

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20160606>

Research Article

Maternal mortality at a government teaching hospital: a six year duration study

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Received: 15 February 2016

Accepted: 25 February 2016

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ABSTRACT

Background: The studies were to help generate information and knowledge regarding the causes of maternal deaths in an urban tertiary health care government hospital and how they can be prevented in a developing country like ours to achieve millennium development goal 5 (MDGS) at reducing the MMR by 75% over the period of 1990-2015.

Methods: A retrospective study done in the year of 2014 on 97 maternal deaths over a period of six years from January 2007 to December 2012.

Results: During the study period there were 16,534 deliveries, and 97 maternal deaths, giving a maternal mortality rate of 586/100,000 live births. Haemorrhage was leading cause of death. Most women died within 24 hours of admission and most of them were admitted in shock. The majority of the death occurred in the age group 20-30 years and in multigravidas.

Conclusions: The maternal mortality rate is much more than the national MMR. Haemorrhage was the leading cause of death followed by septicemia, both of them being preventable by adequate transfusion of blood and its components, delivery in a well-equipped hospital, early identification and prompt action, good antibiotic coverage, and early transportation.

Keywords: Maternal death, Maternal mortality rate

INTRODUCTION

Maternal mortality rate is the number of maternal deaths in a given period per 100,000 women of reproductive age during the same period. Maternal death is defined as the death of any women while pregnant or within 42 completed days of termination of pregnancy irrespective of the duration or site of pregnancy from any cause related to or aggravated by pregnancy but not from accidental or incidental causes. MMR averages at 27/100,000 births in developed countries to 480/100,000 births in developing countries. Global maternal mortality is at 529,000 women per year, of which only 1% deaths occur in developed countries worldwide, 99% occurred in the developing countries.² In India it has been observed

that there is an appreciable decline in the MMR from 677 in 1980 to 254 in 2004-2006 and to 212 in 2007-2009.^{1,2} India has MMR of average 254/100,000 live births.³ A large institutional based study of maternal mortality in teaching and non-teaching hospitals in India was done for a period of 2005-2007, in this study MMR was 96.29/100,000 live births.⁴

METHODS

Data for the present study included all the maternal deaths which occurred during the 5 year period from January 2007 to December 2012 in the department of obstetrics and gynaecology in a government teaching medical college, a referral hospital in the backward

region of Hyderabad-Karnataka. The hospital gets referral from district and primary health centers, rural and urban slums, maternity homes and polyclinics. The maternal mortality was computed and distribution of maternal deaths was classified based on various causes such as age, parity, delivery status, admission death interval and were correlated.

RESULTS

During the reference period from Jan 2007 to Dec 2012 there were a total of 16,534 deliveries and 97 maternal deaths, with MMR of 586/100,000 births.

Yearly distribution of deliveries, maternal deaths and maternal mortality are shown in Table 1.

Table 2 shows maternal death related to various factors. Out of 97 maternal deaths 88 (90.8%) occurred in the age group of 20-30 years. The maternal deaths in primi were 35 (36%) and in multis 62 (64%). 67 (69%) were from rural areas and PHC's and 30 (31%) from urban areas. 56 (57.7%) were referred from PHC, nursing homes, polyclinics and 41 (42.3%) were direct admissions to the hospital. 38 (39%) of the patients were admitted in shock. In 72 (74.2%) of patients the MD was in within 24 hours of admission, 22 (22.6%) maternal deaths were between 24 hours to 7 days and 3 (3.1%) maternal deaths was after 7 days.

Out 97 maternal deaths, 59 (60.8%) maternal deaths were postpartum. 49 (83.1%) maternal deaths were following vaginal delivery, 10 (16.9) following caesarean section. 24 (24.7%) were antepartum deaths and 14 (14.4%) were intrapartum deaths. Only 36 (37%) of patient received blood transfusion. Majority of maternal deaths were due to haemorrhage accounting to 35 (36%). Abruptio placenta was the leading cause of death in 18 patients followed by PPH in 15 and consumptive coagulopathy in 2. This was followed by septicaemia in 16 (16.1%) (Table 3).

In most of the patients severe anaemia was the indirect cause of death.

Table 1: Yearly distribution of deliveries and maternal.

Year	Deliveries	Maternal deaths	MMR/ 100,000 births
2007	1626	8	492
2008	1806	13	719
2009	2582	19	735
2010	2796	20	715
2011	3688	14	379
2012	4036	23	569

Table 2: Maternal deaths in relation to various factors.

