[-0.049, 0.087]
Higher Secondary	0.256***	[0.195, 0.317]	0.517***	[0.416, 0.619]	0.181**	[0.120, 0.242]

*****p=0.00;**p<0.01 and *p<0.05 significant level.**

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