Out-of-pocket expenditure for delivery at home and public health facilities in the context of conditional cash transfer and free delivery care programs: An analytical cross-sectional study in South 24 Parganas district, West Bengal, India, 2017

Sayan Das^{a,b}, L. Sundaramoorthy^a, Tarun Bhatnagar^{a,*}

^a ICMR School of Public Health, ICMR- National Institute of Epidemiology, R 127, 3rd Avenue, Second Main Road, Tamil Nadu Housing Board, Ayapakkam, Chennai, Tamil Nadu, 600077, India

^b Department of Health and Family Welfare, Government of West Bengal, India

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ABSTRACT

Background: The Indian government provides for free/subsidized services in public hospitals and conditional cash transfer (CCT) schemes for delivery care. Our objectives were to estimate the proportion of women reporting out-of-pocket expenditure (OOPE) for delivery care at home and public hospitals, magnitude of components of OOPE for public hospitals by wealth status, and to determine the factors associated with OOPE for delivery care at home and public hospitals in South 24 Parganas district.

Methods: We did a community based cross-sectional analytical study among women who delivered between November 2016 to March 2017. We calculated median (Inter-Quartile Range) direct and indirect expenditures. We did multiple logistic regression to calculate odds ratios (95% confidence interval).

Results: All women reported OOPE for delivery care. Median OOPE was INR 865 (IQR: 520,1700) at public hospital and INR 1700 (IQR: 550,2300) at home. Among public hospital deliveries, majority of OOPE was due to indirect expenditure, 35.8% due to wage loss. Poorest women had the highest median gross OOPE. The middle-income group had the highest median percentage of reduction in OOPE for home delivery after receiving government subsidy. OOPE was most likely for a male child (OR 4.8, 95% CI 1.1–2.0) for home delivery and for caesarian section (OR 56.8, 95% CI 13.6–237) among the public hospital deliveries.

Conclusions: Women incurred OOPE for delivery care at home and public hospitals despite free/subsidized care. Augmenting the package of delivery-related CCT schemes and increase in universal health insurance coverage for economically poor households can reduce the financial burden of delivery care in the district.

1. Introduction

The maternal mortality ratio in India declined from 301 deaths per 100,000 live births between 2001 and 03 to 178 during 2011–13, but the rate still lags behind the United Nation Millennium Development Goal of 109 per 1,00,000 live births by the year 2015.^{1–3} Utilization of maternal health care services is widely recognised as a factor in influencing maternal and child mortality.⁴ Further, the cost of care can act as a barrier to access maternal health care services.

The healthcare services in India are mainly financed by out-of-pocket expenditure (71%) at the point of care.⁵ In 2005, the Government of India (GOI) launched the *Janani Suraksha Yojana* (JSY) program, a conditional cash transfer scheme for pregnant women to

promote institutional delivery. It provides INR 1000 for institutional delivery and INR 500 for home delivery.⁶ Women belonging to the category of living below poverty line (BPL), schedule caste (SC) and schedule tribe (ST) are eligible to benefit from JSY program. Implementation of JSY is different across the states and union territories. Some states have their own contribution along with central share. In 2011, the GOI launched another program called *Janani Shishu Suraksha Karyakram* (JSSK) in which all services for intranatal care are to be provided free of cost. These include delivery and caesarean section procedures, drugs and consumables, essential diagnostics (blood, urine tests, ultrasonography), diet during stay in health institution-up to three days for normal delivery and seven days for caesarean section, provision of blood transfusion, transport from home to health institution,

* Corresponding author.

E-mail address: tarunbhatnagar@nie.gov.in (T. Bhatnagar).

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transport between facilities, in case of referral and from institution to home after hospital stay and exemption from all kinds of user charges.⁷ *Rashtriya Swasthya Bima Yojana (RSBY)* is another government scheme that also provides for cashless delivery facilities for BPL and a specific group of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) beneficiaries.⁸

As per NSSO 71st round report, in India, mothers are paying money for institutional delivery at public health sectors at an average of INR 1587 in rural areas and INR 2171 in urban areas. In Uttar Pradesh, median OOPE was reported to be INR 700.⁹ In Bankura district of West Bengal the reported OOPE was INR 645 for public sector delivery and INR 10638 for private sector delivery.¹⁰ OOPE leads to low institutional delivery, loss of assets, livestock and land, money borrowing followed by increase in poverty.¹¹ There is limited evidence on the areas where woman have to incur OOPE within public health facilities, which calls for further studies in different geographic locations, to understand the nature and prevalence of OOPE.

