



Estimation of Out of Pocket Expenditure Under Janani Shishu Suraksha Karayakram (JSSK) in Rural Block of Chhattisgarh: A Community Based Cross-Sectional Study

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ABSTRACT

Background: In order to reduce out-of-pocket expenditure during institutional delivery, Govt. of India has launched a nationwide initiative - Janani Shishu Suraksha Karyakram (JSSK) which provides cashless services to pregnant mothers & sick infants accessing public health facilities.

Objectives: To estimate out of pocket expenditure (OOPE) among mothers who availed the benefits of JSSK.

Method: A community based cross sectional study was done in Dharsiwa block of Raipur district among 352 mothers having child less than one year using multistage random sampling method using predesigned pretested proforma from July 2015 to June 2016. Median OOPE was calculated and expressed in Indian National Rupee. (INR)

Result: Overall median OOPE during pregnancy was INR 1220 while during antenatal and natal period, median OOPE was INR 750, INR 300 respectively. Nil OOPE incurred for admission, stay and investigation but median OOPE for transport, medicine, food, informal payments and blood transfusion was INR 200, INR 550, INR 60, INR 500 and INR 1050 respectively. Total Median OOPE incurred by JSSK beneficiaries was highest in medical college and among those who underwent C-section delivery.

Conclusion: Mothers were benefitted with services mentioned under JSSK in the public health facilities; however drugs and transport contributed to the Out of Pocket expenditure.

Keywords: Janani Shishu Suraksha Karyakram , Out of Pocket Expenditure

INTRODUCTION

For building healthy nation, the primary focus is given to promote and protect maternal health. Many services are concentrated towards maternal health as they constitute most vulnerable and majority group (2/3rd) of total population and most of the disease and deaths are preventable among them. ¹ Globally, about 830 women die every day from preventable cause related to pregnancy and child birth. ² In India, annually about 55000 women die due to preventable pregnancy related causes. ³ As per SRS 2011-13, Maternal Mortality Rate

(MMR) in India is 167 per 100,000 live births. Chhattisgarh is the state with quite high MMR i.e 221 per 100,000 live births (SRS 2011-13) as compared to national average. The government had taken various initiatives like National Rural Health Mission (NRHM) launched in the year 2005 to bring all health and family welfare and allied sector programmes under one umbrella to improve the health of rural people and provide a further trust to reduce maternal mortality. ⁴ One such initiative was JSY which is 100 % centrally sponsored safe motherhood intervention; provide cash assis-

tance to pregnant women on institutional delivery.⁵ With the launch of JSY, institutional deliveries had increased significantly but still many pregnant women hesitate to access health facilities for delivery. Major barrier was out of pocket payments in the form of user charges for OPD, admission, diagnostic test, drugs and transport facility. Keeping this in mind, Ministry of Health and family welfare, Government of India has launched a nationwide initiative Janani Shishu Suraksha Karyakram (JSSK) on 1st June 2011 from Meerut, Haryana.⁶ It's a new approach to health care where emphasis was given on elimination on out of pocket expenses.⁶ This entitles all the pregnant women (BPL/APL, urban/rural) with free treatment, drug, diagnostics, diet, blood transfusion and transport services during pregnancy in any government health facilities.⁶

To observe the extent to which the programme has fulfilled its objective in reducing the OOPE among pregnant mothers opting public health facilities for delivery care and as data is lacking regarding expenditure incurred by beneficiaries after the launch of JSSK in Chhattisgarh state, the present study was conducted to estimate out of pocket expenditure (OOPE) among mothers who availed the benefits of Janani Shishu Suraksha Karyakram (JSSK) in Dharsiwa block of Raipur district, Chhattisgarh.

MATERIAL AND METHODS

A community based, cross sectional study was conducted during July 2015 to June 2016 in Dharsiwa block of Raipur District, Chhattisgarh, India among mothers who delivered in the last one year. This Block is a part of field practice area of Rural health training centre of Department of Community Medicine, Pt J.N.M Medical College Raipur.

