

A STUDY OF MATERNAL MORTALITY AT A TERTIARY REFERRAL CENTRE

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ABSTRACT: OBJECTIVE: To study the various causative factors of maternal mortality and to chalk out recommendations to reduce the same. **METHODS:** A retrospective confidential review of maternal deaths was done from the hospital case records, death summary sheets and maternal death register for the period from 1st January to 31st December, 2012. **RESULTS:** It was found that a total of 53 deaths had occurred out of 14, 883 live births, giving a Maternal Mortality Rate (MMR) of 356/lakh live births, during the said study period. Preventable deaths accounted for 74% of deaths. Late referrals, un-booked mothers, lack of training and non-availability of blood and blood products at the primary referral units and lack of blood and blood products at the tertiary centre were identified as the main factors which can reduce the MMR. Maximum deaths were noted in the age group between 21-30, about 79%. 48% were multi-parous, 35% were primiparous and parity was not known in 17% of women. Hypertensive Disorders of Pregnancy (HDP) (28%) was the leading cause for deaths in this study. **CONCLUSION:** Hypertensive Disorders of Pregnancy (HDP) (28%), Haemorrhage (20%) and Sepsis (13%) were the major contributors of death under direct causes and Anaemia (13%) under the indirect cause of death, accounting for a total of 74% of preventable deaths.

KEYWORDS: Maternal Mortality Rate (MMR), Direct causes of MMR, Indirect causes of MMR, Preventable causes of MMR, Non-preventable causes of MMR, Hypertensive Disorders of Pregnancy, Haemorrhage, Sepsis, Anaemia.

INTRODUCTION: Pregnancy and child birth is a social obligation for a lady, a biological function that gives immense happiness to the mother and the family. Death of a pregnant woman is an unbearable tragedy for the family, child and the society. MMR is considered by experts as an index which depicts the quality of health delivery system of a defined geographical region or a country. India accounts for 16% of the world's population and takes the lead in contributing 20% to the world's MMR. One woman dies per minute in the world due to pregnancy related complications, which amounts to a whopping 6 lakhs of women per year who lose their life for fulfilling the obligation of continuing the human race, a huge sacrifice indeed, and 98% of deaths occur in the developing countries.⁽¹⁾ The tragic part of MMR is that 75% of them are preventable. The five major direct preventable factors identified are, haemorrhage, sepsis, HDP, obstructed labour and abortions and their related complications, the single indirect preventable major cause being anaemia.

The UNFPA has declared 8 Millennium Development Goals (MDG), out of which, MDG-5 states that MMR should be reduced by 75% by the year 2015 as compared to the MMR rates of the year 1990.⁽⁴⁾

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MMR in India has seen a steep downward trend from 750 in 1960 to being 400 in 1990.^(5,6) Much of it was planned and implemented by the Government of India as a National Health Policy and under National Rural Health Mission (NRHM). The aim set for 2015 is an MMR of less than 100/lakh live births. It has been difficult to achieve anywhere near this goal because of the geographical vastness, huge population involved and because of regional, religious and social diversity of the country, added to it are factors like resource crunch, poverty, lack of education, less number of trained personal to cater to women of High risk pregnancy. Almost all the data comes from hospital records which are either incomplete or at times the events leading to death are not recorded at all, yet these records throw light on the possible factors of MMR. The present study aims to identify the commonest causes of maternal mortality at the tertiary centre with an aim to evolve strategies to intervene at the right time and to avoid maternal deaths, especially the ones due to preventable causes which were adding to 74%.

MATERIALS AND METHODS: Retrospective anonymous confidential review of maternal deaths was done by studying the case records, death summaries, reference letters from the referring centres and from maternal death register between 1st of January to 31st of December, 2012 at Vani Vilas Hospital attached to Bangalore Medical college and Research Institute, Bangalore. Various factors contributing to maternal death like, age, parity, prior ANC (antenatal check-up) visits, booked or un-booked, referred/not-referred, late references, route of delivery-vaginal/LSCS (Lower segment Caesarean section) and the possible cause of death were thoroughly analysed.

