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RESEARCH ARTICLE

A REVIEW OF MATERNAL MORTALITY IN A TERTIARY CARE CENTER AND TO SEE THE DIFFERENCE BEFORE AND AFTER IMPLEMENTATION OF JSSY IN RAJASTHAN

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ABSTRACT

Background: MMR acts as a marker of general health of a country and is an indicator of risk of death once a woman becomes pregnant. **Purpose:** To review the effects of JSSY by evaluating the MMR and assessing the epidemiological aspects and causes of maternal mortality. **Methods:** Retrospective study included maternal mortality in the Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur from 1st Jan 2009 to 30th April 2014. All maternal mortality from 1st Jan 2009 to 30th April 2014. Data collection and analysis from vital statistic register and mortality records were done. **Main Results:** MMR from Jan. 2009 to April 2014 was 238/100000 live births. MMR before JSSY (Jan. 2009 to Aug. 2011) was 265 and MMR after JSSY (Sep. 2011 to Apr. 2014) was 218. Mortality was more in rural area (64.74%) with lower socioeconomic class (63.58%). Haemorrhage (28.9) being the commonest direct cause of mortality while Anaemia (19.08%) being indirect cause. **Conclusion:** MMR in our state is still very high. So, there is need to improve maternal and child health care. Though JSSY helped us to improve maternal and child health care system and bring down maternal mortality a bit.

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INTRODUCTION

According to the World Health Organization (WHO), "A maternal death is defined as death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related to or aggravated by pregnancy or its management" (www.who.int/ healthinfo/statistics/indmaternalmortality/en). Almost half a million women die every year from complications during pregnancy and childbirth. The current maternal mortality ratio (MMR) in India (2011-2013) is *167/100,000*live births. These deaths are largely preventable (http://www.censusindia.gov.in/ 2011-common/Sample_ Registration_System.html). Reducing the maternal mortality ratio up to 109 by 2015 is one of the eight priorities of Millennium Development Goals (MDG) set by Member States of the United Nations (www. unmillenniumproject.org/goals). JSSY (Janani Shishu Suraksha Yojna) has been implemented by the Dept. of Medical, Health and Family Welfare of Govt. Of Rajasthan From 22nd Sept. 2011 as a part of National Rural Health Mission (NRHM) (rajswasthya.nic.in/JSSK.htm). This includes: Free institutional delivery (Vaginal or caesarean), Free medications, Free investigations (Blood, Urine, USG), Free food – On hospital stay 3 days for normal delivered and 7 days for caesarean deliveries, Free blood supply, Free transportation and referral system, Free treatment to all neonates up to 30 days of birth. The present study was done to calculate the maternal mortality rate in our hospital. To assess the epidemiological aspects and the causes of maternal mortality. To see the difference in maternal mortality and its various aspects after implementation of JSSY in Rajasthan.

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MATERIAL AND METHODS

Our Hospital is an urban, tertiary care centre. It gets a large number of referrals from maternity homes, Primary health centres from rural parts and District hospitals. The present study is a retrospective five years study, conducted in the department of Obstetrics and Gynaecology, S.M.S. Medical College, Jaipur from January 2009 to April 2014.

Table 1. Year wise maternal deaths, total live births and mmr

YEAR	MATERNAL DEATHS	TOTAL LIVE BIRTHS	MMR/100000 LIVE BIRTHS
2009	27	11544	233
2010	35	12064	290
2011	32	12235	261
2012	31	14476	214
2013	38	17029	223
2014	10	5191	192
TOTAL	173	72575	238

Table 2. Epidemiological characteristics of maternal deaths

Epidemiological Parameter	Number	% (Percentage)
1) age (years)		
≤ 19	15	8.67
20 - 24	*76*	*43.93*
25 - 29	56	32.37
≥ 30	26	15.02
2) literacy status		
Illiterate	*116*	*67.05*
Literate	57	32.95
3) residence		
Rural	*112*	*64.74*
Urban	61	35.26
4) socioeconomic status		
Lower	*110*	*63.58*
Upper lower	32	18.5
Lower middle	28	16.18
Upper middle	3	1.73
5) gravidity / parity		
1	*72*	*41.62*
2	22	12.72
3	38	21.96
4 & above	41	23.7

Maternal mortality ratio for the study period was calculated by using the formula-

$$MMR=\frac{\text{Total no of maternal deaths}}{\text{Total no of live births}}\times 100000$$

Mean maternal mortality ratio for the study period was calculated by calculating the yearly MMR of the entire study period. The data for the study was collected from the vital statistic register of labour room of our hospital for the total live births during above period and the mortality records of the same period.

RESULTS

The present study was done to see the difference and effects of JSSY implementation in Rajasthan in view of maternal mortality. Not only the difference in maternal mortality but its epidemiological aspects and causes were also analysed, to look for more improved program and their wider distribution for better pregnancy outcomes.