A predesigned, pretested questionnaire and relevant record and reports like Mother and child protection card, laboratory investigation reports and prescription (if available). Pilot survey was conducted before the start of study in another block to test the accuracy and reliability of proforma and necessary changes were made. Personal interview of mothers and review of records was done during data collection. Mothers delivered within last one year and willing to participate were included in the study.

Sample size calculated by using formula $n = Z_{(1-\alpha/2)}^2 P(1-P) / d^2$

In Raipur district Rural population, Percentage of mother who received 3 or more ANC - 67.7%. (As per AHS 2012-13), with absolute precision of 0.5, at 95 % confidence interval, sample size comes out to

be 336 (which is rounded upto 352 so that equal number of mothers were considered for the study from each village.)

Multistage random sampling was done to select sample. In first stage, both the Community health centres (CHC) was taken for the study. In second stage, two Primary health care centres (PHC) were being selected randomly using lottery method from each CHC, thus 4 PHCs included in the study. Under each PHC, two subcentres were selected with 5 km and two subcentres more than 5 km away from the respective PHC. In each of the subcentres thus selected, two villages were taken one in which subcentre is located and any other village selected via random sampling. Thus study area covers 32 villages, which include equal number of subcentre villages and non subcentre villages. From each selected villages, 11 mothers were taken randomly from each village using random number table.

List of mothers having child less than one year was obtained from all the Anganwadis/ASHA in the study area. From the list, mothers equal to sample size were selected randomly using random number table. If total total number of study subjects were less than required, adjacent village was included for the study

Verbal informed consent of study subjects was taken prior to interview after explaining the purpose and nature of the study. House to house visit was done to collect the data.

Data was entered, compiled in Microsoft excel 2007. Collected data was checked for its completeness and correctness before analysis. Data was finally tabulated, analysed and interpreted. All the cost were expressed in Indian National Rupee (INR) and median and interquartile range (IQR) was calculated, Mann-Whitney U (MW-U) test and Kruskal-Wallis test used to compare median cost of expenditure. Significance level was considered, at p-value < 0.05.

The study was approved by Institutional Ethical Committee (IEC).

Operational definition

JSSK Beneficiaries-Mothers who delivered in government health facility.

Out of pocket expenditure /direct cost⁷ -Cost of transport, diet, drugs and consumables, charges for admission, stay, and investigations as well as charges for blood transfusion were considered as direct costs/out-of-pocket expenditure (OOPE). Both the terms were used interchangeably in the present study.

Indirect cost -Charges paid for food and lodging of family members/accompanying person, wages loss of the family member/accompanying person and cost for servant/maid for household work was considered as indirect costs in this study.

RESULTS

A total of 352 mothers participated in the study from 32 selected villages. Out of this, 253 (71.9%) delivered in government health facility and the rest 99 mothers (28.1%) delivered either in home or in private facility. About 97 % mothers incurred expenditure during antenatal and natal care, total median expenditure was INR 1220.

Overall, 89.32% mothers had incurred direct OOPE for one or other component of JSSK during hospi-

talization/delivery and the median total direct cost incurred was INR 300. None of the mothers incurred expenditure for admission, stay and investigation at the time of delivery in government facility. About 30 % mothers incurred expenditure on medicine during hospitalization and the median total cost for medicine was INR 550. About 40 % mothers gave informal payments (for example gifts or cash given to hospital staff) and the median total cost was INR 500. Though the median cost for food was low i.e INR 60 but spending on food other than JSSK available food constitutes largest proportion of mothers (70%) during hospitalization. Only 2 (0.80%) mothers said that they had paid for blood transfusion at the time of delivery and the median cost was high i.e INR 1050. (Table No 01).

