



Review of changing trends in maternal mortality in a rural medical college in West Bengal

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OBJECTIVE(S) : To study the incidence, causes, and possible prevention of maternal deaths.

METHOD(S) : The individual records of all maternal deaths occurring during the past 6 years from 1999 to 2004 were studied and the cause of death and the avoidable factors in each individual death were analyzed.

RESULTS : The maternal mortality rate (MMR) was 623.46 per 100,000 live births. The major causes of maternal deaths were more or less the same throughout the years of study. Major obstetric complications accounted for more than three-fourths of maternal deaths with the well known triad of toxemia (50.56%), sepsis (18.17%), and hemorrhage (9.72%) playing an important role. Anemia (4.18%) and jaundice (1.84%) were two important indirect causes of maternal deaths. Unbooked cases accounted for 87.95% of maternal deaths. More than 60% of maternal deaths were from rural areas.

CONCLUSION(S): Majority of maternal deaths can be averted by proper intervention of 3E's viz., emergency obstetric care (EmOC), early risk screening, and efficient obstetric services.

Key words : maternal mortality rate, unbooked cases

Introduction

In developing countries maternal mortality rate (MMR) still remains very high. Maternal mortality is a vital index of the effectiveness of obstetric services prevailing in a country. In some areas of Africa the maternal mortality rate has been as high as 2,000 per 100,000, whereas the rates in Western and Northern Europe are mostly around 10 per 100,000 live births¹. Three countries-India, Pakistan and Bangladesh-between them account for 28% of world's births and 46% of maternal deaths². In India MMR is still very high and the rates tend to be lower in urban areas which reflects easier access of the city dwellers to medical services. India set a goal of reducing the rate to less than 200 per 100,000 live births^{3,4}. India is still lagging far behind in achieving this goal and the present maternal mortality rate in India is 453/100 000 live births⁵.

Methods

The individual records of maternal deaths occurring from January 1999 to December 2004 were carefully analyzed to find out the MMR in each year. The incidence of and factors involved in maternal deaths were studied with a view to know the avoidable risk factors.

Results

Table 1 depicts that during the last 6 years the MMR ranged between 428.51 and 869.69 / 100,000 live births and averaged to 623.46 per 100,000 live births.

Table 2 displays the various causes of maternal deaths in the 6 years. Major causes of maternal deaths were more or less the same through the years of study and the well known triad of toxemia, sepsis and hemorrhage predominated.

Table 3 shows that anemia and jaundice are the most important indirect causes of maternal death. The maternal mortality rate varied from 87.31% to 95.06% in unbooked cases (Table 4). 61.66% of maternal deaths were from rural areas (Table 5).

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Table 1. Maternal mortality.

Year	Live births	Maternal deaths	Maternal mortality / 100000 lives births
1999	13017	81	622.26
2000	13786	105	761.64
2001	14296	87	608.56
2002	13453	117	869.69
2003	13990	66	471.76
2004	14702	63	428.51
6 years	83244	519	623.46

Table 2. Obstetric complications causing maternal deaths in percent.

Year	Hemo- rrhage	Antepartum hemorrhage	Post partum hemorrhage	Toxemia eclampsia	Septicemia	Unsafe abortion	Post puer- perial	Rupture uterus	Ectopic pregnancy	Embolism	Anes- thetic mishaps
1999	3.70	1.23	2.47	53.08	17.28	12.34	4.94	4.94	4.94	1.23	-
2000	12.38	1.90	10.48	64.76	10.48	7.81	2.67	1.90	1.90	-	0.95
2001	5.74	2.29	3.45	47.13	24.14	15.69	8.45	3.45	2.29	115	-
2002	10.25	2.56	7.69	52.99	23.08	13.23	9.85	0.85	1.70	-	0.85
2003	15.15	6.06	9.09	39.39	18.18	9.15	9.03	3.03	3.03	1.51	-
2004	11.11	4.76	6.35	46.03	15.87	10.76	5.11	3.17	4.76	1.58	3.17

Note – During 1999-2004, 3639 women were admitted for eclampsia of whom 269(7.3%) died.

Table 3. Indirect causes of maternal deaths (percent).

