

Original Article

EFFECT OF 'JANANI SHISHU SURAKSHA KARYAKRAM' - A GOVERNMENT HEALTH BENEFICIARY SCHEME - ON ADMISSION RATE AND CLINICAL OUTCOME IN NICU IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Neonatal deaths account for a major proportion of child deaths globally. Government of India has launched JSSK scheme on 1st June 2011 with an aim to reduced maternal mortality rate and infant mortality rate (MDG).

Method: A retrospective observational study was carried out to know the effect of JSSK scheme on work load, availability of expensive treatment modality and effect on outcome. Study was carried out by comparing one year time period between SEP- 2011 to AUG 2012 (pre-JSSK year) and SEP-2012 to AUG-2013 (post-JSSK year, as it was implemented from Sept-2012 in the study hospital).

Results: After JSSK scheme institutional deliveries increased by 20.32% and registered deliveries by 20.77%. NICU admission rate was increased by 21.96% with a significant increase in preterm admission by 86.89%. Use of expensive modern treatment modalities were increased by 3.97%. Neonatal death rate is reduced by 1.32% with significant decrease in preterm mortality by 12.99%. Most common causes of death in preterm in pre-JSSK period were septicaemia (41.76%), RDS (27.47%) and aspiration pneumonia (6.59%). While in post-JSSK period the most common causes were RDS (51.04%), sepsis (38.54%) and aspiration pneumonia (4.1%).

Conclusion: JSSK is successful in raising the number of institutional deliveries, booked obstetric practice(hence a better antenatal care) and improved access to level III NICU care among the poor resulting in a significant decrease in preterm mortality rates.

Keywords: JSSK, NICU, neonates

ABBREVIATIONS

JSSK : Janani Shishu Suraksha Karyakram
MDG : Millenium Developmental Goals
RDS : Respiratory Distress Syndrome
MAS : Meconium Aspiration Syndrome
IMR : Infant Mortality Rate
NMR : Neonatal Mortality Rate
NRHM : National Rural Health Mission
JSY : Janani Suraksha Yojna
MoHFW : Ministry of Health & Family Welfare
PICC : Peripherally Inserted Central Catheter
PT : Pre-term
FT : Full-term

INTRODUCTION

Infant mortality rate (IMR) is an indicator of health as well as accessibility of health care services to the people. Reducing maternal and infant mortality is a key goal of reproductive and child health programme under NRHM. (MDG⁷).

With immense effort from the government and improvement of health care facilities, IMR in India has steadily declined from 58/1000 live births in 2004 to 50/1000 live births in 2009^{1,2}. However, there is slow progress in reduction of NMR(neonatal mortality rate) which has declined from 37/1000 live births in 2004 to 34/1000 live births in 2009.^{1,3,4} Preventable modalities such as hypothermia, asphyxia, infections and respiratory distress continue to remain the main cause of mortality in the neonatal period^{1,3,6,8}.

Under the NRHM, THE JSY(Janani Suraksha Yojana) was introduced by MOHFW(ministry of health & family welfare) , which brought about a phenomenal rise in institutional delivery rates (73%; CES2009). Although, more than one crore women were benefitted, the out of pocket expenses for the pregnant women & their families was still quite high.

JSSK launched on 1st June, 2011 was an initiative to assure free services to pregnant women and sick neonate accessing public health institutions. The scheme envisages free and cashless services to pregnant women throughout pregnancy and also treatment of sick newborns up to 30 days after birth in all level III NICUs in government institutions.⁵

Being a Municipal corporation teaching institute having maternity ward and tertiary care neonatal unit, JSSK was implemented at the study institute from Sept.-2012. Now after the successful implementation of the JSSK scheme for more than 12 months this study was undertaken to evaluate the impact of the programme on institutional deliveries and the work pattern of NICU in terms of admission rate, referral and mortality.

OBJECTIVES

The objectives of the study were to study the change in institutional delivery rates after JSSK; and to study the change in work pattern in NICU after JSSK, including admission demographics, utilisation of expensive treatment modalities and outcome.

METHOD

This retrospective observational study was done at a tertiary care NICU of a teaching institute. The study was carried out by comparing one year time period between SEP-2011 to AUG 2012 (pre-JSSK) and SEP-2012 to AUG 2013 (post-JSSK).

All the data were manually transcribed. Total number of deliveries per month during study period with number of normal delivery and caesarean sections were recorded along with emergency and registered patients. Admissions in NICU during the study period were documented with their demographic data such as maturity, birth weight, gender and reason for admission. As it is a tertiary care teaching NICU, all neonates were closely examined by an expert clinician and managed as per standard protocol. Outcome of neo-

nates were recorded in detail. Availability of expensive treatment modalities such as surfactant, PICC, immunoglobulins was compared in pre and post scheme period. Statistical analysis was performed using standard statistical software.

RESULTS

Total deliveries have increased after implementation of the scheme particularly after November 2012 (3435/4133). This delayed rise may be attributed to the time taken for the general public awareness of the scheme. Post JSSK, patients are seeking medical help earlier in pregnancy as reflected by an increased number of registered deliveries by 20.77%. Also what is noticeable is that the ratio of ND to CS is not affected as much in pre and post scheme time period.