Table 01: Component wise distribution of out of pocket expenditure for delivery according to place of delivery

Component of *OOPE (in INR)	Place of delivery						#KW test	P value
	SHC	*PHC	****CHC	District hospital	Medical College Hospital	Total		
n	70	27	20	56	80	253		
Transport								
Median ± IQR	200±200	200±87.5	150±150	350±275	300±400	200±150	17.080	## 0.002
Range	100-400	100-400	100-350	100-1200	100-1000	100-1200		
Informal payments								
Median ± IQR	800±400	350±00	-	400±250	500±500	500±00	37.72	###<0.001
Range	300-1500	-	-	200-500	200-500	200-1500		
Medicine								
Median ± IQR	1100±275	350±00	-	450±250	500±350	550±00	5.131	0.162
Range	200-1600	-	-	300-700	300-3700	200-3700		
Extra Food other than JSSK								
Median ± IQR	-	50±20	40±25	60±50	80±100	60±100	14.558	##0.002
Range	-	20-60	20-50	20-700	20-1500	20-1500		
Admission stay and investigation								
Median ± IQR	00±00	00±00	00±00	00±00	00±00	00±00	-	-
Range	00±00	00±00	00±00	00±00	00±00	00±00		
Total direct costs								
Median ± IQR	200±150	200±167.5	135±232.5	235±500	1050±522.5	300±900	87.952	###<0.001
Range	100-1900	50-450	20-400	30-1700	30-450	20-4350		
Indirect cost								
Median ± IQR	400±900	300±350	365±242.50	650±441.50	600±350	600±500	15.317	##0.004
Range	200-2000	200-600	150-600	300-6000	200-4000	150-6000		

*OOPE=out of pocket expenditure, **SHC=Subhealth centre,***PHC=Primary Health Centre,****CHC=Community health centre #KW test=Kruskal-Wallis test, ##p<0.05 significant, ###P<0.001 highly significant

Table 02: Association of out of pocket expenditure incurred with mode of delivery

Component	Normal delivery(N=218)		Caesarian delivery(N=35)		MW- value	P value
	Median ± IQR	Range	Median ± IQR	Range		
Transport	300±275	100-1200	300±100	150-600	*250.0	** 0.045
Informal payments	500±450	200-1500	500±00	200-500	852	>0.929
Medicine	450±250	200-2050	700±790.25	300-3700	*331.00	***<0.001
Food other than JSSK	50±20	20-300	225±172.5	20-1500	324	***<0.001
Admission, stay & invsetigations	00±00	00±00	00±00	00±00	-	-
Total direct costs	300±725	20-3150	1350±843.5	100-4300	875	***<0.001
Indirect costs	600±200	150-6000	950±700	300-2800	206.500	*** <0.001

Medial, IQR and Range are in INR; *MW-U=Mann-Whitney test, ** p<0.05 Significant, *** p<0.001 highly significant

Table 3: Association of Socio-demographic variables of JSSK beneficiaries with out of pocket incurred in government facility

Socio-demographic Variables and it's Category	n=253	#OOPE(in INR) Median \pm IQR	Range (in INR)	**MW-U test	P value
Education					
No formal education	39	300 \pm 746.25	50-3150	4224.00	0.45
Up to middle school	111	300 \pm 837.5	30-4350		
High school and above	103	380 \pm 962.5	20-3450		
Occupation					
Housewife	227	300 \pm 855	20-4350	2203.50	0.89
Working	26	270 \pm 925	50-3450		
Caste					
ST/SC	94	280 \pm 600	50-4350	4895.0	*P<0.05
Others	159	500 \pm 900	20-3450		
SES***					
Up to III	34	300 \pm 620	30-4350	2998.50	0.94
IV+V	219	300 \pm 915	20-3450		
Parity					
Primiparous	130	500 \pm 940	20-4350	5811.00	0.25
Multiparous	123	300 \pm 750	40-3260		
Type of family					
Nuclear	178	265 \pm 592.5	30-3150	3978.00	*P<0.05
Joint	75	460 \pm 955	20-4350		
Distance of delivery hub (in Kms)					
\leq 10 kms	141	200 \pm 300	20-2100	3452.00	*P<0.001
>10 kms	112	900 \pm 1000	30-4350		

MW-U=Mann-Whitney test, *P<0.05=Significant, *SES=socioeconomic scale as per Modified B.G Prasad Scale 2015(Based on per capita monthly income in Indian rupees (CPI 261.4/2015), #OOPE=Out of pocket expenditure in Indian national rupee.

