RESEARCH BRIEF

Impact of *Janani Shishu Suraksha Karyakram* on Out-of-pocket Expenditure among Urban Slum Dwellers in Northern India

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Objective: To assess the impact of *Janani Shishu Suraksha Karayakaram* (JSSK) on out-of-pocket expenditure during perinatal period in an urban slum area of Chandigarh, India. **Methods:** Data on out-of-pocket expenditure were collected retrospectively from 425 women who gave birth during June 2010 to June 2012. **Results:** Out-of-pocket expenditure for delivery decreased from Rs. 5342 to Rs. 3565 between pre and post-intervention period. There was no significant difference in catastrophic health expenditures between pre-JSSK (21.2%) and post-JSSK (15.6%) periods (*P*=0.15). **Conclusion:** Strengthening of implementation of JSSK is required to ensure universal access for natal care.

Keywords: Cash transfer, Economic evaluation, Neonate.

India has a high burden of maternal and infant mortality [1]. Majority of maternal deaths can be prevented through basic and emergency obstetric care during delivery. Appropriate medical attention at time of delivery can prevent 75-80% of total maternal deaths [2]. Similarly, about 43% of total under-five mortality occurs in the neonatal period which is preventable with timely treatment [3]. However, there is low utilization of public and private health facilities owing to high out-of-pocket expenditure [4-7].

In order to improve financial access to institutional deliveries, Government of India launched free delivery scheme (*Janani Shishu Suraksha Karyakaram*) in public health facilities, and for any medical treatment of sick neonate upto 30 days of birth. We undertook this study to assess the impact of this cashless delivery scheme on out-of-pocket expenditure for institutional delivery in an urban slum of Chandigarh, India.

METHODS

All women who gave birth during the period from June 2010 to June 2012 in an urban slum of Chandigarh were enrolled for study. The period from June 2010 to September 2011 was considered pre-intervention as there was no implementation of JSSK scheme, while October 2011 to June 2012 was post-intervention period as JSSK scheme was implemented during this period.

Data were collected retrospectively over 3 months from August 2012 to October 2012. A total of 233 and 192 women were enrolled in pre-and post-JSSK groups, respectively. The study was approved by Institutional Ethics Committee of Post Graduate Institute of Medical Education and Research, Chandigarh. Written consent was obtained from study subjects.

A three part interview schedule was developed. First part elicited socio-demographic information and obstetric history. The second part elicited detailed information regarding out-of- pocket expenditure during perinatal period. It included information on OOP expenditure during antenatal care, delivery, routine check-up of neonate, treatment for sick newborn and hospitalization of neonate.

Mean out-of-patient expenditure for antenatal care and delivery were compared for statistical significance using t-test at 5% significance level. Households were ranked by wealth status into quintiles, based on per capita income levels. Bottom three quintiles were merged and categorized as poor; while the top two quintiles were merged, and labelled as rich.

We computed prevalence of catastrophic health expenditure (CHE) for delivery as an indicator of financial risk protection for maternal health care. This was estimated as any household which incurred an expenditure of more than 10% of total consumption expenditure of the household. Logistic regression was used to estimate the odds of incurring CHE during post-JSSK period as compared to pre-JSSK period, after controlling for education, occupation, caste, religion and wealth status of the household.

RESULTS

A total of 290 and 230 women delivered during pre- and post-JSSK periods, of which we collected data on 233 (80%) and 192 (83%) women who gave birth during pre- and post-JSSK period, respectively. Majority of these women were Hindus, in the age group of 21-30 years, belonging to schedule caste, and with a family income of less than Rs. 10000/ month **(*Web Table* I)**. There was no statistically significant difference in obstetric history of women delivered in pre- and post-JSSK periods in terms of parity, type and place of delivery.

Mean out-of-patient expenditure (public and private institutions) for antenatal care varied from Rs. 4951 (US$ 83.43) to Rs, 4892 (US$ 82.44) between pre- and post-JSSK period, respectively (*P*=0.9) (***Table* I** and ***Web Table* II**). Statistically significant difference (*P*= 0.001) was observed in overall expenditure for women who gave birth to a baby in public sector health facility during pre-JSSK (Rs. 5342) and post-JSSK period (Rs. 3565) **(*Table* I** and ***Web Table* III)**. A significant reduction was observed for direct out-of-patient expenditure (*P*=0.001), while a statistically insignificant difference was observed for indirect cost (loss of wage, attendant stay etc).

There was a statistically insignificant (*P*=0.151) reduction in prevalence of catastrophic health expenditures (CHE) for delivery in public sector health facility between pre-JSSK (21.2%) and post-JSSK periods (15.6%) (***Web Table* IV**). After controlling for confounders such as religion, caste, employment status and wealth group, there was no difference in the odds of incurring CHE in post-JSSK period as compared to pre-JSSK period (OR=2.05; 95% CI= 0.9-4.7) (***Table* II**). However, the prevalence of CHE reduced from 40% to 23% among those belonging to the bottom three wealth quintiles, which was statistically significant (*P*=0.01) (***Web Table* IV**). The most significant predictor for incurring CHE was delivery by cesarean section (OR=40; 95% CI=14-118).