Following observations were noted in the present study:

The mean MMR from Jan / 2009 to Apr / 2014 was 238/100000 live births for this period. We also noted that MMR following JSSY implementation started decreasing and total live births increased. Hence JSSY definitely helped to increase the number of institutional deliveries in our hospital. (Shown in table no. 1). The epidemiological characteristics of maternal deaths are shown in table no. 2. In the present study most of dying women were of 20-24 years of age (43.93%) representing the peak of reproductive age group and their lack of knowledge about proper health check-ups and importance of family planning in their day to day life.

Most of the dying women were from rural area (64.74%) showing lack of awareness in rural areas about antenatal care even now a days. Majority of women were illiterate (67.05%) showing need for improvement of female education. Majority of maternal deaths were belonging to lower socioeconomic status (63.58%) as mostly were from rural and urban slums and illiterate. Thus illiteracy, lack of knowledge about health facilities, communication gap, lack of interest in health seeking & importance of family planning services and poor accessibility of health care facilities and breaks in the chain of transportation in rural areas play an important role in maternal deaths. These results of our study is comparable to the study conducted by Jadhav CA et al. (2013). Most of the dying mothers were primigravida (41.62%). As most of deaths were due to haemorrhage and hypertensive disorders of pregnancy. Majority of haemorrhages were because of atonic as well astraumatic PPH inprimipara patients and eclampsia was leading cause of death in hypertensive disorders which has more prevalence in primigravida. More than three quarter of dying mothers i.e. 87.86% were unbooked antenatal patients while only 12.14% were booked antenatal cases. Antenatal care is the basic need and right of all the pregnant women and is an indicator of health care services provided to pregnant women. Complications occur when due to lack of knowledge as well as interestthe patients have irregularor not at all antenatal visits and are referred or reported in critical conditions to tertiary care centres (Table no.3). Out of 173 deaths, 115 (66.48%) deaths were due to direct causes of pregnancy. Haemorrhage (28.9%) and hypertensive disorders of pregnancy (27.17%) constitute the major direct causes of maternal mortality while sepsis (4.62%) and uterine rupture (4.05%) also contributed significant numbers of maternal deaths. 58 (i.e. 33.52%) deaths were due to indirect causes complicating pregnancy.

Table 3. Maternal deaths and their antenatal supervision status

Year	Booked	Unbooked
2009	5	22
2010	5	30
2011	4	28
2012	3	28
2013	3	35
2014	1	9
Total No.	21	152
% (Percentage)	12.14	87.86

Table 4. Direct causes of maternal deaths

Cause of Death	Number	% (Percentage)
Hemorrhage	*50*	*28.90*
Hypertensive disorders of pregnancy	47	27.17
Sepsis	8	4.62
Uterine Rupture	7	4.05
Obstructed Labor	2	1.16
Uterine Inversion	1	0.58
TOTAL	115	66.48

Table 5. Indirect causes of maternal deaths

Cause of death	Number	%(percentage)
Anemia	*33*	*19.08*
Heart disease	13	7.51
Hepatic disease	7	4.04
Pulmonary disease	3	1.73
CNS disease	1	0.58
Acute Renal Failure	1	0.58
TOTAL	58	33.52

Table 6. Mmr before and after jssy

year	Number of maternal deaths	Total live births	Mmr/100000 live births
Jan/2009 – Aug/2011 *(*Before Jssy)	84	31719	265
Sep/2011 – Apr/2014 *(*After Jssy)	89	40820	218
difference	*↑ by 5.95%*	*↑ by 28.69%*	*↓ by 17.74%*

Anaemia (19.08%) being the most common indirect cause of maternal deaths in our study. Heart diseases (7.51%) also contributed for significant number of maternal deaths during pregnancy. These findings of our study were in accordance to the study by Bhaskar K Murthy et al. (Bhaskar, 2013). The MMR from Jan/2009 to Aug/2011 was 265 maternal deaths/100000 live births i.e. before the implementation of JSSY and MMR from Sep/2011 to Apr/2014 was 218 deaths /100000 live births i.e. after JSSY implementation. The result shows 17.74% decrease in MMR after application of JSSY.

Thus we saw that availability of better health care facilities, greater awareness and knowledge of health programmes, 24 hrs. Emergency, referral and transportation system helped us to bring down the maternal mortalities and saving not only mother's life but also future of the new born infants.

Conclusion

So it can be said that JSSY has definitely helped us to bring down the maternal mortality in our hospital. JSSY has helped in doing so by providing more intense and frequent antenatal check-ups as well as round the clock availability of emergency medications, health facilities and transportation and referral system. Early detection of various conditions complicating pregnancy also added to it. But we still need to improve to achieve the desired MMR of Millennium Development Goals by 2015. For the same we need to create more awareness about proper antenatal check-ups by means of education, health workers, media as well as mouth to mouth publicity and provide better health care to them who need it the most. As educating a woman means educating a family so awareness will be more extensive. Thus female education is one of basic requirement for global awareness about health facilities and health seeking behaviour. There is also need to work at grass root level by improving female education to create awareness among them about health and importance of proper and regular antenatal check-ups. Local health workers including Aanganwadi workers, ASHA (Accredited Social Health Activist) all should be trained properly to educate women about the various health programs and importance of family planning for their benefit as these are among them so effect will be more.

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