In South 24 Parganas district of West Bengal, we estimated the median OOPE of INR 1000 for delivery care in public sector facilities, INR 1625 for home delivery and INR 12000 for private sector facilities among JSY eligible mothers [unpublished data]. However, we did not know how much money is spent on different components of OOPE and the difference of OOPE between JSY beneficiaries and non-beneficiaries. We also did not know whether socio-economic status has any effect on OOPE. The question remains whether JSY conditional cash transfer defrayed OOPE in JSY beneficiaries.

We conducted this study to estimate the prevalence of women having OOPE for delivery care at home and public healthcare facilities and the magnitude of different components of OOPE for public health facilities in South 24 Parganas district. We also compared the magnitude of OOPE for delivery care at home and public health facilities by wealth status and the magnitude of different components OOPE for delivery care at home and public health facilities between JSY beneficiaries and non-beneficiaries. We determined the factors associated with OOPE for delivery care at home and public health facilities.

2. Methods

2.1. Study design, and setting

We did a community based analytical cross-sectional study, between November 2016 and March 2017, among women who delivered at home and public health facilities from April to October 2016 in South 24 Parganas health district of West Bengal.

2.2. Sampling

We sampled the population using probability proportion to size linear systemic sampling method. We took health sub-center (HSC) as a cluster. We chronologically identified women in clusters from recent to old. Total deliveries conducted at public health institution and home in 2015–2016 were 70089.¹² Assuming 65.6% women incurred OOPE in home and public health facilities [unpublished data] 95% confidence interval, 7% absolute precision and design effect of two, we calculated a sample size of 360. We selected 30 HSCs and 12 women from each.

2.3. Data collection

We collected data by face-to-face interviews with women at their homes. We used a semi-structured questionnaire in Bengali language. We collected socio-demographic data, details of last delivery, expenditure in Indian rupees (INR) towards medicine, laboratory investigation, blood transfusion, transportation of mother, food and cloth for mother and baby, attenders' wage loss and gift/money given to hospital staff. We collected information about 22 household assets in order to estimate the 'Wealth Index' as a proxy indicator for household

income.¹³

2.4. Data analysis

We used CDC Epi Info 7.2 for data entry. We categorized the type of delivery into 'vaginal' and 'caesarean section' and place of delivery into 'home' and 'public health facility'. We assigned scores for each household asset. We calculated factor score using principal component analysis and constructed 'Wealth Index'.¹³ We divided all women into five quintiles of economic groups (poorest, poor, middle, rich, richest) using the Wealth Index.

We divided the OOPE into 'direct (medicine, laboratory investigation, blood transfusion)' and 'indirect (food and cloth of baby, transport, attenders' wage loss, gift/money to hospital staff/ambulance driver)' expenditures and compared median OOPE using Mann Whitney U test. We calculated gross OOPE by adding direct and indirect expenditure and net OOPE by subtracting JSY amount received by the women from gross OOPE. For home deliveries we considered payment to traditional birth attendant as OOPE.

We calculated the proportion of women incurring OOPE for deliveries at home and public health facilities. For public health facilities, we calculated median OOPE with interquartile range (IQR) for different components of OOPE in all women, JSY beneficiaries and non-beneficiaries. We compared the median OOPE for each component between JSY beneficiaries and non-beneficiaries using Mann-Whitney-U test. We compared net OOPE across the five economic groups, separately for delivery at home and public health facilities. We calculated percentage of reduction in OOPE on account of actual JSY benefit. We calculated median percentage of reduction in OOPE with IQR for each of the five economic groups, using Kruskal-Wallis test, separately for delivery at home and public health facility.

We dichotomized OOPE using the median and considered OOPE above median as dependent variable. We calculated crude Odds ratio (OR) and 95% confidence interval by simple logistic regression to find out factor associated with OOPE, separately for home and public-sector delivery. We considered variables with crude OR p-value ≤ 0.20 for multiple logistic regression to calculate adjusted OR with 95% CI. We identified relevant covariates as confounders for these variables by comparing the -2 log likelihood ratio values of models with and without the potential confounder(s) as per the conceptual framework based on directed acyclic graph.¹⁴ We used IBM SPSS 23 trial version for data analysis.

We took written informed consent from all participants. We obtained approval from Institutional Ethics Committee of ICMR-National Institute of Epidemiology, Chennai, India for all study procedures.

