Does Maternity Care Expenditure is Catastrophic? A Cross-Sectional Study of Household`s Expenditure on Maternal Health Care Services in EAG States of India

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Abstract

Objectives: The main aim of this study is to analyze the differentials in average expenditure on prenatal, delivery and postnatal care by socio-economic characteristics of households in EAG states and assessment of the number of households incurred catastrophic health expenditure on maternity care.

Method: We have used 71st round of the NSSO data held on June 2014. For the analysis of prenatal care, delivery care, postnatal care, total maternity expenditure and Out of Pocket Expenditure (OOPE) have been taken as dependent variables and the independent variables have been chosen based on previous studies as well as socio-economic aspects, especially in EAG states of India. Bivariate analysis and binary logistic method have been used for the data analysis.

Results: Results shows that MCE is high in urban sector specially in Orissa among all EAG states. We also found that Orissa has the maximum number of household that incurred high catastrophic-health-expenditure.

Conclusion: We can conclude that women belong to better socio-economic condition spent more money on maternity care and incurred high OOPE where is, it is less among women who belong to poor socio-economic condition, due to lack of awareness and other socio-economic hurdles.

Keywords: *Prenatal Care, Delivery, Postnatal Care, Maternity Care, Out of Pocket Expenditure, Catastrophic Health Expenditure.*

Introduction

India is a developing country comes under the South Asian region, facing a high MMR of 190 per 100,000 livebirth.[1-2] EAG states & Assam covered maximum share of MMR and IMR, out of which 71% of infant deaths, 72% of under age-5 deaths, and 62% of maternal deaths.[3] Xu et al., (2003) found that the proportion of households is positively associated with the catastrophic-health-expenditures and the share of out of pocket payments in total health expenditure.[4] Leone et al., (2013) found that the expenditures on delivery care are substantially higher in socio-economically weak states than the average spending on delivery care in India.[5] The current pattern of health care expenditure shows that only 71% of their total health expenditure born by the household and remaining 29% expenditure covered by the government and other welfare agencies in which 20% (Central), 6% (State) and 2% expenditure covered up by different internal and external welfare agencies, respectively.[6] The rises in OOPE on health care disrupts the consumption of other consumable goods and services which directly affect the living standards of the household, in result health care expenditure become catastrophic.[7]

Catastrophic expenditure is defined as the share of out of pocket payments in total health expenditure, the share of total health expenditure in Gross Domestic Product (GDP/NI) and the percentage of households below the capacity to pay or poverty line.[8] Here, catastrophic expenditure on maternal care are considered those expenditure who covers the expenditure of maternal care from conception to postnatal period.

Although lot of studies have been done on OOPE on delivery care at the country level, this study is the first of its kind to explore the burden of overall maternity care on

households in EAG states. So, there is need for separate research of EAG states to know the consequences and nature of expenditure on maternity care, especially the nature of the OOPE of the households.

Objectives

- To assess the differentials in expenditure on prenatal, delivery and postnatal care by socio-economic characteristics of the households in EAG states.
- To analyze the households incurring catastrophic health expenditure.

Methodology

Data Source

The 71st round of the NSSO data has been used for the analysis which was conducted from January to June 2014 on the title of "Key Indicators of Social Consumption in India: Health." For the analysis, women aged 15–49 years were included who were pregnant in the 365 days before the survey or who delivered the baby and received any maternal care services. For analyzing the maternity care expenditure (MCE), we received the data from those 4,811 women who gave birth in any public or private hospitals. However, information on prenatal and postnatal care expenditure was collected as an aggregate level. Total Maternal expenditure was collected by the source of all three components of health care from prenatal, delivery and postnatal care.[9]

Method

Dependent Variables:

In this analysis, dependent variables have been taken from the four different aspects of Maternal Care Expenditure such as prenatal care, delivery, postnatal care, and total maternal expenditure. Additionally, we have taken OOPE as a dependent variable to examine whether the household incurred any catastrophic medical expenditure (CME) on maternal care. OOPE or net expenditure derived by subtracting insurance reimbursement to total medical expenditure. Prenatal care expenditure, delivery care expenditure and postnatal care expenditure includes expenses incurred in obtaining prenatal, delivery care and postnatal care services separately, whereas the total MCE is the summation of all three expenditure (prenatal, delivery, and postnatal care).

