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Original Research Article

A Study of Causes of Maternal Mortality at a Tertiary Care Centre, Rajasthan, India

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ABSTRACT

This study, conducted at department of obstetrics & gynaecology, P.B.M. Hospital, Bikaner, Rajasthan, was meant to analyze the causes of maternal mortality at our centre with a motive to guide measures to lower maternal mortality and improve maternal outcomes.108 cases reported over a period of 3 years were studied retrospectively with respect to cause of mortality, admission-to-mortality interval, age, parity, booking status etc. and the contributory factors were systemically analyzed. 72.22% of maternal deaths were attributed to direct causes with obstetric haemorrhage being the commonest. Hypertension / eclampsia and sepsis were other important direct causes. Anaemia and cardiovascular diseases were important indirect causes. It was observed that many maternal deaths were due to preventable causes and we need to strengthen our maternal and child health services as well as literacy and general health awareness in order to improve maternal and foetal outcomes.

Keywords: Maternal deaths, maternal mortality, Causes.

INTRODUCTION

WHO defines maternal death as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the site and duration of pregnancy, from any cause related to or aggravated by the pregnancy or its management but not by accidental or incidental cause." [1] It is an important parameter of maternal and child health. India's Sample Registration System (SRS) reports a decline in maternal mortality ratio in India from 212 per 100,000 live births in 2007-09 to 178 in 2010-12 to 167 in 2011-13. This implies an estimated 44,000 maternal deaths every year in India. [2] Maternal deaths indicate a disparity and inequity in access to nutrition and health care services, particularly during pregnancy and childbirth and question our health infrastructure as well as social and literacy levels of females in any society.

This study was conducted at department of obstetrics & gynaecology, P. B.M. hospital, Bikaner, Rajasthan to analyze the risk factors and causes associated with maternal mortality with a motive to guide measures to lower maternal mortality ratio and improve maternal and foetal outcomes.

MATERIALS AND METHODS

108 cases of maternal deaths over a period of 3 years from 1st April 2012 to 31st March 2015 were analyzed retrospectively. Each case was studied with respect to cause of death, admission-to-mortality interval, age, parity, antenatal booking, literacy,

socioeconomic status, residence, mode of delivery etc. Direct, indirect, associated causes and socio-demographic factors attributing to maternal death were systemically studied.

OBSERVATIONS

- **Age distribution**

<21 years = 24 cases = 22.22%
21-25 yrs = 48 cases = 44.44%
26-30 yrs = 22 cases = 20.37%
31-35 yrs = 10 cases = 09.26%
36-40 yrs = 02 cases = 01.85%
>40 years = 02 cases = 01.85%

- **Parity distribution**

Primigravida = 38 =35.19%
Multigravida = 59 =54.63%
Grandmultigravida = 11 =10.19%

- **Residence**

Rural = 76 cases = 70.37%
Urban= 32 cases = 29.63%
Education levels
Illiterate= 79 cases = 73.15%
Literate = 29 cases = 26.85%

- **Antenatal Registration**

Un-booked = 98 = 90.74%
Booked = 10 = 09.26%

- **Socio-economic status**

Lower = 68 cases = 62.96%
Middle & Upper = 40 cases = 37.04%

- **Place of delivery**

Undelivered = 30 cases = 26.85%
Home delivery = 9 cases = 08.33%
Hospital other than ours = 14 cases = 13.89%
Our hospital = 53 cases = 49.07%
Unsafe abortion = 2 cases = 1.85%

- **Admission-to-mortality interval**

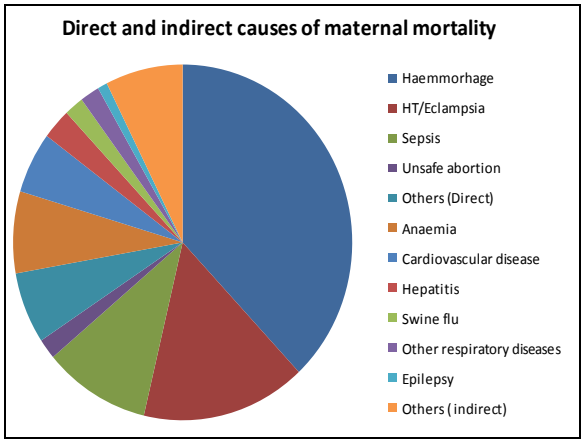
< 1 hour = 6 cases = 05.56%
1-6 hrs = 20 cases = 18.52%
6-12 hrs = 22 cases = 20.37%
12-18 hrs = 16 cases = 14.81%
18-24 hrs = 6 cases = 05.56%
24 hrs- 7 days = 33 cases = 30.56%
>7 days = 5 cases = 04.63%

