ORIGINAL ARTICLE

Alarmingly High Maternal Mortality in 21st Century

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Abstract

The study was conducted to determine the maternal mortality rate (MMR), various factors affecting it and possible prevention of maternal deaths in Christian Medical College & Hospital, a tertiary care institute during the past five years (2001- 2005). The individual record of maternal deaths was studied regarding their socio-demographic features, causes, modes of management and ultimate outcome. The Maternal Mortality rate was 1470 per lac live births. The major obstetrical complications accounted for more than three fourth of maternal deaths with hemorrhage (33%), sepsis (21.7%) and eclampsia (7.5%) playing an important role. Anemia (44.3%) and jaundice (16.0%) were two important indirect causes of maternal deaths. Un-booked cases accounted for majority of maternal deaths. Only two maternal mortality patients were showing regularly in our institute, rest all of the patients either had no antenatal check-up or were having ANC in private clinics and were referred as an emergency in critical condition. More than 90% of maternal deaths hailed from rural and urban slum areas. 61 (57.8%) cases received primary care from untrained birth attendants and 11 (10.4%) did not receive primary care in any form. There was delayed referral by the untrained personnel, 49 (46.2%) patients were referred after more than 48 hours of acute emergency, 51 (48.1%) died between 24 to 48 hours and 25 (23.6%) died within 24 hours of admission in spite of all resuscitative measures. It is concluded that providing good antenatal care, finding appropriate ways of preventing and dealing with the consequences of unwanted pregnancies, and improving the way society looks after pregnant women are three most important ways to reduce maternal mortality.

Key Words

Maternal mortality rate (MMR), Emergency obstetrical care (EmOC), Obstetrical hemorrhage

Introduction

Parturition is a simple natural process, which can take a turn making it "lethal" for any patient. It is truly said that "normal delivery" is a retrospective diagnosis.

In most of developing countries, maternal deaths are the tip of iceberg, which signal everyday tragedies of women's lives and reflect how world's poverty has been feminized. Every minute a woman dies. 1400 die everyday and amount to 0.6 million dying in a year. Eighty percent die due to complications of pregnancy and childbirth and 99% of these deaths are in Sub-Saharan Africa and South Asia (1). United Nations in 2003 estimated that one out of every 55 women in India faces the risk of maternal death. Maternal mortality is a very difficult medical, social, emotional and hence medico legal situation in third world countries.

The present study was undertaken to identify risk factors and suggest steps for reducing maternal mortality in our region.

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Material & Methods

This retrospective study relates to Maternal Mortality Rate among 7207 consecutive live births from Jan 2001 to Dec 2005. All the women who died while pregnant or within 42 days of termination of pregnancy, irrespective of duration and site of pregnancy and from any cause related to or aggravated by pregnancy or its management but not from accidental or incidental causes were included as cases in the study. Data are expressed as percentages and rate per 100,000 live births. Various factors like age, parity, socioeconomic status, antenatal care during pregnancy, type of illness, modes of management and ultimate outcome were evaluated.

Results

Among the 7427 deliveries (including multifetal pregnancies) during the study period, total 7483 babies were born, out of which 7207 were live births, 276 stillbirths and 106 maternal deaths giving maternal mortality rate of 1470/ 100,000 live births. Table I shows maternal death distribution in the five years of study.

Table I: Maternal Mortality in 5 years

YEAR	No of Maternal Deaths	Total Births	No of Live Births	MMR/100,000 Live Births
001	21	1379	1337	1570
002	21	1369	1294	1622
003	19	1617	1565	1214
004	26	1600	1557	1698
005	19	1518	1454	1306
Years	**106**	**7483**	**7207**	**1470**

52 (49%) cases were of age group 21-25 years, which is the peak of reproductive age group. Table II shows the age distribution of maternal mortality cases. Maximum number of maternal death cases was primigravida or primipara. The minimum period of gestation in these maternal death patients was 22 weeks and maximum period of gestation was 42 weeks. At the time of death, highest proportion (66cases/ 62.3%) was of postpartum patients, 15 cases (14.1%) were post-abortal and 25 patients were ante-partum (Table II).

Only eight (7.5%) cases belonged to urban areas, rest 98 (92.5%) cases hailed from rural (39.6%) and urban slum areas (52.8%) and all the maternal death cases except two (98.1%) were referred from outside (table II).

