



## Original Research Article

# A comprehensive study on maternal mortality at a tertiary care hospital

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## ABSTRACT

**Introduction:** Maternal mortality, according to WHO is defined as “the death of women while being pregnant or within 42 days of termination of pregnancy, irrespective of duration and site of pregnancy, from any cause related or aggravated by the pregnancy but not from accidental or incidental cause”. Maternal death is classified as Direct and Indirect maternal death. About 99% of MMR occur in developing countries. Hence the present study has been taken up to analyze cause of maternal mortality in tertiary hospital.

**Aim:** Our study aims to analyze the cause and incidence of maternal mortality in a tertiary care hospital

**Materials and Methods:** Present Study is a, Retrospective study conducted in Cheluvamba hospital, MMC&RI which is a tertiary care hospital. We have analyzed all maternal deaths, which were reported in the institute during the study period starting from 1st January 2015 to 31st May 2019 (4 years 5 months).

**Results:** There were 52,896 deliveries in our institute during the study period. 60 maternal deaths were reported. Maternal mortality rises with high degree of parity as noted in the study, multigravida (56.7%). 55% cases were unbooked. The major cause of death was attributed to Hypertensive disorders of pregnancy (45%) and second major cause is anemia (41.7%).

**Conclusion:** Enhancing women’s access to basic health care facilities, regular Antenatal care, high risk pregnancy detection and its management and basic health education helps in reducing maternal mortality.

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## 1. Introduction

Maternal mortality, according to WHO is defined as “the death of women while being pregnant or within 42 days of termination of pregnancy, irrespective of duration and site of pregnancy, from any cause related or aggravated by the pregnancy but not from accidental or incidental cause.”<sup>1</sup> Maternal death is classified as:<sup>2</sup>

### 1.1. Direct maternal death

The death of the Mother that results from obstetrical complication of pregnancy, labor or the puerperium and from intervention, omissions, incorrect treatment or a chain of events resulting from any of these factors.

### 1.2. Indirect maternal death

A maternal death that is not directly due to an obstetrical cause. Death results from previously existing disease or a disease developing during pregnancy, labor or puerperium. Or condition aggravated by maternal physiological adaptation of pregnancy.<sup>2</sup>

About 99% of MMR occur in developing countries. Deaths in Sub-Saharan Africa and Southern Asia accounts for 86% of global Maternal Death.<sup>3</sup> As shown in Chart 1.<sup>4</sup>

An estimate of 303,000 maternal deaths occurred globally in 2015, yielding an overall MMR of 216(207-249) maternal deaths per 100,000 live births.<sup>5</sup> India with African countries attribute to one- third of maternal deaths.<sup>5</sup>

The various states in India have stack content in MMR. Among the south Indian states Kerala has the least MMR with 46 per 1 lakh live birth for the year 2016. Andhra Pradesh has reduced MMR from 92 per 1 lakh live birth in year 2018 to 74 per 1 lakh live birth in year 2016. Among

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## Maternal death

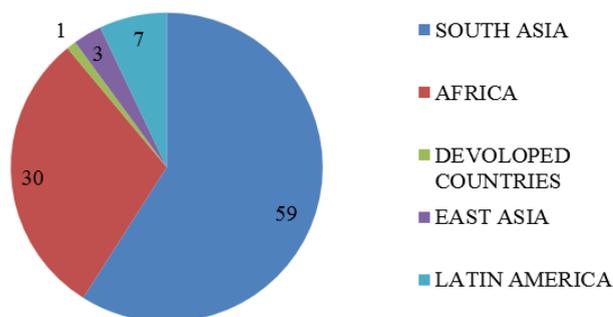


Chart 1: Worldwide distribution of maternal mortality by region<sup>4</sup>

all the states. Assam has highest MMR of 237 per 1lakh live births in the year 2016.<sup>6</sup>

Millenium Development Goals mandate a further reduction in MMR to 103. Maternal death review process initiated by Government of India in 2010 by analyzing and identifying lacunae in the health care systems to improve the quality of obstetric service. As per sustainable developmental goals India has aimed to reduce MMR to less than 70 per one lakh live birth.<sup>7</sup> Hence the present study has been taken up to analyze the cause of maternal mortality in a tertiary care centre.

## 2. Aim

Our study aims to analyze the cause and incidence of maternal mortality in a tertiary care hospital.

## 3. Material and Methods

Present study is a, Retrospective study conducted in department of Obstetrics and Gynaecology, Cheluvamba hospital, Mysore Medical College and Research Institute. It is a tertiary care hospital. We have analyzed all maternal deaths reported in institute during the study period starting from 1<sup>st</sup> January 2015 to 31<sup>st</sup> May 2019 (4 years 5 months). Data was collected from Hospital Medical Records on a proforma and statistical analysis was done. Descriptive statistics such as percentage were calculated for categorical variables. Pie chart was used for visual representation of analyzed data. Ethical committee clearance was taken before recording data on proforma.

## 4. Results

There were total of 52,896 deliveries conducted during the study period starting from 1<sup>st</sup> January 2015 to 31<sup>st</sup> May 2019. 60 maternal deaths were reported during the study. Incidence of Maternal Mortality in our institute is 0.11%.