RESULTS: The period under study recorded 53 deaths out of 14883 live births, amounting to a maternal mortality rate of 356 / lakh live births, out of which 74% were preventable, 50% were referred, 48% were multi-gravida, 64% died within 48 hrs. of admission and a maximum 79% were between 21 to 30 yrs. In this study, HDP with 28%, followed by Haemorrhage at 20% and sepsis with 13% are the major direct preventable contributors of MMR with 13% deaths due to anaemia being major indirect preventable cause. Among the direct not-preventable death, amniotic fluid embolism constitutes 5% and is difficult to or is almost impossible to prevent.

DISCUSSION: The MMR in the present study is 356/lakh live births, out of which, 40 (74%) were preventable, if we prevent these 40 women from dying, the MMR would be 87/ lakh live births. Poor general condition at the time of admission was the foremost contributing factor followed by late references. Age group between 21- 30 were the most susceptible in this study, 64% of deaths occurred within <48 hrs. of admission. HDP seems to be the major contributing factor along with low socio economic status with anaemia adding to it.

This preventable cause can be prevented by regular ANC and early intervention or by early reference to a hospital with facilities to handle the complications. The second preventable cause is haemorrhage, training the personal to diagnose and manage Ante partum haemorrhage (APH) and PPH and making blood and products available at the primary referral centres should be an effectively solution to this problem. The third factor is sepsis, which can be tackled by departing knowledge and training regarding best Infection Prevention Practices, early

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interventions, using appropriate antibiotics following culture sensitivity should tackle this factor. Anaemia can be addressed by inculcating the practice of intravenous sucrose administration into the ANC schedule instead of oral iron tablets.

Deworming should be made a compulsory part of ANC check-ups. Anaemia increases mortality in geometric proportions when combined with either haemorrhage or sepsis. Amniotic fluid embolism ends up in certain death, it needs more emphasis and stringent guidelines are needed to be chalked out for its management.⁽⁵⁾

CONCLUSION: The study tells us that, most of the deaths are preventable (74%). All it needs is adequate training and more stringent implementation of the policies by the policy makers to provide adequate training and facilities at the primary referral units, logistics from referral centre to higher centre (well implemented by providing 108 ambulance service) which can be improvised by providing a few ambulances fitted with ventilators in them and provide adequate quantities of blood and blood products and well equipped Intensive care unit beds with efficiently trained personal.

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Characteristics	Groups	Maternal deaths	Percent-age (%)
Referred/ Not - referred	Referred	27	50.94
	Not – referred	26	49.05
Age (in Years)	< 20	6	11.32
	21 to 30	42	79.24
	31 to 40	5	09.43
Parity	Primigravida	19	35.84
	Multigravida (2 to 4)	25	47.16
	Not known	9	16.98
Booked/ Unbooked	Booked	16	30.18
	Unbooked	10	18.86
	Not known	27	50.94
Route of delivery	Vaginal	26	49.05
	LSCS	8	15.09
	Undelivered	4	07.54
	Check curettage	1	01.88
	Not known	13	24.5 2
	Laparotomy	1	01.88
Admission death interval	< 48 hours	34	64.14
	> 48 hours	19	35.85
Causative factors	Preventable	39	74
	Not preventable	14	26

Table 1: Analysis of Various factors (n=53)

Features			Maternal Deaths	Percentage (%)
Causative factors	Preventable			74
	Direct	Hypertensive disorders of pregnancy	15	28.30
		Haemorrhage	11	20.75.
		Sepsis	06	11.32.
		Obstructed labour (rupture uterus) (peripartum hysterectomy)	01	1.88.
	Indirect	Anaemia	06	11.32
	Not preventable			26.
	Direct	Amniotic fluid embolism	03	5.66
	Indirect	Others	11	20.75

Table 2: Analysis of Causative factors

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Sl. No	Features	Number	Percentage (%)
1	Burns with sepsis	1	1.88
2	Cardiomyopathy	1	1.88
3	Acute pulmonary oedema	3	5.64
4	Acute fulminant hepatitis	1	1.88
5	Dengue with hepatitis B positive	1	1.88
6	Pulmonary embolism	3	5.64
7	Rheumatic heart disease with pulmonary hypertension	1	1.88

Table 3: Not preventable other causes

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