2.5. Role of the funding source

The funders had no role in the study design, data collection, data analysis, data interpretation, or manuscript preparation. The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

3. Results

3.1. Socio-demographic and delivery-related characteristics

We interviewed 360 women, of which 218 (60.6%) were educated up to secondary level and above, 305 (84.7%) were housewives, 60 (16.7%) belonged to scheduled caste/tribe, 147 (40.8%) belonged to the two poorest economic groups, and 139 (38.6%) were primigravida. In all, 325 (90.3%) delivered at public health facilities and 229 (63.9%) reported having received JSY incentive: 209 (64.3%) out of 325 in public health facilities and 20 (57.1%) out of 35 home deliveries (Table 1).

Table 1

Socio-demographic characteristics and OOPE among women who delivered at home and public health facility, South 24 Parganas, West Bengal, India, 2017.

Characteristics	All women (360)					Home Delivery (35)					Public Health facilities (325)				
	#	%	OOPE (INR)		p-value ^a	#	%	OOPE (INR)		p-value ^a	#	%	OOPE (INR)		p-value ^a
			Median	IQR				Median	IQR				Median	IQR	
Education															
Below secondary	142	39.4	1080	510,1980	0.3	30	85.7	1500	550,2100	0.1	112	34.5	965	505,1775	0.5
Secondary and above	218	60.6	863	550,1690		5	14.3	2100	2000,4000		213	65.5	850	550,1650	
Occupation															
Housewife	305	84.7	930	540,1700	0.9	31	88.6	1700	550,2100	0.7	274	84.3	875	530,1680	0.9
Others	55	15.3	800	500,1800		4	11.4	1550	650,3175		51	15.7	799	500,1790	
Economic group															
1st Quintile	72	20	1100	560,1940	0.2 [†]	21	60	2000	1500,2300	0.02 ^b	51	15.7	740	480,1365	0.2 [†]
2nd Quintile	75	20.8	865	480,1690		7	20	800	250,2000		68	20.9	883	510,1685	
3rd Quintile	68	18.9	730	430,1700		5	14.3	250	200,800		63	19.4	750	440,1780	
4th Quintile	73	20.3	1150	580,1960							73	22.5	1150	580,1960	
5th Quintile	72	20	1065	555,1700		2	5.7	2275	550,4000		70	21.5	1065	560,1700	
Caste															
Schedule Caste & Tribe	60	16.7	1030	550,1790	0.01	5	14.3	2025	1350,2475	0.7	55	16.9	1390	570,2200	0.01
Others	300	83.3	830	510,1700		30	85.7	1300	500,2100		270	83.1	825	500,1570	
Sex of the baby															
Female	174	48.3	825	550–1940	0.06	18	51.4	1100	500–1800	0.04	156	48	815	500–1480	0.1
Male	186	51.7	1170	500–1600		17	48.6	2000	1500–2500		169	52	1060	550–1770	
Birth Order															
1st Gravida	139	38.6	1030	550,1790	0.8	12	34.3	2025	1350,2475	0.07	127	39.1	880	520,1653	0.8
Others	221	61.4	830	510,1700		23	65.7	1300	500,2100		198	60.9	830	510,1690	
Type of Delivery in Public Health Facilities															
Vaginal											256	78.8	705	460,1400	< 0.001
Caesarian Section											69	21.2	1800	1350,4200	
JSY Beneficiaries															
Yes	229	63.6	810	500,1690	0.02	20	57.1	1250	350,2200	0.4	209	64.3	800	500,1650	0.07
No	131	36.4	1200	590,1890		15	42.9	1900	800,2300		116	35.7	1125	575,1775	

p-value based on.

^a Mann-Whitney *U* test.^b Kruskal Wallis test.

3.2. OOPE by socio-demographic and delivery-related characteristics

All women reported to have incurred OOPE. Median OOPE was INR 900 (IQR: 520,1690) overall. It was significantly lower for delivery at public health facilities [INR: 865 (IQR: 520,1700)] compared to home delivery [INR 1700 (IQR: 550,2300)]; $p = 0.04$. Overall median OOPE was significantly higher among women belonging to schedule caste and tribe [INR 1030 (IQR: 55, 1790)] than other caste [INR 830 (IQR: 510,1700)]; $p = 0.01$. Median OOPE was significantly lower for JSY beneficiaries [INR 810 (IQR: 500,1690)] than nonbeneficiaries [INR 1200 (IQR: 590,1890)]; $p = 0.02$.

