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A Study of Maternal Mortality

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ABSTRACT

Objective(s): To study and analyze the maternal deaths occurring due to various causes. **Method(s):** A retrospective study of maternal deaths occurring due to various causes and to find out the factors responsible for deaths. **Results:** There were a total number of 31,298 deliveries and 46 deaths. Out of 46 deaths, 34 (73.89% of all deaths) were due to direct causes and 10 (21.73% of deaths) were due to indirect causes and 2 (4.34% of all deaths) were due to unrelated causes. The most common direct causes for death were hemorrhage (26.08% of all deaths), pregnancy-induced hypertension and eclampsia (23.9% of all deaths). On the other hand, the most common indirect causes for death were anemia (13.04% of all deaths) and jaundice (6.52% of all deaths). **Conclusion(s):** Hemorrhage was the most common cause of death and the most vulnerable time for death was within the first 24 hours after delivery.

Keywords: Maternal death, hemorrhage, pregnancy-induced hypertension

Maternal morality is an index of obstetric care in the community. Healthcare extends from antenatal to postnatal period. The major causes of death are hemorrhage, pregnancy-induced hypertension (PIH) and anemia. Hence, a study was conducted to find out the causes of death and the factors responsible for it. The study also examined implementable interventions, if any, to reduce the maternal mortality.

MATERIAL AND METHODS

A retrospective study of maternal mortality due to various causes from 1st January, 2002 to 31st December, 2006 was carried out. Cases of maternal deaths were analyzed and factors responsible for death were scrutinized in detail.

RESULTS

In 7-year retrospective study, there were a total of 31,298 live births and 46 deaths resulting in a maternal mortality rate (MMR) of 1.46/1,000. Of the 46 deaths, 36 cases were unbooked (78.26% of all deaths).

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Table 1 shows that the maximum number of patients delivered via the vaginal route. Nine patients (19.56% of all deaths) required surgery. One case of triplets and another case of twins underwent lower segment cesarean section (LSCS).

Table 2 depicts the time interval from admission to death. As seen in the table, most deaths occurred within 24 hours of admission (63.05%).

Table 1. Outcome of Pregnancy

Outcome	Number of cases	Percentage (%)
LSCS	7	15.22
Laparotomy	1	2.17
Subtotal hysterectomy	1	2.17
Vaginal delivery	25	54.35
Undelivered	12	26.08
Total	**46**	**100.00**

Table 2. Admission to Death Interval

Time	Number of cases	Percentage (%)
<24 hours	29	63.05
25-72	10	21.74
73 hours to 7 days	2	4.34
>7 days	5	10.87
Total	**46**	**100.00**

Table 3. Causes of Death

Direct causes	Number of causes	%	Indirect causes	Number of causes	%	Unrelated causes	Number of causes	%
PIH & Eclampsia	**11**	23.91	Jaundice	3	6.52	Myocardial infarction	1	2.17
Hemorrhage	**12**	26.08	Anemia	6	13.04	Pneumonia	1	2.17
Atonic PPH	8		Heart disease	1	2.17			
Accidental	1							
Placenta previa	1		Others	0	0			
Retained placenta	2							
Sepsis	**5**	10.86						
Septic abortion	2							
Puerperal sepsis	3							
Other causes	**6**	13.04						
Amniotic fluid embolism	5							
Pulmonary embolism	1							
Total	**34**	**73.89**		**10**	**21.73**		**2**	**4.34**

Table 4. MMR/1,000 Live Births Over the Years

Year	Number of maternal deaths	Total number of live births	MMR/1,000
2000	11	4,516	2.43
2001	14	4,666	3
2002	5	4,815	1.03
2003	4	4,815	0.83
2004	5	4,669	1.07
2005	5	3,750	1.33
2006	2	4,267	0.43
Total	**46**	**31,498**	

Table 3 shows that the majority of patients died due to direct causes, in particular, due to hemorrhage. In indirect causes, anemia and jaundice were the main culprits. There were two cases of unrelated causes.

Table 4 shows that there is a gradual decline in the death rate at Bowring and Lady Curzon Hospital, Bengaluru over the years except in 2001.

DISCUSSION

The mother is the pivot of the family and maternal health is an index of reproductive healthcare in the country. Maternal death has serious implications not only to the family but to the society and nation as well.

Table 1 shows that the majority of women delivered vaginally.[1,2] The cases were referred even after LSCS for sepsis. One particular case needed re-laparotomy for burst abdomen and this particular patient had jaundice. Table 2 shows that the maximum number of deaths occurred within 24 hours[3,4] and the shortest interval was 20 minutes and the longest was 18 days. The late deaths we observed in our study were mostly caused by sepsis. As seen in Table 3, the maximum number

of patients died due to direct causes and in particular due to atonic hemorrhage.[1,2] All these patients had started their pregnancy with anemia and even a slight bleeding pushes them to shock. Out of 5 cases of sepsis, 2 underwent surgery for perforation, during medical termination of pregnancy (MTP). Of these two, one underwent laparatomy for drainage of pus and the other underwent subtotal hysterectomy. The other 3 patients had intrauterine device (IUD) and sepsis. These patients were referred from other hospitals. The possible reasons behind sepsis in these patients could be due to late referral, anemia and malnutrition. Amniotic fluid embolism was seen in 5 cases. Out of 5 cases, 3 died after delivery. One had still birth. All of them had died from 20 minutes to 2 hours 35 minutes. Amongst indirect causes, anemia killed 13.04% of cases. All these patients had hemoglobin <6 g. One patient had mitral stenosis, tricuspid regurgitation and congestive cardiac failure.

CONCLUSION

The present study shows that the hemorrhage is the most common cause of death, which is accentuated by co-existing anemia. Detection of the disease at an early or pre-pregnant stage is essential. The most vulnerable time of death is within the first 24 hours after delivery. Though the specialist service is available at places, if the infrastructure is not there, cases should be referred early. Postmortem examination in all cases will help in understanding the cause of death, than clinical diagnosis. There is a strong need for intensive care unit (ICU) for critically ill mothers in all hospitals.

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