

# Study of Maternal mortality in a tertiary care center

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## Abstract

**Introduction:** Maternal Mortality is a result of a complex interaction between medical, cultural, literacy, socio economic factors and the prevailing health care infrastructure in the community. Hence MMR varies from country to country, States to state and primary health care center to tertiary care center. **Methods:** This retrospective study was conducted in Govt. Medical College, Aurangabad from 01 Jan 2007-31 Dec 2009. All maternal deaths during this period were statistically analyzed. **Results:** Maternal Mortality Ratio in Govt. Medical College, Aurangabad was 194/100000 live births. Most of the dying mothers were in the age group 20-29 years within education upto illiteracy. Poor socio-economic status contributed 70.14% of maternal mortality. Most of the patients belongs to rural area. Hemorrhage in the leading cause deaths in 35.82% patients. 46.26% patients had underlying anemia associated with or without other complications as contributory cause of maternal mortality. **Conclusion:** Shortcomings of health care system should be met urgently to reduce the maternal mortality ratio with which, we can achieve MMR of 109 by 2015 as per 5<sup>th</sup> millennium development goal.


**Key Word:** maternal mortality.

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## INTRODUCTION

Death of a women in child birth or from pregnancy related events is a devastating experience for a family and for surviving children. Maternal death is defined by the International classification of disease (ICD-10), is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of pregnancy from any causes related to or aggravated by pregnancy or its management, but not from

accidental or incidental causes. Maternal Mortality ratio is the number of maternal deaths during given time period per 1,00,000 live births during same time period.<sup>1</sup> MMR of India was 560 in 1990<sup>1</sup> and came down to 460 in 1995, 370 in 2000<sup>2</sup>, 254 in 2004 - 2006, 212 by 2007-2009<sup>4</sup> and 190 in 2013<sup>2</sup>. MMR in Maharashtra is 149 by SRS 2001-2003<sup>3</sup> survey, and brought down to 130 by 2006 and 104 by 2009, lesser than Millennium Development Goals (MDG) of 109 by 2015<sup>4</sup>. MMR in Maharashtra is 87 by 2010-2012<sup>5</sup> survey. The major contributors to maternal mortality in India are uncontrolled fertility, inaccessibility or inadequate utilization of health care facilities, low education and gender discrimination leading to inferior status of women. The main cause of maternal death is hemorrhage followed by anemia as contributory factor. This study was conducted to evaluate the maternal mortality ratio in the tertiary care centre, to evaluate the effect of socio demographic factors on maternal death, and to know the causes leading to maternal death so as to identify the preventive interventions needed to reduce maternal mortality ratio.

## METHODS

This retrospective study was conducted in Government medical college, Aurangabad, Maharashtra from January 2007 to December 2009, which is a tertiary care centre. The Performa containing name, age, address, booked/unbooked, education, details of antenatal care. along with obstetric complication and cause of death was filled from in- patient case record. During the study, total live births, total cesarean sections and total maternal deaths were studied. All maternal deaths occurring during pregnancy or within 42 days of delivery, death due to ectopic pregnancy, abortion and molar pregnancies were included. Deaths due to accidents were excluded.

## RESULTS

**Table 1:** Year wise distribution of live births, maternal deaths and MMR

	2007	2008	2009	Total
No. of Deliveries	10935	10829	12634	34398
No. of Mat deaths	23	25	19	67
MMR	210.33	230.86	150.38	194.77

Material Mortality ratio in Govt. Medical College Aurangabad was 194.77 per 1,00,000 live birth from 2007-2009.

**Table 2:** Distribution of women according socio demographic characters and antenatal supervision

Characteristics	No.	Percentage
Age		
<19Yrs.	00	00.00
20-29 Yrs.	61	91.04
30-39 Yrs.	06	08.95
40 Yrs. and above	00	00.00
Area of residence		
Urban	10	14.92
Rural	57	85.07
Literacy		
Illiterate	30	44.77
Primary School	18	26.86
Secondary School	12	17.91
Graduate	05	07.46
Post Graduate	02	02.98
Socio-Economic status		
I	00	00.00
II	00	00.00
III	00	00.00
IV	20	29.85
V	47	71.14
Antenatal supervision		
Booked	21	31.34
Unbooked	46	68.65
Parity		
Primigravida	06	08.95
Multigravida	04	05.97
Para 1	30	44.77
Para 2	07	10.44
Para 3	09	13.43
Para 4 and above	11	16.41

Table 2 shows that 61 (91.04%) were in the age group of 20-29 yrs. Followed by 6 (8.95%) in 30-39g yrs. 85.07% were from rural population. 44.77% were illiterates followed by 26.8% were studied up to primary school. There were 2 studied upto post graduation. 70.14% belonged to class V socio economic status. 68.65% were unbooked patients.

