

To study maternal mortality and complications leading to maternal death in the tertiary care centre

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Abstract

Objective: To study maternal mortality and complications leading to maternal death in the tertiary care centre over the five years of period. **Method:** A retrospective and prospective study of all maternal deaths from January 2001 to December 2005 was carried out. **Results:** There were total 204 maternal deaths out of 24,620 live births giving a maternal mortality rate (MMR) of 828.59 per 100,000 live births. Unbooked cases accounted for 74% of maternal deaths. The majority of deaths occurred in 25-29 years age group and 71% were multigravida. Out of 204 maternal deaths 72.06% deaths were due to direct causes. Hemorrhage was the commonest cause of death (36%) followed by toxemia of pregnancy (19%) and sepsis accounted for 135 of deaths. **Conclusion:** Hemorrhage, toxemia of pregnancy and sepsis were found to be direct major cause of death. Anaemia and other indirect causes like jaundice, malaria, heart disease were other indirect causes of deaths.

Keywords: Maternal mortality, Rupture uterus, Postpartum Haemorrhage, Sepsis, Eclampsia, Anaemia.

Introduction

Maternal mortality is defined as per WHO (ICD-10) as death of a woman while pregnant or within 42 days of termination of pregnancy from any cause related to or aggregated by the pregnancy or its management but not from accidental or incidental cause. Late maternal death is defined as death of a woman from direct or indirect causes more than 42 days but less than one year after termination of pregnancy. Pregnancy related death is defined as death of a woman while pregnant or within 42 days of termination of pregnancy irrespective of the cause of death. Maternal death audits form the mainstay of evaluation of maternal health services in developing countries. Every minute, one woman dies due to pregnancy or child-birth related causes, this translates

into 1,500 women dying every day. According to statistics released by UNICEF and WHO 2006 in India every five minutes a woman dies during child birth [1]. In India the level of MMR has declined from 7501 in 1960s to about 400 in 1990s [2,3]. It is roughly estimated to be about 300 in 2003, though it is above 400 in some states [4,5]. Upto 80% of all maternal deaths are directly due to five complications, haemorrhage, sepsis, pregnancy-induced hypertension, rupture uterus and complication of abortions. A major cause for so many deaths due to hemorrhage is because, once bleeding starts, death can occur in around 2 hours compared within 10 hour for eclampsia and 72 hours for obstructed labour [6]. The aim of study was to assess the MMR in tertiary centre and find out the causes leading to maternal death.

Manuscript received: 01st Feb 2016
Reviewed: 12th Feb 2016
Author Corrected: 22nd Feb 2016
Accepted for Publication: 01st March 2016

Result

In our study average MMR was 828.59/100,000 live births from 2001-2005. Highest MMR reported was 1041.2/100,000 live births in the year 2002 and lowest 568.94/100,000 live births in 2005.[Table-1]. 74% deaths occurred among unbooked patients, 26% occurred among booked patients. [Table -2]

Table No 1: Year Wise Distribution of Maternal Deaths & MMR

S.NO.	Year	No. of live births	No. of death	MMR (1 Lakh LB)
1.	2001	4438	40	901.31
2.	2002	5182	44	849.09
3.	2003	4514	47	1041.2
4.	2004	5213	43	824.86
5.	2005	5273	30	568.94
Total		24620	204	828.59

Table No 2: Maternal Deaths in Booked and Emergency Cases

S.NO.	Booked/ Emergency Admission	2001	2002	2003	2004	2005	Total	Percentage
1.	Booked	8	13	15	10	7	53	26
2.	Unbooked	32	31	32	33	23	151	74
Total		40	44	47	43	30	204	100

Table No 3: Maternal Deaths in Relation to Age

S.NO.	Maternal age in year	2001	2002	2003	2004	2005	Total	Percentage
1.	15-19	3	1	4	1	4	13	6.37
2.	20-24	16	12	11	18	7	64	31.37
3.	25-29	11	16	22	15	14	78	38.24
4.	30-34	6	7	7	3	2	25	12.25
5.	35-39	4	7	3	5	3	22	10.78
6.	40-45	-	1	-	1	-	2	0.49
Total		40	44	47	43	30	204	100

Table No 4: Death in Relation to Gravida

S. No.	Gravida	2001	2002	2003	2004	2005	Total	Percentage
1.	I	12	13	11	16	7	59	29
2.	II	7	10	12	7	8	44	22
3.	III	9	10	12	7	7	45	22
4.	IV	6	6	6	6	5	29	14
5.	V & above	6	5	6	7	3	27	13
Total		40	44	47	43	30	204	100.00