Table II: Clinical and Demographic characteristics

Characteristic	Number	Percentage
Maternal Age		
20 years or less	7	6.6
21-25 years	52	49.0
26-30 years	24	22.6
31-35 years	22	20.7
38 years	1	0.9
Gravida/Parity		
1	37	34.9
2	28	26.4
3	18	17
4	13	12.2
5	7	6.6
6, 7, 8	1 each	0.9 each
Time period of pregnancy		
Antepartum	25	23.6
Post-abortal	15	14.1
Post-partum	66	62.3
Antenatal Care		
Booked	2	3.7
Unbooked	105	96.3
Locality		
Urban	8	7.5
Rural/ Urban slums	98	92.5

Table III shows that 61 (57.8%) cases received primary care from untrained birth attendants and 11 (10.4%) did not receive primary care in any form. 49 (46.2%) patients were referred after more than 48 hours of acute emergency, so delayed referral is found to be very significant cause in this study series. Out of these maternal mortality patients, 51 (48.1%) died between 24 to 48 hours and 25 (23.6%) died within 24 hours of admission in spite of all resuscitative measures.

Table IV shows various causes of maternal deaths in our study series. Obstetrical hemorrhage (33%), sepsis (21.7%) and eclampsia (7.5%) were three major direct causes of maternal mortality followed by non-hemorrhagic obstetric shock (5.6%), thrombo-embolism (5.6%) and obstructed labor (3.7%). Major indirect causes of maternal deaths seen in our case series were hepatitis (16.0%) and other associated medical disorders (6.6%). 44.3% of mortality women in our series had moderate to severe anemia.

Table III: Various factors contributing to high maternal mortality

Contributory Factor	No	Percentage
Primary Care given before referral		
Untrained Birth Attendant	61	57.5
General Practitioner	8	7.6
Specialist	26	24.5
None	11	10.4
Delay in Referral		
<24 Hours	22	20.7
24-48 Hours	23	21.7
>48 Hrs- 7 Days	49	46.2
>7 Days	14	13.2
Duration of stay in Hospital before death		
<24 Hours	25	23.6
24- 48 Hours	51	48.1
>48 Hrs- 7 Days	17	16.0
7- 14 Days	13	12.3

Table IV: Direct and Indirect Causes of Maternal Death

Cause	Type	No	Percentage
DIRECT			
Hemorrhage		**35**	33
	PPH	25	
	Abruptio Placenta	7	
	Placenta Previa	3	
Sepsis		**23**	21.7
	Postabortal	11	
	Puerperal	9	
	Chorioamnionitis	3	
Eclampsia		**8**	7.5
	Antepartum	7	
	Postpartum	1	
Non Hemorrhagic Obstetric Shock	Inversion Uterus	**6**	5.6
Thrombo Embolism		**6**	5.6
	Cortical Vein	4	
	Pulmonary	2	
Obstructed Labor		**4**	3.7
INDIRECT			
Viral Hepatitis		17	16
Heart Disease		5	4.7
LGBS		1	0.9
Steven Johnson Syndrome	Drug induced (for MTP)	1	0.9
TOTAL		106	100

Discussion

The lifetime chances of maternal deaths in the world as a whole are about 1 in 75. It varies from region to region and from country to country. In the least developed countries the chances are about 1 in 16, in the developing countries about 1 in 60 and in the industrialized countries about 1 in 41,000 (2).

Table V gives the maternal mortality rate in various studies conducted in India. According to RGI estimates for the year 2000, maternal mortality rate for India was 407 per 100,000 live births (3). MMR is very high in our study (1470 per 100,000 live births) as most of the women were referred in terminal and irreversible condition from referral centers. In the studies of Bera & Sengupta (4), Sapre & Joshi (5), MMR is comparable to our study whereas Khare *et al* (6) has reported even higher MMR in their study.