Independent Variables:

The independent variables in this analysis were selected based on social and economic characteristics of the EAG states of India. The variables which have more significance in this analysis is the socio-economic disparities, level of female education (Illiterate & Literate), religion (Hindu & Others), social groups (SC/ST, OBC and General), economic status (Monthly Per Capita Consumption Expenditure of household (MPCE)) and working status of women. We have also used some demographic variables of women such as age (15-24, 25-29, and 30-49) and place of residence (Rural and Urban).

Model for Catastrophic Expenditure:

We have used the proportion method to estimate the catastrophic health expenditureas given by Wagstaff & Van Doorslaer, (2003). This method categorizes the proportion of household incurring catastrophic health expenditure based on the share of health expenditure in the household's total consumption expenditure at 10 percent cut-off levels. This cut-off level provides a chance to estimate the concentration of the problem. An OOPE for healthcare turn into catastrophic expenditure when the payment exceeded some threshold (cut-off) level and defined as a part of total household non-food consumption. If T represents OOPE for healthcare, x represents total households expenditure, and f(x) stands for food expenditure, then a household is said to have incurred catastrophic payments when T/x or T/[x-f(x)] exceeds a specified threshold, Z.[8]

Statistical Method

In this study, we have used descriptive statistics to explain the charrecterstics of the variables, and Bivariate-analyses to examine the unadjusted association among dependent and independent variables. A Binary-logistic-regression model was also used to assess the independent association between dependent and independent variables. We have taken the net maternity expenditure 1 when it is higher for the cut off level and 0 when it is less than cut off level to run the binary logistic model where 1 shows the high OOPE. The whole analysis has been carried out in STATA-13 software.

Result

Average Expenditure on Maternity Care:

Table 1 explain the expenditure pattern of households by their various socio-economic characteristic among all age groups. The MCE, prenatal, delivery and postnatal care expenditure is highest in 15-24 age group and lower in 30-49 age group. The MCE is high in urban sector (Rs.10274) as compared to the rural (Rs. 6369). The literate woman incurred high MCE as compared to illiterate woman, and delivery care expenditure is higher (Rs. 6944) among all three MCE. The General category women incurred higher MCE which is twice higher than women belongs to SC/ST category. Table-1 shows that as quintiles increases (poorest to richest), expenditure on all maternity care also increases. MCE is highest (Rs. 17247) in richest quintile and lowest (Rs. 4907) in poorest quintile. Women involved in casual labour spend less than Other working groups. There is high MCE incurred by Orrisa (Rs 8050) followed by Bihar and Uttar Pradesh and least expenditure incurred by Chhattisgarh (Rs. 5246).

Out Of Pocket Expenditure on Maternal Care at 10% Cut off Level

Table 2 shows the percentage of households incuring high OOPE. In the age group (25-29), maximum (9.2%) of household incurred high OOPE. Percentage of household having high OOPE is higher, where women are literate and belongs to Hindu religion and in a social group, it is highest (7.5%) in the general category women. In MPCE quintile, percentage of household incurred high OOPE is showing an increasing pattern as wealth quintile shifting from poorest to richest quintile. In Orrisa (9.1%) of household are incurring high OOPE on maternity care followed by in Bihar (6.8%) and Uttar Pradesh (6.4%) where is household of Rajasthan incur least OOPE.

Age group (30-49) shows the significant association where age group (30-49) is 54% more likely to incur high OOPE on maternity care. Table 2 shows the general category is significantly associated with the net MCE where the odds of occurrence of high OOPE on maternity carries 20% more as compared to SC/ST category. An increasing trend can be observed in case of wealth quintile where odds of incurring high OOPE on maternity care is increasing as wealth quintiles shifting from poorest to richest quintile. In EAG states, Bihar is 34% more likely to incur high OOPE on maternity care.