Overall, there was no significant difference in OOPE by education, occupation, birth order and economic status. However, among home delivered women, median OOPE was significant higher in the poorest [INR 2000 (IQR: 1500,2300)] and richest [INR 2275 (IQR: 550,4000)] economic groups compared to the second [INR 800 (IQR: 250,2000)] and third [INR 250 (IQR: 200,800)] quintiles.

OOPE was similar across economic groups among women who delivered in public health facilities ($p = 0.2$). Median OOPE was significantly higher among women belonging to schedule caste and tribe [INR 1390 (IQR: 570,2200)] than others caste [INR 825 (IQR: 500,1570)]; $p = 0.01$ among women who delivered in public health facilities. These women also reported significantly higher median OOPE for delivery by caesarian section [INR 1800 (IQR: 1350,4200)] compared to vaginal delivery [INR 705 (IQR: 460,1400)]; $p < 0.001$ (Table 1).

3.3. Components of OOPE for deliveries in public health facilities

Out of 325 women of delivered in public health facilities, 58 (17.8%) reported some form of direct OOPE and 100% indirect OOPE. Overall, 41 (12.6%) reported OOPE towards medicines and 30 (9.2%)

towards laboratory investigation. OOPE was reported by 323 (99.4%) towards wage loss of accompanying person and 294 (90.5%) towards gifts to hospital staff/ambulance driver. Median OOPE towards indirect expenses [INR 850 (IQR: 515, 1600)] was significantly higher than direct expenses. [INR 850 (IQR: 200 (IQR: 150,475))]; $p < 0.001$. Median OOPE was highest towards wage loss of the accompanying person [INR 1050 (IQR: 900,1500)]. Wage loss accounted for 35.8% of OOPE, followed by informal payments (26.4%), transport (18.1%), food and cloth (14.8%), medicine (2.7%), laboratory investigation (2.0%) and blood transfusion (0.3%).

Median OOPE for JSY beneficiaries [INR 800 (IQR:500,1650)] and lower than non-beneficiaries [INR 1125 (IQR:574,1775)]. The difference was not statistically significant ($p = 0.20$). Similar proportion of JSY beneficiaries and non-beneficiaries reported different components of OOPE. There was no significant difference in the magnitude of different components of OOPE between JSY beneficiaries and non-beneficiaries (Table 2).

3.4. Effect of JSY incentive on OOPE

Among women who delivered at home, median net OOPE was significantly higher in the poorest [INR 1700 (IQR: 1300,2050)] and richest [INR 1775 (IQR: 50,3500)] economic groups compared to the second [INR 700 (IQR: 250,2000)] and third [INR -250 (IQR: 300,300)] quintiles: ($p = 0.02$) (Fig. 1a). The middle (3rd quintile) economic group had the highest median percentage reduction in gross OOPE [-100% (IQR: 150%,38)] and the richest (5th quintile) economic group had the lowest [48% (IQR: 9,71)]. The poor and poorest group had 100% reduction in OOPE. This difference was statistically significant ($p = 0.01$) (Table 3). Net OOPE and percentage reduction in gross OOPE were similar across the economic groups among women who delivered at public health facilities (Fig. 1b, Table 3).

Table 2

Magnitude of components of OOPE among women who delivered at public health facilities and compared between JSY beneficiaries and non-beneficiaries, South 24 Parganas, West Bengal, India, 2017.

Components of OOPE	Women who delivered at public health facilities (325)				JSY beneficiaries (209)				Non JSY beneficiaries (116)				p-value*
	n	%	OOPE (INR)		n	%	OOPE (INR)		n	%	OOPE (INR)		
			Median	IQR			Median	IQR			Median	IQR	
Total			865	515,1690			800	500,1650			1125	575,1775	0.2
Direct	58	17.8	200	150,475	33	15.8	200	150,300	25	21.6	200	150,600	0.7
Indirect	325	100	850	515,1600	209	100.0	799	500,1570	116	100.0	1055	575,1715	0.1
Direct expenditure													
Medicine	41	12.6	200	150,350	21	10.0	200	150,300	20	17.2	200	150,400	0.8
Laboratory	30	9.2	150	100,488	18	8.6	150	100,250	12	10.3	250	125,600	0.6
Blood transfusion	7	2.2	100	100,200	4	1.9	200	150,350	3	2.6	100	0,100	0.1
Indirect expenditure													
Food & Cloth	323	99.4	200	160,280	209	100.0	200	160,280	114	98.3	230	170,300	0.2
Transport	219	67.4	230	140,390	140	67.0	230	120,375	79	68.1	240	150,400	0.5
Wage loss	111	34.2	1050	900,1500	66	31.6	1050	750,1400	45	38.8	1050	900,1500	0.5
Informal Payment	294	90.5	250	200,480	188	90.0	250	200,460	106	91.4	270	200,520	0.1
Gift to staff	287	88.3	200	100,310	184	88.0	200	100,300	103	88.8	210	180,320	0.3
Gift to driver	107	32.9	150	100,250	64	30.6	150	100,250	43	37.1	150	100,250	0.8