**Table 3:** Distribution of Causes leading to material deaths

Causes	No. of deaths	Percentage
<b>Direct causes</b>	40	59.69
Hemorrhage	24	35.82
PIH	10	14.92
Sepsis	06	08.95
<b>Indirect cause</b>	27	40.31
Anemia	10	14.92
Heart disease	02	02.98
Viral hepatitis	04	05.97
Amniotic fluid embolism	07	10.44
Peripartum cardiomyopathy	01	01.49
Cerebral Malaria	02	02.98
Fulminant Koch	01	01.49
Underlying anemia	31	46.26

\*These are the material death having anemia with or without other complication

Table 3 indicates the causes of material deaths. Among the direct causes of 59.69% heomorrhage, pregnancy induced hypertension and sepsis were seen in 35.82%, 14.92%, 8.95% respectively. Indirect causes contributed 40.31% which includes anemia. Amniotic fluid embolism, Viral hepatitis, heart diseases, were seen causes 14.92% 10.44%, 5.97%, 2.98% respectively. Rare causes like cerebral malaria, peri partum cordiomyopathy and fulminant Koch were seen in 2.98%, 1.49%, 1.49%, 1.49%, of deaths respectively.

Total of 31 (46.26%) had anemia with or without obstetric complication almost anemia as contributory cause in 46.26% of deaths.

## DISCUSSION

Maternal Morality ratio in Govt. medical college Aurangabad, Maharashtra was 194.77 in 2007 to 2009, which is lesser than MMR of India 212 by 2007-2009<sup>4</sup> but higher to MMR 104 of Maharashtra in 2009<sup>4</sup>. This MMR of 194.77 higher than MMR of Maharashtra was because of higher number of referral at later stage of complication during pregnancy and labour in our tertiary center. In the present study 91.04% of material death were between the age group of 20-29 years which is comparable to the findings of 70% in Bhatia *et al*<sup>6</sup> and 72% in Biswajit Paul<sup>7</sup> studies. This is because, majority of the Indian women get married at early age and get pregnant at younger age.

85% of women belonged to rural region in comparable to Verma Ashok *et al* of 92%<sup>8</sup>. 70% of women were of poor socio economies statues comparable to Tayade *et al* of 70%<sup>9</sup> and Bhaskar K. Murthy of 83.3%.<sup>10</sup> 44.77% were illiterate and 26.8% were studies upto primary school, comparable with data of Vidyadhar B. Bangal study.<sup>11</sup> 68.65% of maternal deaths were unbooked comparable to kittur S. *et al*<sup>12</sup>. Majority of maternal deaths were in primi para, comparable to study of kiltur.<sup>12</sup> In the present study direct causes contributed 59.69% of all deaths. Common direct cause was hemorrhage contributing to 35.82% followed by PIH-14.92% and sepsis 8.95% of deaths, comparable to study of SRS maternal mortality in India: 1997-2003<sup>3</sup> whose survey mention hemorrhage 38%, sepsis 11% hypertension disorder in 11% as cause of maternal deaths, WHO systemic global causes analysis also revels Hemorrhage (27%) PIH- (14%) and sepsis (10.7%) on causes of death<sup>14</sup>. Indirect causes accounted 40.31% of maternal deaths in our study. Anemia contributed in 14.92% and was a contributory factor in 46.26% of other deaths. This is comparable to study of WHO.<sup>14</sup>

Amniotic fluid embolism contributed to 10.44% of deaths, comparable to study of kittur S.<sup>12</sup> and Tayade *et al*.<sup>9</sup> Heart disease contributed to 2.98% maternal deaths which is similar to deaths study of kittur S. <sup>12</sup> and Bhaskar K. Murthy.<sup>10</sup> Cerebral Malaria was seen in 2.98 deaths, similar to study of Vidyadhar Bangal.<sup>15</sup> Peripartum cardiomyopathy and fulminant Koch seen in 1.49% and 1.49% respectively which has very minimal rate of mortality.

## CONCLUSION

The major contributors of maternal mortality in India, like uncontrolled fertility, inaccessibility or inadequate utilisation of health care facilities, low education, gender discrimination and inferior status of women should be stabilized. Thus there is a need to improve the basic comprehension emergency obstetric care facilities from grass root levels. Govt of India has been trying to reduce MMR with Janani suraksha Yojana (JSY), Operation liaison of sub-centers, name based web enabled tracing of pregnant women, and by increasing accredited social health activities (ASHAS). Multidisciplinary approach with modern available facility can decrease MMR to a satisfying levels.

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