Year	Anemia	Jaundice	Heart disease	Disseminated intravascular coagulopathy	Blood transfusion	Malaria	Others
1999	6.17	2.47	2.47	1.23	1.23	1.23	-
2000	1.90	1.90	1.90	-	0.95	0.95	-
2001	3.45	1.15	3.45	2.29	1.15	2.29	2.29
2002	4.27	0.85	1.70	1.70	-	-	1.70
2003	4.54	1.51	4.54	3.03	1.51	1.51	3.03
2004	4.76	3.17	1.58	1.58	-	-	3.17

Table 4. Booked and unbooked cases and maternal mortality.

Year	Total deaths	Booked cases	Unbooked cases
1999	81	4 (4.94%)	77 (95.06)
2000	105	10 (9.52%)	95 (90.48%)
2001	87	9 (10.34%)	78 (89.66)
2002	117	7 (5.98%)	110 (94.02%)
2003	66	5 (7.58%)	61 (92.42%)
2004	63	8 (12.69%)	55 (87.31%)
1999-2004	519	43 (8.28%)	476 (91.72%)

Table 5. Maternal deaths from urban and rural areas.

Year	Total deaths	Urban	Rural
1999	81	20 (24.69)	67 (75.31)
2000	105	40 (38.09)	65 (61.91)
2001	87	38 (43.69)	49 (56.31)
2002	117	53 (45.29)	64 (54.71)
2003	66	23 (34.85)	43 (65.15)
2004	63	25 (39.68)	38 (60.32)
1999-2004	519	199 (38.34)	320 (61.66)

Figures in brackets represent percentages

Table 6. Comparison of maternal mortality rates in different areas.

Institutions	Year	MMR	Causes in percent					
			Hamorrhage	Toxemia	Sepsis	Anemia	Jaundice	Others
Bera and Sengupta ⁶ (Kolkata)	1979-1980	1009	23.80	17.90	16.40	5.90	19.90	16.10
Ramteke and Pajai ³ (Yavatmal)	1992-1994	1048.24	29.25	12.25	12.24	12.93	5.40	27.93
Sapre and Joshi Gwalior ⁸ (Gwalior)	1971-1996	1448.65	17.17	25.44	12.89	25.53	4.99	14.08
Present study (West Bengal)	1994-2004	623.46	9.72	50.56	18.17	4.18	1.84	15.53

Discussion

Table 6 gives the MMR and percentage causes of deaths in different areas in India. Though there is a small decline in MMR in comparison to other studies, still MMR is very high in our study (MMR 623.46 per 100,000 live birth) as most of the women are referred in terminal and irreversible condition from referral centers. Toxemia (50.56%), sepsis (18.17%) and hemorrhage (9.27%) are all preventable by high risk screening and proper antenatal, intranatal and emergency obstetric care (EmOC). The deaths due to eclampsia are very high in our study. This is mainly due to haphazard use of sedatives and anticonvulsants in different centers and also because many patients come to our hospital without any antenatal checkup. Recently our department has conducted a meeting with the health personnel of higher authority and the representatives of UNICEF to introduce a plan to use injectable magnesium sulphate at all referral hospitals in the district of Burdwan.

Amongst the indirect causes anemia (4.18%) is the major cause of death which can be prevented by iron, folic acid, protein supplement, and blood transfusion,

The high percentage of deaths in unbooked cases indicates the importance of adequate antenatal care. The quality of the care is also very important as the facilities may lack even the

most basic resources like the drugs, the means to measure the blood pressure and hemoglobin, and even water and electricity.

Most of the mothers live in rural areas. Besides poor resources of health facilities in rural areas women may lack awareness of the seriousness of the problems. Delayed referral, poor transport facilities, underutilization of health facilities, and poor socioeconomic status are responsible for the high rate of maternal deaths.

It is heartening to note that MMR is showing a good reduction during the last 2 years at our center (Table 1).

From this study it is evident that proper health care in our hospital helps in reduction of maternal mortality, but further reduction requires better health facilities in remote and rural areas. EmOC facilities should be well distributed to serve 500,000 people in our area and there should be one comprehensive and four basic EmOC facilities which can reduce MMR in an area. EmOC key functions are - i) antibiotics (injectable) ii) oxytocic drugs, iii) anticonvulsants, iv) manual removal of placenta, v) removal of retained products, vi) assisted vaginal deliveries, vii) surgery (cesarean section), and viii) blood transfusion facilities. The first six services are basic and all eight services are comprehensive.

Other interventions for reduction of MMR are proper antenatal care, risk screening, skilled personnel at child birth, good transport facilities, family planning, safe abortion services, and health propaganda by mass media.

These facilities not only reduce burden on tertiary hospitals but also save money and time of poor mothers having complications.

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