* p-value based on Mann-Whitney U test comparing median OOPE between JSY beneficiaries and non-beneficiaries.

3.5. Factors associated with OOPE for home delivery

Women reporting OOPE higher than the median were more likely to have given birth to a male child (OR 4.8, 95% CI 1.1–2.0) and less likely to belong to other than poorest economic group (OR 0.1, 95% CI 0.02–0.7). Women's education, occupation, caste, newborn child's birth order and JSY beneficiary status were not significantly associated with OOPE for home delivery (Table 4).

3.6. Factors associated with OOPE for delivery at public health facilities delivery

Women reporting OOPE higher than the median were more likely to have delivered by caesarian section (OR 56.8, 95% CI 13.6–237) and less likely to belong to caste other than SC/ST (OR 0.5, 95% CI 0.3–0.9). Women's education, occupation, economic status, newborn child's gender and birth order and JSY beneficiary status were not significantly associated with OOPE for delivery at public health facility (Table 4).

Fig. 1a. Net OOPE for delivery care by economic groups among women who delivered at home, South 24 Parganas, West Bengal, India, 2017.

Fig. 1b. Net OPE for delivery care by economic groups among women who delivered at Public health facilities, South 24 Parganas, West Bengal, India, 2017.

4. Discussion

In this study, institutional deliveries were preferred. The figures are consistent with the district reports.¹⁵ All women reported having some kind of expenditure towards delivery care. Expenditure was significantly higher among women with lower education, housewives, on the first born, belonging to schedule caste and tribes and JSY non-beneficiaries.

OPE has been reported to increase with wealth status.^{16,17} In our study we cannot find any increasing pattern of OPE in economic group. In home delivery, highest OPE found in richest group though lowest OPE found in middle group. In case of public health facilities delivery, we found lowest OPE in poorest group though rich group (4th quintile) had the highest OPE. Difference of median OPE in rich and richest group was less than INR 100. There is no universal consensus on why a wealth gradient in OPE exists, with studies showing either positive¹⁸ or no relationship¹⁹ between income and health expenditures.

In our study women belonging to schedule caste/tribes incurred higher OPE. As majority of them belongs to poor education and

economic status, they fear to asked question. They forced to buy medicine and performed laboratory investigation from outside, give gift to hospital staff. Also, majority of spouse of SC/ST women were daily wage labor. Majority of hospital have partnership with private laboratory and medicine shops for free services. SC/ST women might be unaware about it.¹⁶ Studies showed SC/ST people incurred lower OPE for delivery care than other caste. This was in contrast to our result. Further qualitative studies are needed to explore in-depth the socio-logical dimensions of caste and expenditure for public services.

In our study, JSY beneficiaries had low OPE than non-beneficiaries and this was consistent with Mohanty et al.²⁰ But we could not elicit any association between JSY beneficiaries and OPE. Another study using data from the DLHS-3 showed JSY benefited public health facilities deliveries had higher OPE compared to home deliveries.²¹ This difference could be due to the fact that only a descriptive analysis was performed and possible confounders were not taken into consideration.

In our study, indirect expenditure had the main share in OPE. Probably this is due to the JSSK programme. JSSK provides free medicine, laboratory investigation, blood transfusion, which decreased the direct expenditure. Sidney et al. conducted study in rural setup of India

Table 3

Percentage reduction in OPE by economic groups among women who delivered at home and public health facilities, South 24 parganas, West Bengal, India, 2016.