Total number of NICU admissions has increased by 21.96% with a rise of 28.41% in admission rate of institutional delivered neonates. Admission rates of referred extramural neonates were 26.36% and 22.46% in the pre and post JSSK period respectively. Male to female ratio in pre-JSSK period was 52.13:47.87. In post-JSSK period it was almost reversed (47.77:52.33). Comparing admissions as per maturity, FT were 64.37% in pre JSSK and 45.98% in post JSSK period where as PT admissions were 35.26% and 54.02% in pre and post JSSK period respectively. Neonatal death rate is decreased by 1.32% in post scheme period.

After implementation of JSSK scheme, the use of expensive modalities of treatment like surfactant, PICC, immunoglobulins mainly used in pre-terms, RDS, septicemia patients have increased significantly from 4.26 % of total PT admissions in pre-JSSK period to 11.64% in post-JSSK period. Previously the indications for such modalities probably were the same, but because of the financial constraints of patients relatives, their use was limited. Availability of such essential indicated modality has positive impact in outcome of patients in terms of mortality and morbidity.

Table 1: Number of deliveries Pre-JSSK and Post JSSK Period

Months	Pre JSSK (2011-2012)							Post JSSK (2012-2013)							
	Normal Delivery			Caesarian section			Total	Months	Normal Delivery			Caesarian section			Total
	Total	Em*	B#	Total	Em*	B#			Total	Em*	B#	Total	Em*	B#	
Sep11	214	64	150	103	41	62	355	Sep12	213	53	160	107	43	64	320
Oct11	231	69	162	88	35	53	351	Oct12	229	57	172	110	44	66	349
Nov11	191	48	143	84	34	50	293	Nov12	255	64	191	131	52	79	386
Dec11	219	66	153	107	43	64	326	Dec12	261	66	195	86	34	52	347
Jan12	202	61	141	63	25	38	265	Jan13	256	64	192	97	39	58	353
Feb12	195	67	128	85	34	51	230	Feb13	190	48	142	106	42	64	319
Mar12	187	60	127	100	44	56	277	Mar13	196	49	147	129	53	76	325
Apr12	172	53	119	72	29	43	216	Apr13	208	52	156	127	38	89	335
May12	140	42	98	98	39	59	238	May13	210	53	157	154	46	108	364
Jun12	182	55	127	81	32	50	263	Jun13	196	49	147	138	48	90	334
Jul12	219	66	153	78	31	47	297	Jul13	213	54	159	129	39	90	342
Aug12	223	67	156	101	41	60	324	Aug13	224	53	171	135	41	94	359
Total	2375	718	1657	1060	428	633	3435	Total	2651	662	1989	1449	519	930	4133

*Emergency; #Booked

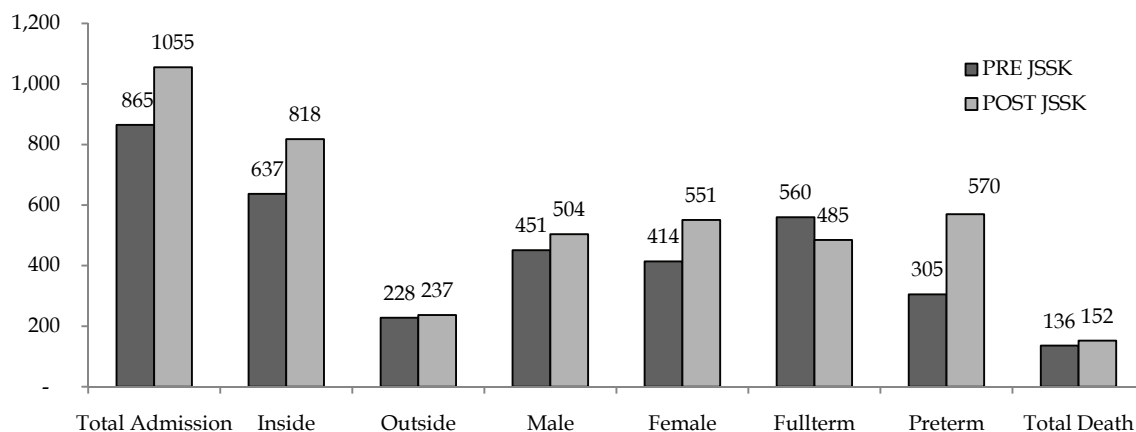


Figure No 1: Demographic data of NI CU in pre and post JSSK periods

Table 2: Use of Expensive Modalities of Treatment in NICU

Month	Surfactant		PICC		Immunoglobulins	
	Pre	Post	Pre	Post	Pre	Post
Sep	0	0	0	1	1	0
Oct	0	0	1	7	0	0
Nov	0	1	0	3	1	1
Dec	1	0	0	2	0	1
Jan	0	0	1	3	1	0
Feb	0	0	0	0	0	2
Mar	1	1	0	1	1	2
Apr	0	3	1	1	1	2
May	0	1	0	1	0	2
June	1	2	1	2	0	2
July	1	4	0	1	0	1
Aug	0	4	0	8	0	0
Total	4	16	4	30	5	13

Mortality rates in neonates were 15.72% in pre-JSSK and 14.40% in post-JSSK period which showed a favourable decline of 1.32%. Amongst FT, death rate was 8.03% and 11.54% in pre and post JSSK period respectively. In PT, death rate significantly decreased by 12.99% (from 29.83% to 16.84%). Death rate of institutional delivered neonates remained unchanged (13.65%/13.32%, pre/post), while there was a decrease

in death rate of neonates referred from outside (21.49%/18.14%;pre/post).