Table No 5: Causes of Maternal Death (n=204)

S.No.	Causes	No.	Percentage
A. Indirect Causes			
I. Haemorrhage			
1.	Rupture uterus/obst. Labour	23	11
2.	Placenta praevia	7	3
3.	PPH	23	11
4.	Retained Placenta	9	4
5.	Incomplete Abortion	7	3
6.	Ectopic Pregnancy	4	2
7.	Vesicular Mole	1	0
Total		74	36
II. Toxaemia of pregnancy		38	19
III. Sepsis		26	13
IV. Other direct causes			
1.	IUD	4	2.0
2.	Post LSCS	3	1.5
3.	Retroverted Gravid Uterus	1	0.5
4.	Amniotic fluid embolism	1	0.5
Total		9	4

Grand Total		147	72.06
B. Indirect Causes			
1.	Anaemia	38	18.6
2.	Jaundice	6	2.9
3.	Malaria	9	4.4
4.	Heart Disease	2	1.0
Total		55	26.96
C. Unrelated Causes			
1.	Gastro Enteritis	1	0.5
2.	ARDS	1	0.5
Total		2	0.98

Table No 6: Types of Toxaemia (n=38)

S.NO.	Type	2001	2002	2003	2004	2005	Total	%
1.	Antepartum eclampsia	4	3	2	-	3	12	32
2.	Intra partum eclampsia	3	3	1	3	-	10	26
3.	Post partum eclampsia	2	3	3	1	1	10	26
4.	Pre eclampsia	-	1	3	2	-	6	16
	Total	9	10	9	6	4	38	100
	Total Deaths	40	44	47	43	30	204	
	Total Percentage	23	23	19	14	13	19	

Table No 7: Year Wise Distribution of Deaths Due to Anaemia

S.No.	Year	Total Deaths	Death due to Anaemia	Percentage
1.	2001	40	4	10
2.	2002	44	12	27
3.	2003	47	8	17
4.	2004	43	10	23
5.	2005	30	4	13
Total		204	19	18.6

Majority of deaths occurred in 25-29 yrs age group, (38.24%), 6.37% in teen age group and 0.49% in above 40 years age group. [Table-3] Majority of deaths occurred in primi (29%) and 71% in multi gravidae. [Table -4]. 90% of death occurred among rural patients and 10% among urban patients. 59% of maternal deaths occurred among patients from low socioeconomic strata. Only 2% of maternal deaths occurred among patients from the affluent class. Majority of maternal deaths occurred in illiterate (63%), as compared to educated (37%). Only 9% of patients were referred cases. 72% of maternal deaths occurred in the post partum and puerperal period, 17% in antepartum period, 9% in postabortal and 2% in intrapartum period. History of interference by trained or untrained dai was present in 35% of maternal deaths. 51% of deaths occurred within first 12 hours of admission, 22% died within 24 hours. 7% of deaths occurred after 5 days of admission. 75% of the patients died after delivery of which 39.7% of babies were SB and 35.8% were alive. 13.2% cases died undelivered. Abortion related deaths were 8.8% and deaths due to ectopic pregnancy and vesicular mole were 2% and 0.5% respectively. Out of the 204 maternal deaths 147 (72.06%) deaths were due to direct causes. In this group 36% died due to haemorrhage, 19% due to toxemia of pregnancy and sepsis accounted for 13% of deaths. One death (0.5%) was due to obstructive uropathy complicating retroverted gravid uterus and one death was due to amniotic fluid embolism. Among 204 maternal deaths 55 cases (26.96%) died due to indirect causes, of which maximum deaths (18.6%) were due to anemia. Jaundice, malaria, heart disease accounted for 2.9%, 4.4%, 1% of deaths respectively. 0.98% of deaths were due to unrelated causes like gastro enteritis and ARDS. [Table- 5]. 11% of deaths were due to obstructed labour/ rupture uterus, deaths due to the same was maximum in 2002 (14%) & 2003 (13%) and least in 2004 (2%). 26% of deaths due to rupture uterus/obstructed labour occurred in III gravida. 60% of deaths due to obstructed labour/ rupture uterus occurred among patients with parity more than two. 48% of deaths were due to hypovolemic shock. CRA, pulmonary embolism, endotoxic shock and congestive cardiac failure accounted for 17%, 13%, 13%, and 9% of deaths due to rupture uterus/obstructed labour respectively. 19% deaths were due to APH and PPH. Of which 18% of deaths were due to placenta praevia, 44% were due to atonic PPH, 15% were due to traumatic PPH, and 23% were due to retained placenta. 66% of deaths due to haemorrhage occurred in patients above parity two and 8% in primi. 66% of deaths were in the 20-30 years age group. 31-40 year age group accounted for 9% of deaths due to APH and PPH. 74% of deaths due to APH and PPH occurred within 12 hours of admission. out of the 39 deaths due to APH and PPH majority (60%) died due to hypovolemic shock. CCF, CRA, Septic Shock, DIC, Pulmonary Embolism, Renal Failure accounted for 8%, 10%, 8%, 3%, 8%, 3% of deaths respectively. 19% of deaths were due to eclampsia and preeclampsia. Of which 32% died due to antepartum eclampsia. Intrapartum eclampsia, post partum eclampsia and pre eclampsia accounted for 26%, 26% and 16% of deaths respectively [Table-6]. 50% of the deaths occurred among primi gravida and 5% of deaths occurred among grand multi. 26% of deaths were due to CCF. CRA, CVA, Pulmonary embolism, renal failure, endotoxic shock, hypovolemic shock accounted for 18%, 11%, 16%, 5%, 3%, 11% of deaths respectively among cases of eclampsia and pre eclampsia. 26 cases (13%) deaths were due to sepsis. Of which puerperal sepsis and post abortal sepsis accounted for 58% and 42% respectively. 18.6% of deaths were due to anaemia. Maximum deaths (27%) due to anaemia occurred in the year 2002 and least (13%) in the year 2001.[Table-7] 29% of deaths due to anemia occurred among primi, rest 71% deaths occurred among multigravidae with maximum (32%) deaths among second gravidae. 63% of anaemia patients died due to CCF. CRA, Pulmonary embolism, Septic shock Haemorrhagic Shock and DVT accounted for 13%, 16%, 3%, 3% and 3% respectively.