Economic group	All women (360)				Home delivery (35)				Public health facility delivery (325)			
	# (%)	Percentage of OPE reduction			# (%)	Percentage of OPE reduction			# (%)	Percentage of OPE reduction		
		Median	IQR	p-value*		Median	IQR	p-value*		Median	IQR	p-value*
1st Quintile	72 (20)	61	–63,100	0.2	21 (38)	100	76,100	0.01	51 (16)	9	–108,100	0.1
2nd Quintile	75 (21)	60	–20,100		27 (49)	100	–100,100		68 (21)	59	–16,100	
3rd Quintile	68 (19)	38	–98,100		5 (9)	–100	–150,38		63 (19)	39	–85,100	
4th Quintile	73 (20)	51	–28,100						73 (22)	51	–28,100	
5th Quintile	72 (20)	32	–30,100		2 (4)	48	9,71		70 (22)	32	–32,100	

* p-value based on Kruskal Wallis test.

Table 4

Factors associated with OOPE among women who delivered at home and at public health facilities, South 24 Parganas, West Bengal, India, 2017.

Characteristics	OOPE for Home Delivery (N = 35)				OOPE for Public Health Facility Delivery (N = 325)			
	> Median (N = 16)		Odds ratio	95% C.I.	> Median (N = 162)		Odds ratio	95% C.I.
	# (%)	# (%)			# (%)	# (%)		
Education								
Below secondary	12 (40.0)	18 (60.0)	1		58 (51.8)	54 (48.2)	1	
Secondary & above	4 (80.0)	1 (20.0)	6	0.6–60.4	104 (48.8)	109 (51.2)	0.8	0.6–1.4
Occupation								
Housewife	14 (45.2)	17 (54.8)	1		138 (50.4)	136 (49.6)	1	
Others	2 (50.0)	2 (50.0)	1.2	0.2–9.7	24 (47.1)	27 (52.9)	0.9	0.5–1.5
Economic group								
1st quintile	13 (61.9)	8 (38.1)	1		23 (45.1)	28 (54.9)	1	
2nd–5th quintile	3 (21.4)	11 (78.6)	0.1 ^b	0.02–0.7	139 (50.7)	135 (49.3)	1.3	0.7–2.3
Caste								
Schedule caste & tribe	2 (40.0)	3 (60.0)	1		35 (63.6)	20 (36.4)	1	
Others	14 (46.7)	16 (53.3)	1.3	0.2–9.0	127 (47.0)	143 (53.0)	0.5	0.3–0.9
Sex of Baby								
Female	5 (27.8)	13 (72.2)	1		72 (46.2)	84 (53.8)	1	
Male	11 (64.7)	6 (35.3)	4.8	1.1–20	90 (53.3)	79 (46.7)	1.3	0.9–2.0
Birth Order								
1st	7 (58.3)	5 (41.7)	1		64 (50.4)	63 (49.6)	1	
Others	9 (39.1)	14 (60.9)	0.5	0.1–1.9	98 (49.5)	100 (50.5)	0.9	0.6–1.5
Type of Delivery								
Normal					95 (37.1)	161 (62.9)	1	
Caesarian section					67 (97.1)	2 (2.9)	56.8	13.6–237.0
JSY beneficiary								
Yes	8 (40.0)	12 (60.0)	1		97 (46.4)	112 (53.6)	1	
No	8 (53.3)	7 (46.7)	1.7	0.4–6.6	65 (56.0)	51 (44.0)	1.4 ^a	0.9–2.4

^a Adjusted for Caste.^b Adjusted for Education.

and result showed same findings.¹⁶ Among indirect expenditure, wage loss of accompanying person had the highest contribution towards OOPE. Hospitalisation interferes with job. Person unable to perform work during hospitalisation,²² thus loss of wages occurs. Skordis-Worrall et al. showed that in urban Indian slums, direct medical costs were responsible for the majority of OOPE.¹⁹ Our study was conducted in rural setup. Possibly, the people of rural and urban setting faced different kind of access issues. Rural South 24 Parganas consists of multiple islands. It hampers the transport facilities. There is more opportunity for education in urban area. Main source of income is agriculture in rural setup whereas, in urban setup it is industry bases.²³