- **Cause of death**

Out of the 108 maternal deaths reported over 3years, 72.22% were attributed to direct causes and 27.78% to indirect causes. Obstetric haemorrhage was the leading direct cause followed by hypertensive disorders of pregnancy/ eclampsia and sepsis. Important indirect causes were anaemia and cardiovascular disease. The details are shown in table 1 and figure 1.

Table 1: Direct and indirect causes of maternal mortality

Causes of maternal mortality						
Total number of cases-108						
	Direct causes = 78 (72.22 %)			Indirect causes = 30 (27.78 %)		
S. no	Cause of death	No. of cases	%	Cause of death	No. of cases	%
1	Haemmorhage	41	37.96	Anaemia	8	7.41
2	HT/ Eclampsia	17	15.74	Cardiovascular disease	6	5.56
3	Sepsis	11	10.19	Hepatitis	3	2.78
4	Unsafe abortion	2	1.85	Swine flu	2	1.85
5	Others	7	6.48	Other respiratory diseases	2	1.85
6	-	-	-	Epilepsy	1	0.93
7	-	-	-	Others	8	7.41



DISCUSSION

This study, conducted at department of obstetrics & gynaecology, P.B.M. hospital, Bikaner, Rajasthan was a retrospective analysis of 108 maternal deaths occurring over a period of 3 years from 1st April 2012 to 31st March 2015. 72.22% of cases were attributed to direct causes. Direct obstetric causes include causes directly related to pregnancy, labour and postpartum period. [3] Obstetric haemorrhage was the leading cause of

maternal deaths (37.96% cases). Postpartum haemorrhage was more common as well as important because it also has the shortest episode-to-death interval. Prevention demands immediate and efficient back-up for all deliveries. We need a target of 100% institutional deliveries. Hypertensive disorders of pregnancy (including eclampsia) and sepsis were other important direct causes leading to 15.74% and 10.19% of maternal deaths respectively. Early diagnosis, early referral and prompt management play key role in reducing mortality due to these causes. Deaths due to sepsis were usually related to puerperal infections, owing to infections acquired at the time of delivery or old untreated reproductive tract infections. 1.85%, i.e. 2 cases were due to unsafe abortions. This number can easily be nullified by provision of safe abortion services.

Studies report haemorrhage as the leading direct cause of maternal deaths worldwide followed by hypertensive disorders and sepsis. [4] Regions variations in estimates do exist. [4] There has been no major change in the causes of maternal mortality over years. [5] Deaths due to haemorrhage, anaemia, obstructed labour, hypertensive disorders and sepsis are surely preventable by upgrading antenatal services, early referral and treatment of high-risk cases, promotion of institutional deliveries and provision of adequate postnatal care. [5] Safe abortion services need to be ensured. [5] Various social factors were also contributory. Most of the maternal deaths were in 21-30 years age group. This could also be related to these years being the optimal and high- childbearing years of a female. Higher rates of maternal mortality were related to increasing parity, especially with shorter birth intervals. Illiteracy, poverty and lack of antenatal care were contributory factors, especially in cases coming from remote, rural areas. These variables were not only inter-related but also precede certain indirect medical causes like anaemia, making pregnancy and childbirth a risky venture. About 27% were antenatal and intranatal deaths and 73% were postnatal cases. 5.6% of maternal deaths occurred within 1 hour of admission indicating the critical condition at the time of admission. About 65% succumbed within 24 hours.

CONCLUSION

High maternal mortality is an indicator of low socio-economic status, low standard of living and inadequacy of health services in a community. It reflects lack of essential and emergency obstetric care. Underutilization of available services is also a contributory factor. Many maternal deaths were preventable. This calls for up gradation of maternal and child health programs coupled with an attack on social and cultural factors through active community involvement.

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