Mothers opted medical college and district hospital for institutional delivery, almost 100 % of mothers incurred expenditure in one or other components of JSSK during hospitalization. The median total direct cost was also highest INR 1050 in medical college followed by district hospital (INR 235). (Table No-01)

In the present study when travel expenditure was compared among different type of government facility, highest amount of expenditure was incurred by those mothers opted district hospital (INR 350) and medical college (INR 300). This difference was statistically significant ($p<0.05$). (Table no-01)

As far as spending on medicine is concerned, the median cost of expenditure (INR 1100) was highest among mothers who went to sub-health centre (SHC) for delivery followed by medical college (INR 500). (Table no-01)

Informal payments in the form of cash give to hospital staff also create financial burden on family during delivery. the median cost for the same was highest at sub centre (INR 800) then at medical college (INR 500) and district hospital (INR 450). No such informal payment was made by beneficiaries in Community health centre. This difference was highly significant statistical ($p<0.001$). (Table no-01)

In this study we observed that majority of mothers got free meal during stay from the hospital under

JSSK but mothers had to spend money on extra food other than JSSK. The median cost for this was more in medical college (INR 80) than in district hospital (INR 60) followed by PHC (INR 50) and CHC (INR 40). The possible reason could be longer duration of stay in medical college and district hospital and as all the study participants belongs to rural area, so mothers and their family members had to depend on food purchased from the market specially when admitted in medical college and district hospital. This difference was statistically significant ($p<0.05$). (Table no-01)

A significant difference was observed in out of pocket expenditure incurred by mothers in public facilities according to type of delivery i.e. normal or c-section delivery. The median cost of expenditure for c-section delivery (INR 1350) was almost four times more than normal delivery (INR 300). (Table No-02)

In the present study, it was observed that mode of delivery does not affect amount incurred during travel to health facility. The median cost on transport to health facility was same irrespective of mode of delivery. A significant difference was observed in case of expenditure on drugs ($P<0.001$). In normal vaginal delivery cost incurred for medicine (INR 450) was significantly low when compared to c-section delivery (INR 700). It was also found that spending on extra food other than JSSK

available food is higher on c-section (INR 225) than on normal deliveries (INR 50). (Table No-02)

Mothers with higher education i.e high school and above were more likely to have more direct OOPE (INR 380). Housewife and primipara incurred more direct cost during stay for delivery. Women belongs to SC/ST had low median direct cost expenditure when compared to women of other castes (general and OBC). Delivery hub beyond 10 kms of residence was associated with higher direct cost of expenditure (INR 900). (Table No-03)

DISCUSSION

This study described that mothers received the benefits under JSSK in public facility, though majority of mother incurred out of pocket expenditure in drugs, consumables, transport and food.

In this study, the median total direct cost incurred during hospitalization was INR 300. A similar study conducted by Tyagi et al in Sirmaur Himachal Pradesh reported median expenditure of INR 210 while finding of a study by Suresh Sharma and Manish Bothra in various districts of Delhi was in contrast to present study and overall total average medical cost incurred by mothers was INR 1493.^{8,9} National Family Health Survey-4 in the year 2015-16 (NFHS-4) reported average out of pocket expenditure per delivery in public health facility in India was Rs 3198 while in Chhattisgarh it was Rs 1480.¹⁰

Maximum median expenditure during delivery was for blood transfusion (INR 1050), this may due to non availability of required blood group or donor for exchange. Median expenditure on medicine among all JSSK beneficiaries was INR 550, and the median cost was highest who opted subcentre for delivery (INR 1100) followed by medical college (INR 500). The possible reason could be non availability of medicine at hospital supply which compels beneficiaries to purchase it from market.