As the ready access to cash is not available in rural household, high OOPE becomes a barrier to the utilization of delivery care services.¹⁷ As mentioned above, we found all women have at least some OOPE. They did not get a free delivery in public health facilities and indirect expenditure was the main contributor. A study showed that people knows that there was no need to gift hospital staff but they give it because of fear and rough behavior.²⁴ Main purpose of JSY programme is to give incentive to mother but people are using it to compensate the incurred OOPE. In our study, only 64.3% women got JSY incentive after public health sector delivery. All women, who delivered her baby at public health facilities, should receive the JSY incentive. In JSY programme evaluation, women were not getting JSY incentive due to lack of bank account, which is now mandatory and women faced problem in bank account opening as they did not have corrected identification card after marriage [unpublished data]. In our study, OOPE was not associated with being a JSY beneficiary. The amount of JSY incentive is fixed and same from the year 2005 till date. Within this more than ten years period, cost of health-related expenditures has increased. JSSK can only compensate direct expenditure, but there is rise in cost of indirect expenditure also. This may explain why JSY was not associated in our study.

In our study, women who delivered at home incurred more OOPE than public health facilities. This may be due to JSSK programme which compensated the direct expenditure and referral transport. Distance

from the delivery center may played a role for home delivery.²⁵ We found that majority of women, who delivered at home, belongs to islands part of South 24 Parganas district. Lack of transport of ferry service, specially at night may explain the home delivery and their dependency on local traditional birth attendants. They have no fixed fees for conducting delivery. It depends on relationship of traditional birth attendants with family, number of traditional birth attendants present in the locality or island and also wealth of the household. There is a practice that traditional birth attendants will take money, cloth or grocery products in each consequences year. In those cases, their payment may decrease as they will compensate it in yearly basis. Another study shows that amount of OOPE was decreased over time at public health facilities.¹⁷

In our study, having a male baby was a predictor for more OOPE among women with home delivery. This could be due to the prevalent male preference in the society.²⁶ Our result showed that women of higher economic group had more OOPE than poorest group among those with home delivery. In the rural setup, the payment towards traditional birth attendant might have corresponded with the household economic status. Xu K et al. did not find any association between economic status and OOPE. They did not take indirect expenditure into consideration.¹⁷ Badi H. et al. studied the long-run economic relationship between health expenditure and income in 20 OECD countries over the period 1971–2004. The analysis indicated that health care expenditure and most of its determinants were non-stationary, and that they were linked in the long-run.²⁷

In our study cesarean section was associated with higher OOPE in public health sector deliveries, similar to other studies.²⁰ Being an operative procedure for complicated cases, caesarean section invites higher expenditure. It requires emergency USG. As not all hospitals have 24 × 7 hrs USG facility and laboratory investigation on emergency basis, women may be necessitated to go to private clinic. Further, women undergoing a caesarian section would be hospitalized for longer time, which may influence monitory demand of hospital staff. It can also increase the amount of wage loss of the accompanying person(s).

Our study has few limitations. Recall bias may have influenced the amount of OOPE. To reduce this, we selected mother from recent delivery to backwards in each cluster. We also take disaggregated data on expenditure to minimize the under reporting for public health facilities delivery. We were unable to take component wise OOPE for home delivery. There is no scope for expenditure on laboratory investigation, blood transfusion, transport, waste loss, any informal payments. Baby's cloth generally arranged from old cloth available at home. We cannot calculate expenditure for baby's food as there is no question of hospital as we do not for how many days it should be calculated. In Asian countries, family borrows money or sale livestock for paying delivery related expenditure.²⁸ It forced them to forgo essential item to repay the loan thus limits our understanding about effect of JSY on OOPE. We did not collect information about financing sources.

All women had OOPE. It was mainly due to informal payment, food and cloth for baby transport and wage loss. It was also high in home delivery and SC/ST caste. Receiving JSY incentive did not influence OOPE though it compensates OOPE incurred by women in lower economic groups. We suggest displaying information about JSSK services at public facilities may help the SC/ST women. JSY incentive may be increased for caesarean section delivery. Increasing number of vehicle and installing GPS system in ambulance may increase its availability. In West Bengal RSBY is another option for women. The socio-economically poor women can get delivered her baby at RSBY empaneled private health facility. It covers all direct expenditure. It provides fixed payment for transport cost. As it is a cashless health insurance scheme, no one is asking money as gift. Expenditure on cloth for baby and wage loss are not covered by this scheme.⁸ But only 42.4% of targeted families were enrolled under this scheme. Enrolment of socio-economically poor women under RSBY scheme and proper awareness about RSBY may help to decrease OOPE.²⁹ Further study is needed to understand the magnitude of reduction in OOPE with family's economic status.

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ICMR-National Institute of Epidemiology, Chennai, India.

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