Most common causes of death in PT were sepsis (41.76%), RDS (27.47%) and aspiration pneumonia (6.59%) in pre JSSK period. In post JSSK period RDS (51.04%) was the commonest followed by sepsis (38.54%) and aspiration pneumonia (4.10%).

Amongst FT, common causes of deaths were severe birth asphyxia (37.77%/42.85%), sepsis (35.51%/33.92%) and MAS (17.77%/10.71%) in pre and post JSSK period respectively.

DISCUSSION

After implementation of JSSK, number of institutional deliveries has significantly increased. This may be due to better public awareness, no charges for normal deliveries, caesarean section, transfer of mother home to health care facilities, primary health facilities to tertiary health facilities, hospital to home. Increase in registered delivery and hence proper antenatal care has direct impact on decreased death rates mainly amongst PT.

Table 3: Pre & Post JSSK Mortality Rate

A) Pre-JSSK mortality rate

Month	Total Admission	Total Death	Outside		Inside		Full Term		Pre Term	
			Admission	Death	Admission	Death	Total	Death	Total	Death
Sept11	70	9	18	3	52	6	51	3	19	6
Oct11	72	18	22	3	50	15	41	4	31	14
Nov11	61	12	12	6	49	6	32	3	29	9
Dec11	49	5	16	1	33	4	30	1	19	4
Jan12	55	12	19	6	36	6	34	5	21	7
Feb12	73	6	19	3	54	3	56	1	17	5
Mar12	78	11	20	3	58	8	55	4	23	7
Apr12	70	15	11	3	59	12	39	5	31	10
May12	90	16	24	8	66	8	57	4	33	12
Jun12	85	9	22	7	63	2	61	2	25	7
Jul12	85	13	21	2	64	11	62	8	22	5
Aug12	77	10	24	4	53	6	42	5	35	5
Total	865	136	228	49	637	87	560	45	305	91

B) Post-JSSK mortality rate

Month	Total		Outside		Inside		Full Term		Pre Term	
	Admission	Death	Admission	Death	Admission	Death	Total	Death	Total	Death
Sept11	70	9	18	3	52	6	51	3	19	6
Oct11	72	18	22	3	50	15	41	4	31	14
Nov11	61	12	12	6	49	6	32	3	29	9
Dec11	49	5	16	1	33	4	30	1	19	4
Jan12	55	12	19	6	36	6	34	5	21	7
Feb12	73	6	19	3	54	3	56	1	17	5
Mar12	78	11	20	3	58	8	55	4	23	7
Apr12	70	15	11	3	59	12	39	5	31	10
May12	90	16	24	8	66	8	57	4	33	12
Jun12	85	9	22	7	63	2	61	2	25	7
Jul12	85	13	21	2	64	11	62	8	22	5
Aug12	77	10	24	4	53	6	42	5	35	5
Total	865	136	228	49	637	87	560	45	305	91

Table 4: Causes of death in pre JSSK and post JSSK

	Pre JSSK	Post JSSK
Causes of death in Pre-term		
Sepsis	38	37
RDS	25	49
Aspiration Pneumonia	6	4
Others	22	6
Total	91	96
Causes of death in full-term		
Severe birth asphyxia	17	24
Sepsis	16	19
MAS	8	6
Others	4	7
Total	45	56

Admission rate of NICU has also increased with mainly PT admission. This may be due to in utero transfer of high-risk babies to tertiary care unit and free access for non affording beneficiaries. Attributing factors for significant decreased PT mortalities may be good ante natal care, institutional delivery, prompt treatment to problem and easy availability of life saving expensive modalities at no cost. Main causes for mortalities in PT were sepsis and RDS. While in FT, birth asphyxia, sepsis and MAS were the major culprit.

CONCLUSION

JSSK is definitely successful in increasing institutional deliveries, booked obstetric patients (thereby improving the antenatal care). It has also increased the NICU admission rate in level III government centres, with increased use of costly modern modalities across all socioeconomic strata. Increased preterm admission rate & reduced preterm mortality will have a huge impact on the NMR over the long run. However, the concerned level II & III govt. NICUs will have to be strengthened in terms of doctor- bed & nurse-bed ratios and decrease unnecessary transfers due to non-vacancy to magnify the effects of JSSK in the society.

Limitations: This was a record based cross-sectional study with its inherent limitations & hence certain biases arise. One year time period may not be sufficient to measure the actual effect of the scheme, particularly when the time period is immediately after the implementation. Further study for a longer duration would measure the effects of JSSK on NICU more accurately.

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