Discussion

The MMR in our present study is 828.59 per 100,000 live births from 2001-2005 ranging from 1041.2 in year 2002 and lowest 568.94 in 2005. Most women were in poor general condition at the time of admission. 50% of deaths occurred within first 12 hours of admission. Various studies done in India in the last 15 years have shown wide variation in MMR ranging from 47/100000 to 625/100000 births [7-12]. Madhu Jain has reported a very high MMR of 2270/100000 [8]. The higher incidence of deaths is due to non referral of cases from periphery. Most deaths were observed in the 25-29 yrs age group in present study whereas deaths were in 20-

29 year age group in other studies [13]. Majority of deaths occurred in multigravida, majority of deaths were due to direct causes (72.06%) comparable with study done by Bhaskar k Murthy et al [13] Hemorrhage and sepsis were the major direct killers and were comparable to other studies [13]. In our study, 19% deaths were due to APH and PPH and 19% were due to eclampsia and preeclampsia. The use of magnesium sulfate and early termination with medication had led to improve the scenario of eclampsia. Indirect causes of death in our study accounted for 26.96%. Out of which anaemia (18.6%) had contribute the majority. Anaemia

is probably a chronic rather than acute condition in many cases. There is a resulting compensatory shift of the oxygen dissociation curve to the right. Thus, women with very low haemoglobin concentrations may be seen in the antenatal period without the expected overt symptoms of cardiac failure. They will, however, easily become tired by any form of physical activity and may decompensate, e.g. as a result of labour. Should any adverse event such as bleeding occur, their risk of death is high [14].

Conclusion

The most of maternal death are preventable. Sustained reductions in maternal mortality will only be possible if madam high-quality obstetric care in made available to all women through a system of professional midwifery and referral hospital care in the context of political commitment and accountability of health providers. The availability of blood bank at all first referral units (FRUs) and their proper functioning are needed. The provision of timely blood transfusion can save many lives. Health education of masses alongwith good quality health care and transport facilities can prevent many deaths.

Funding: Nil

Conflict of interest: None.

Permission of IRB: Yes

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How to cite this article?

Garg P, To study maternal mortality and complications leading to maternal death in the tertiary care centre. *Int J Med Res Rev* 2016;4(3):347-352. doi: 10.17511/ijmrr.2016.i03.10