Table V: Studies showing Maternal Mortality Rate during different periods

Institution	Year	MMR/100,000 L.B.
Govt of India (3)	2001-2002	407
Bera & Sengupta (1992) Eden Hospital Medical College, Calcutta (4)	1979-1980	1009.0
Sapre & Joshi (1999) KRH, Gwalior (5)	1971-1996	1448.6
Khare et al (2002) NSCB MCH, Jabalpur (6)	1986-2000	2642.3
Present Study CMC&H, Ludhiana	2001-2005	1470

As stated by the 2005 WHO report " Make Every Mother and Child Count". Major direct causes of maternal mortality are all preventable by high-risk screening and proper antenatal, intranatal and emergency obstetric care (EmOC). They are severe bleeding/ hemorrhage (25%), infections/ septicemia (13%), eclampsia (12%), obstructed labor (8%), complications of abortion (13%), other direct causes (8%) and indirect causes (20%) such as malaria, anemia, jaundice and other medical disorders which complicate pregnancy or are aggravated by it (7).

Hemorrhage, sepsis, eclampsia and obstructed labor account for 80% of all maternal deaths worldwide (8).

Same data has been obtained in present study.

Anemia was associated in 44.3% cases of maternal deaths, which can be prevented by Iron, Folic acid, protein supplement and blood transfusion.

The most vulnerable time for maternal death is the post-partum period during which 60% deaths (9) and 65% deaths (10) are reported. In our study 62.3% deaths occurred in post-partum period. Unfortunately, post-partum period is the most neglected period. In developing countries, while 65% of all women have some form of antenatal care, 53% receive intranatal care; only 30% receive post-partum care (9).

The high percentage of deaths in unbooked cases indicates the importance of adequate antenatal care i.e. four visits of Focused Antenatal Care of high quality as advocated by WHO.

As seen in our study series, lack of primary care at the time of obstetrical emergency and delayed referral are two important factors contributing to high maternal mortality rate so good antenatal care alone has little value in reducing maternal mortality unless linked to efficient EmOC (11). Most of the mothers live in rural areas, 92.5% of maternal death cases hailed from rural areas or urban slums (periphery of Ludhiana city). Besides poor resources of health facilities in rural areas women may lack awareness of the seriousness of the problems.

Antenatal care 'per se' cannot prevent most deaths, but can act as a good entry point for EmOC. EmOC in time by skilled birth attendant (SBA) can prevent most deaths. Starting from obstetric first aid by using I/V or I/M anticonvulsants, oxytocics, antibiotics, then advancing to Basic EmOC by adding I/V infusions, assisted vaginal delivery, MRP, removal of retained products to it. Comprehensive EmOC consists of Basics plus Cesarean section, Laparotomy, neonatal resuscitation and safe blood transfusion. United Nation guidelines recommend a minimum of one comprehensive facility and four basic EmOC facilities per 500000 population and one SBA for every 175 deliveries to reduce MMR in the area.

Conclusion

WHO report 2005 (3) reviews, the three most important ways in which the outcomes of pregnancies can be improved: providing good antenatal care, finding appropriate ways of preventing and dealing with the consequences of unwanted pregnancies, and improving the way society looks after pregnant women.

References

1. WHO/ UNICEF/ UNFPA Estimates: Maternal Mortality in 2000.
2. Unicef (2002), State of World's Children 2002.
3. The World Health Report 2005- Make Every Woman and Child Count.
4. Bera SK, Sengupta A. Evaluation of etiological factors of maternal death in Eden Hospital- 12 years study. *J Obstet Gynec India* 1992; 42: 182.
5. Sapre S, Joshi V J. *Obst Gynecol Ind* 1999; 49: 53.
6. Khare S, Singh KN, Kulkar S. Maternal mortality in Jabalpur Medical College (a 15 year study). *J Obst Gynecol Ind* 2002; 52(4): 51-54.
7. Govt of India (2002), Annual Report 2001-2002. *Ministry of Health and Family Welfare, New Delhi.*
8. Abou Zahr C: Maternal mortality overview. In Murrary CJL, Lopez AD (eds). Health, dimensions of sex and reproduction, Geneva. *World Health Organization* 1998; 111: 64.
9. Mathai M. *National Med J Ind* 1999; 12: 251.
10. Joydev Mukherji, Rajendra P Ganguly, Sudip K Saha, Samir Ch. Ghosh Roy: Postpartum Care- 'A Neglected Tragedy'. *J Obstet Gynecol Ind* 2002; 52(4): 40-43.
11. Weil O, Fernandes H: Maternal mortality- Role of antenatal care. *Lancet* 1999; 354: 940.