		Number	Percentage
Age	≤19	4	4.1%
	20-30	88	90.8%
	>30	5	5.1%
Parity	Primi	35	36%
	Multi	62	64%
Area	Rural	67	69%
	Urban	30	31%
Admission	Direct	41	42.3%
	Referral	56	57.7%
Interval between admission and death	< 24 hours	72	74.2%
	24 hours to 7 days	22	22.6%
	> 7 days	3	3.1%
Maternal death	Antepartum	24	24.7%
	Intrapartum	14	14.4%
	Postpartum	59	60.8%
	Following vaginal delivery	42	71.2%
	Following caesarean section	10	16.9%
	Following home delivery	7	11.8%
Number admissions in shock		38	39%
Number of patients that received blood transfusion		36	37%

Table 3: Causes of maternal mortality from Jan 2007 to Dec 2012.

		Number	Percentage
Haemorrhage	APH-Abruptio placenta	18	18.5%
	Placenta previa	0	
	PPH-atonic	10	10.3+5.1%=15.4%
	Traumatic	5	
	Consumption coagulopathy	2	2.1%
Cardiac failure	Severe anaemia	8	8%
	Rheumatic heart disease	1	1%
	Postpartum cardiomyopathy	1	1%
Septicemia		16	16%
Eclampsia	Antepartum	8	8%
	Intrapartum	1	1%
	postpartum	1	1%
Pulmonary embolism		4	4%
Hepatic disorder		3	3%
Cerebrovascular accidents		4	4%
Rupture uterus		3	3%
Uterine inversion-with adherent placenta-without adherent placenta		2+1=3	3%
Adherent placenta		2	2%
Shoulder dystocia		2	2%
Blood transfusion reaction		2	2%
Ruptured ectopic pregnancy		1	1%
Incomplete abortion		1	1%
Cerebral malaria		1	1%

Table 4: Comparative MMR at different institution in India.

Institute	Year	MMR	Haemorrhage%	Hypertension%	Sepsis%	Anaemia%	Hepatic disease %
Pal Amitav et al BMC, Burdwan ⁶	1999 - 2004	623.46	9.72	50.56	18.17	4.18	1.48
Nikhil Purandare et al, OMH Jogeshwari (W), Mumbai ⁷	July 2000- June 2005	113.44	66.7	3.3	3.3	53.3	3.3
Puri Alka et al, Hindu Rao Hospital, Delhi ⁸	Jan 2003 - Dec 2006	690	12	18	24	13	14
Present Study	Jan 2007 - Dec 2012	586	36	10	16	8	3

DISCUSSION

In India most of the maternal deaths take place in institutions more so in government and non-government teaching hospitals. The zone wise institutional based data survey of maternal mortality rate where underreporting and non-sampling error is least, showed MMR is highest in east i.e. 853/100,000 births were as least in Kerala.⁴ This survey showed majority of women died around labour, delivery and immediate postpartum with hypertensive disorders and obstetric haemorrhage. In the

present study the leading cause of maternal deaths were due to obstetric haemorrhage followed by septicemia.

The comparative MMR at different institutions in India showed MMR variation from 113/100,000 births to 690/100,000 births (Table 4) and variation in Maternal deaths due to obstetrics haemorrhage, hypertension, sepsis, anaemia and hepatic disease. In present study maternal death due to hypertension and anaemia were less. However anaemia was a major indirect cause of maternal deaths. 10% of maternal deaths were due to cardiac failure due to severe anaemia in 8%, Rheumatic

heart disease 1%, postpartum cardiomyopathy 1%. About 39% of patients were brought in a state of shock. In almost 90% of patients the haemoglobin percentage was less than 6gm/dl. But only 37% of patients received blood transfusion as deaths occurred even before blood could be made available, or non-availability of blood or delay in transport. 74.2% of patients died within 24 hours of admission.

Table 1 showed gradual increase in hospital deliveries with gradual decrease in MMR. This was because of encouragement of hospital deliveries through government programmes like Janani Shishu Suraksha Yojana (JSY), providing Madilu kit for the newborn and incentives to the women and ASHA (accredited social health activist) worker. There is also quick transport of patients through 108 government ambulance which are stationed at a short distance to health care centers.

The death pre eclampsia and eclampsia is reduced in this study due administration of MgSO₄ by skilled Birth attendants (SBA's) and early reference.

CONCLUSIONS

The present study shows obstetric haemorrhage and septicaemia as leading cause of maternal death which were potentially preventable causes of death. The need for early detection of complication and management of emergency obstetric care services with availability of blood and its components even at the rural area and PHC's is to be seriously looked into to reach the goal of maternal mortality rate of 109/100,000 live births set by millennium development goals (MDG). Literacy and health awareness are also important factors for reduction in MMR. There should be vigorous mass campaign for community based maternal education programmes. Social bias towards blood donation and late referral are still the major contributory factors for maternal deaths. Early

recognition and judicious use of proper antibiotic is the mainstay due to septicaemia.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Malipatil P, Chaitanya VM. Maternal mortality at a government teaching hospital: a six year duration study. *Int J Reprod Contracept Obstet Gynecol* 2016;5:890-3.