Table-1: Average Expenditure on Maternity Care

Background Variable	Prenatal care expenditure		Delivery care expenditure		Postnatal care expenditure		Maternal care expenditure (MCE)	
	Mean	Obs	Mean	Obs	Mean	Obs	Mean	Obs
Age (years)								
15-24	2038.254	2952	6141.2	2031	1780.4	1880	7160.8	3036
25-29	1972.178	2455	6082.2	1719	1670.2	1906	7062.2	2507
30-49	1853.039	1623	5632.2	1061	1522.4	1257	6724.1	1675
Place of Residence								
Rural	1831.3	4445	5285.0	2931	1586.5	3094	6369.4	4575
Urban	2683.9	2585	9259.6	1880	2133.8	1949	10274.1	2643
Level of Education								
Illiterate	1300.5	2244	4252.6	1311	1383.9	1537	4834.3	2337
Literate	2394.3	4786	6944.1	3500	1875.9	3506	8400.8	4881
Religion								
Hindu	1968.5	5930	5925.2	4150	1635.6	4271	7007.9	6073
Other	2015.9	1100	6541.7	661	1920.8	772	7159.8	1145
Social Group								
SC/ST	1400.2	2190	4117.7	1455	1356.9	1531	4882.2	2252
OBC	2018.5	3419	5980.0	2281	1692.9	2423	6993.9	3518
General	3089.4	1421	9398.4	1075	2248.4	1089	11847.7	1448
MPCE quintile								

Cont... **Table-1: Average Expenditure on Maternity Care**

Poorest	1434.5	2434	4117.1	1521	1360.4	1658	4907.9	2512
Poorer	1647.4	1706	4866.2	1175	1591.0	1234	6028.4	1755
Middle	2518.9	1264	6774.9	889	1780.7	907	7743.6	1293
Richer	2461.0	988	7992.0	714	2114.6	745	9969.1	1013
Richest	4218.2	638	14232.9	512	2876.5	499	17247.2	645
Working status								
Self emp.	2156.5	4688	6638.0	3258	1805.2	3372	7827.5	4801
Regular wage	2451.4	769	6122.8	541	1845.9	575	7954.2	792
Casual labour	1284.1	1284	4070.9	804	1326.1	874	4682.7	1328
Other	2504.3	289	7137.277	208	1686.8	222	7936.2	297
States								
Uttarakhand	1786.7	193	4204.3	137	1545.3	142	5803.2	200
Rajasthan	2141.7	872	4770.5	717	1829.8	576	6575.1	909
Uttar Pradesh	1925.2	2396	7208.2	1435	1929.6	1658	7714.7	2461
Bihar	2405.3	961	6950.8	565	1523.5	732	7879.0	992
Jharkhand	1247.7	489	5007.7	377	1058.2	380	5499.3	509
Orissa	2490.9	696	6183.6	569	1495.2	570	8049.8	707
Chhattisgarh	1278.0	361	5383.3	204	1369.1	245	5246.6	364
Madhya Pradesh	1586.9	1062	4205.7	807	1699.5	740	5276.8	1076
Total	1976.1	7030	6013.5	4811	1683.5	5043	7032.6	7218