In our study 55% of them were unbooked and Maternal Mortality was higher in Multigravida (56.7%) compared to primigravida as shown in Table 1

Table 1: Parity distribution of maternal mortality (N=60)

Parity	Number	Percent
Primigravida	26	43.3
Multigravida	34	56.7

45% of maternal death was seen in age group between 21-25 as shown in Table 2

Table 2: Age wise distribution (N=60)

Age (In years)	Number	Percent
≤20years	11	18.3
21-25years	27	45.0
26-30years	19	31.7
31-35years	1	1.7
≥35years	2	3.3

Among the total maternal death 41.6% were delivered by LSCS as shown in Table 3

Table 3: Maternal mortality distribution according to mode of delivery (N=60)

Mode of delivery	No	Percent
Vaginal	23	38.4
LSCS	25	41.6
Hysterotomy	1	1.7
Undelivered	1	1.7

In this study 33%of perinatal mortality was reported.

Admission to delivery interval was less than 6 hours in 35% of cases as shown in Table 4

Table 4: Admission to delivery interval (N =60)

Admission to delivery interval (in hrs)	Number	Percent
≤6hours	21	35
6 to 24 hours	9	15
≥24 hours	6	10

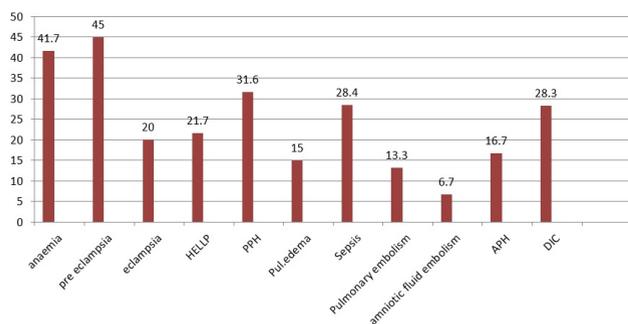
80% of deaths were reported in post partum period as shown in Table 5

Table 5: Phase of pregnancy at the time of death (N =60)

Status of Death	Number	Percent
Antepartum	7	11.7
Intrapartum	1	1.7
Postpartum	48	80
Abortion	4	6.7

Categorization of causes of maternal mortality is shown in Bar graph-1. In this study leading cause of Mortality

was Hypertensive Disorder of pregnancy (45%) followed by anaemia (41.7%) and post partum hemorrhage PPH (31.6%).



Graph 1: Categorization of causes of maternal mortality

(Few patients had more than one complication which attributed to maternal mortality)

## 5. Discussion

Maternal Mortality rate is most widely used health indicator of nation.<sup>4</sup> Maternal Mortality in the developing Countries is unacceptably high. About 1000 women die from pregnancy related complication around the world everyday.<sup>1</sup>

Maternal death is more between age group of 21 to 25years (45%), similar incidence was seen in J Sowjanya Kumari et al (61.9%)<sup>8</sup> and Special Bulletin in Maternal Mortality in India 2014-16(35%).<sup>6</sup> Maternal mortality is second leading cause of death among women aged 15-49 years, after HIV.<sup>9</sup>

Majority of them were Multigravida (56.7%) like the one noted in Doddamani et al study (55.8%).<sup>10</sup> Maternal mortality rises with higher degree of parity.<sup>1</sup>

In our study 80% of maternal deaths were reported in postpartum period in contrast to Madhuri Badrinath et al (35.5%)<sup>11</sup> where antenatal deaths were higher (57.7% v/s 11.7% in present study). A woman is most vulnerable at post partum period. About 50-70% deaths occur in the postpartum period of which 45% deaths occur in the first 24hrs after delivery and more than two-third during the first week. Between 11-17% of maternal deaths occur during child birth itself.<sup>12</sup>

In this study leading cause of Mortality was Hypertensive Disorder of pregnancy (PIH) 45% followed by anaemia (41.7%) and PPH (31.6%) in contrast to anaemia (76.2%), PIH (33.3%) and PPH (28.6%) as seen in J Sowjanya Kumari et al.<sup>8</sup>

Most maternal deaths are related to direct obstetrics complications (80%), which includes post partum hemorrhage, eclampsia, prolonged or obstructed labor, sepsis, and unsafe abortions. Around 20% of maternal deaths are due to indirect causes. Most maternal deaths are preventable, but

this requires significant social and Governmental efforts like skilled health personnel at periphery with availability of emergency drugs, equipments and early referral facilities.

## 6. Conclusion

Maternal death is an untenable public health problem that requires priority attention. Through this study we would like to conclude that, Hypertensive disease of pregnancy is the most common cause of maternal mortality. Most maternal deaths in developing countries are preventable by appropriate measures like.

1. Antenatal care and early detection of high risk pregnancy and avoid late referral.
2. High Dependency Unit for high risk pregnancy and appropriate team approach in its management.
3. Strengthening of Primary care at PHC/CHC level.
4. Well trained Nursing and Paramedical Staff.
5. Analysis of every maternal death through maternal death audit. It helps in identifying actual cause of death and lacunae in health care delivery system. It helps to contribute in formulating preventive measures to reduce pregnancy related deaths.

## 7. Acknowledgement

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None.

## 9. Conflicts of interest

None

## 10. Publication ethics

We agree for publication ethics

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