DISCUSSION

Overall we found a statistically significant (33%) reduction in out-of-patient expenditure on delivery before and after the introduction of free scheme for delivery and neonatal care in public hospitals. There was no reduction in indirect costs for natal care or out-of-pocket expenditure on antenatal care which was not part of the JSSK scheme. This strengthen the attribution of JSSK scheme towards reduction in out-of-pocket expenditure for institutional delivery in public sector institutions.

Despite a 23% overall reduction in out-of-pocket expenditure and one third reduction in public sector hospitals, our study points to persistence of out-of-pocket expenditure on account of medicines and investigations, even in public sector hospitals. A major reason for the same is poor availability of drugs at public health facilities. A recent evaluation in Punjab and Haryana reported that the average availability of drugs in public sector health facilities varied from 45%-51% [8].

TABLE I OUT-OF-POCKET (OOP) EXPENDITURE (RUPEES) FOR ANTENATAL AND DELIVERY CARE IN PUBLIC SECTOR FACILITIES IN CHANDIGARH

Characteristic	*Strata*	*OOP for antenatal care*		*OOP for delivery*	
		Pre-JSSK	*Post-JSSK*	*Pre-JSSK*	*Post-JSSK*
		Mean (SE)	*Mean (SE)*	*Mean (SE)*	*Mean (SE)*
Religion	Hindu	5191 (518)	4631 (388)	5752 (381)	4052 (305)
	Others	3875 (725)	5941 (1557)	5406 (1280)	5465 (1500)
Social Group	General	4302 (554)	4806 (664)	5475 (655)	4696 (670)
	OBC	6154 (932)	3627 (1042)	7604 (1574)	4339 (827)
	SC/ST	5243 (693)	4993 (520)	5552 (442)	4141 (398)
Education	Upto Middle	4412 (1231)	2983 (407)	4999 (658)	3999 (509)
	Matric and Above	5232 (574)	5228 (550)	5599 (440)	4321 (430)
Mother's occupation	Employed	5097 (1693)	8440 (808)	7992 (1695)	4134 (809)
	Unemployed	5100 (502)	4575 (367)	5628 (373)	4211 (332)
Socio-economic status	Poor	5656 (1273)	3956 (521)	6073 (701)	3585 (316)
	Non Poor	4833 (380)	5484 (548)	5560 (423)	4747 (520)
Overall	Mean	4631 (452.3)	4337 (370.4)	5342 (344)	3565 (244)

WHAT THIS STUDY ADDS?

- *Janani Shishu Suraksha Karyakram* – a cash transfer scheme of Government of India – has resulted in reduction in out-of-pocket expenditure for childbirth.

TABLE II PREDICTORS FOR CATASTROPHIC HEALTH EXPENDITURE FOR DELIVERY IN PUBLIC HEALTH FACILITIES IN CHANDIGARH.

Characteristic	*OR (95% CI)*
JSSK	2.05 (0.90-4.66)
Religion (Hindu)	0.61 (0.16-2.37)
Occupation (employed)	3.34 (0.73-15.30)
Education (less than matriculate)	0.923 (0.38-2.27)
Caste (General)	0.79 (0.17-3.79)
Type of delivery (normal)	40.90 (14.14-118.30)
Socio economic status (poor)	20.01 (6.61-60.5)

Another area where pregnant women have to incur expenditure is diagnostics due to non-availability of radiological investigations (ultrasound); the availability of reagents for blood investigations also remains patchy. Thus the success of the JSSK scheme also depends on overall health system strengthening. Finally, another reason for high OOP expenditure among public sector hospitals in Chandigarh was that one of the tertiary care hospital which serves as the referral centre for complicated cases was not imparting benefits of JSSK scheme to women receiving natal care. Hence the implementation of JSSK needs to be further strengthened in order to improve access of public sector hospitals for curative and natal care.

Pre- and post-intervention study design employed by us without any control area limits causal inference. No reduction in out-of-patient expenditure for antenatal care or indirect costs of delivery during the concomitant period strengthens the argument for association of JSSK scheme with the reduction in direct out-of-pocket expenditure on delivery. We had a long recall period which could lead to underestimation of out-of-pocket expenditure, especially in pre-JSSK period. This implies that the reduction in out-of-pocket expenditure as observed in the study could represent some degree of underestimation of true impact.

We conclude that introduction of JSSK appears to have reduced the out-of-pocket expenditure; the extent of risk protection is however inadequate. Moreover, despite the one-third reduction in out-of-pocket expenditure, overall levels remain high. More rigorous implementation of JSSK may further reduce the financial hardships faced by households, improve access and utilization of institutional deliveries and contribute towards reduction of maternal and neonatal mortality.

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