Table-2: Out of Pocket Expenditure on Maternal Care at 10% Cut off Level

10% cut off level	**% of Household incurred OOPE**				**95 % CI**	
Background Variable	**no. of %**	**Obs.**	**Total obs.**	**Odds Ratio**	**Lower lev.**	**Upper lev.**
Age (years)						
15-24®	6.7	1,684	25,324	1.00		
25-29	9.2	1,103	12,026	1.01	0.9	1.1
30-49	8.1	2,402	29,740	1.55***	1.4	1.7
Place of Residence						
Rural®	6.4	5,152	80,539	1.00		
Urban	6.5	3,225	49,938	0.87***	0.9	0.9
Education Level						
Illiterate®	5.8	2,759	47,423	1.00		
Literate	6.3	5,139	82,114	1.04	1.0	1.1
Religion						
Hindu®	6.6	7,201	109,442	1.00		
Other	5.6	1,176	21,035	0.91**	0.8	1.0
Social Group						
SC/ST®	5.9	2,115	36,181	1.00		
OBC	6.3	3,999	63,995	1.13***	1.0	1.2
General	7.5	2,263	30,301	1.20***	1.1	1.3
MPCE quintile						
Poorest®	5.4	2,312	42,681	1.00		
Poorer	6.0	1,789	29,959	1.09*	1.0	1.2
Middle	6.7	1,583	23,528	1.25***	1.1	1.4
Richer	7.1	1,392	19,533	1.38***	1.2	1.5
Richest	8.8	1,301	14,776	1.46***	1.3	1.6
Working status						
Self emp. ®	6.3	5,658	90,446		1.00	
Regular wage	6.3	831	13,155	1.06	1.0	1.2

Cont... **Table-2: Out of Pocket Expenditure on Maternal Care at 10% Cut off Level**

Casual Labour	6.0	1,239	20,649	1.06	1.0	1.2
Other	10.4	649	6,227	1.29***	1.1	1.5
EAG States						
Chhattisgarh®	6.2	378	6,073		1.00	
Madhya Pradesh	6.2	1,198	19,280	1.14	1.0	1.3
Jharkhand	5.5	460	8,378	0.95	0.8	1.2
Uttarakhand	6.3	202	3,185	1.05	0.8	1.3
Rajasthan	5.1	846	16,766	0.81**	0.7	1.0
Uttar Pradesh	6.4	3,031	47,421	1.12	1.0	1.3
Bihar	6.8	1,197	17,718	1.34***	1.1	1.6
Orissa	9.1	1,065	11,656	2.07***	1.7	2.4
Total	6.4	8,377	130,477			

*** p<0.01,** p<0.05,* p<0.1

Discussion

This paper is a quantitative analysis of expenditure incurred in the utilisation of maternal health care services in EAG states, and also talks about the critical socio-economic and demographic factors influencing the catastrophic health expenditure of the households. Study said that literate women are more concern about their health and to avoid the maternity related complications they spent more on maternity care services than illiterate women. The MCE is high among women belong to the urban area than their rural counterparts because of education and decision making power. We also found the same result where socially and economically better off women spent more on maternity care than economically poor and socially disadvantaged group of women.[10-11] Similarly, Average OOPE is higher among the literate women who belongs to higher quintile than illiterate women who belongs to lower quintiles, because mostly literate and economically strong women have the ability to pay higher prices and they ask for better quality health care services.[12] In rural areas, women are mostly less educated, dependent, poor and unaware about the maternity-related services and complications than urban area, in result they spent less money on maternity care. In our study, we found that OOPE on maternity care is higher among women those belong to General Category and Non-Hindu religion than their counterparts.[10] We found the differentials in MCE and OOPE among EAG states where Orrisa incurred the highest MCE than other EAG states and also maximum number of household incurred OOPE in this state.

Conclusion

Based on the above findings, we can conclude that women belong to poor socio-economic condition spent less money on maternity care due to lack of awareness and other socio-economic hurdles. The government should give more emphasis on policy implementation on community level and give more focus on maternal and child health-related awareness programmes especially in EAG states where people are less educated and economically poor. The government should also look into policy consideration on the implementation of community health insurance to reduce the economic burden of maternity care, especially in EAG states.

Due to the limitation of NSS dataset, we could not do extensive and in-depth study on factor influencing on catastrophic expenditure on maternal care, it can be suggested that the state-wise rural-urban analysis and public-private hospital based differencial analysis could be done in the future for in-depth information about catastrophic expenditure on maternal health care.

Ethical Clearance- This study is based on secondry data base, NSSO 71st round survey which were conducted by Government of India. So, there is no need of ethical clearance for data collection from any research committee.

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Conflict of Interest - Nil

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