Apart from the hospitalization, transport expenditure was also incurred by almost 40 % of the mothers and the other 60 % mothers got transport benefit as per the guidelines of JSSK, however OOPE was incurred by those who either not called for service or called but not got response from call centre or those for whom ambulance reached late after calling. 102/Mahatari Express is the designated vehicle in Chhattisgarh under JSSK for cashless transport of pregnant mothers for institutional delivery. Median expenditure incurred for transport among all JSSK beneficiaries was INR 200. The Coverage Evaluation Survey 2009 (CES 2009) reported mean expenditure for transporting pregnant women to facility in India was Rs192 which is

similar to present study.¹¹ But Tyagi et al reported median cost for transport either to or fro from the facility was double (INR 420) then the present study.⁸ Possible reasons for low expenditure for transport might be vicinity of study area to Raipur, capital city of Chhattisgarh state where facility for tertiary care is present in district hospital and medical college hospital. However, for transport service, expenses was more who went to district hospital and medical college for institutional delivery and this is in accordance to the study done by Mondal et al who stated higher median transport cost for medical college (INR 300) followed by block PHC (INR 50).¹²

The present study showed JSSK beneficiaries who went medical college for institutional delivery had overall higher median total direct OOPE. This is in accordance with the study done by Mondal et al in rural community of Bankura, West Bengal which showed direct cost were higher on medical college (INR 900) than PHC (INR 205).¹²

In this study, burden of OOPE by JSSK beneficiaries was higher for C-section than normal delivery. A study done by Modugu et al in the year 2012 reported stated mean OOP expenditure of normal delivery in a public health institution was least (Rs,381) in Daman and Diu and highest in Manipur (Rs 3984) with a national average of Rs.1624. Mean OOPE for c-section in a public institution was Rs 5935, ranging from Rs.678 in Daman and Diu to Rs 13165 in Uttarakhand.¹³ These deliveries despite occurring in public health institution create much financial burden on family. This finding is in contrast to the present finding, the possible reason could be due to implementation of JSSK in public facilities which reduces the OOPE during delivery. The findings of this study suggest that JSSK successfully help in reducing the OOPE of mothers and their family opting the public health facility for delivery.

Higher total direct cost for C-section delivery in government facility was mostly contributed by cost of drugs followed by food. Model et al reported that expenditure on medicine/drugs in government facility was significantly high in case of C-section delivery when compared to normal delivery which is in accordance to the present study. However, none of the mothers incurred expenditure for admission, stay and investigations in a study by Mondel et al which is similar to present study.¹²

A cross sectional study done to know cost of institutional delivery in Bankura, West Bengal showed that direct cost was highest among women of the general caste and OBC. Scheduled caste/scheduled tribe women had lowest direct cost, Homemaker, primipara incurred more direct costs which is simi-

lar to findings of present study.¹² In this study mothers who had to travel more than 10 kms to reach delivery centre had higher OOP than their respective counterpart while study in Bankura stated Delivery hub beyond 5 km of residence was associated with higher direct costs.¹⁵ Women with higher education were more likely to have more OOP expenditure, this finding of present study was same as that of Mondal et al.¹²

Modugu *et al.* also reported that women of the general caste, richest quintile and those having higher education were more likely to have higher OOP expenditure.¹³ Higher direct costs in case of primipara were also noted.^{7, 14}

CONCLUSION

JSSK is programme under the umbrella of National Health mission to assure free cashless services to all pregnant mothers and sick infants to reduce economic barrier accessing public health facility for childbirth. Still after five years of implementation, this program is unable to meet its desired objective of reducing the expenditure of pregnant females in public health facility. The major expenditure was contributed by medicine, food and transport. Lack of human resource, poor infrastructure of health facility and irregular and inadequate supplies of medicine compels beneficiaries to incur huge cost during institutional delivery. This shows government expenditure on the scheme is inadequate, and should be address by judicious allocation of resource (including Fund) to improve efficacy of JSSK.

Limitations of the study: One major limitation is recall bias about expenditure in the absence of documentary evidence in some case for a period of 12 months incurred by mother during delivery.

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