

Original Research Article**Maternal Mortality: A Retrospective Analysis in a Tertiary Care Centre**Pooja Mise¹, Aditya Mise², Usha Doddamani³, Radhika Mekale⁴, Sangamesh Mise⁵¹Assistant Professor, Dept. of OBG, GIMS, Kalaburagi,²MS (M.Ch. Urology) Senior Resident, GMC Guntur³Professor &HOD, Dept. of OBG, GIMS, Kalaburagi,⁴MS OBG Assistant Professor ESIC Kalaburagi,⁵MS (DrNB Oncology) Chennai

Received: 19-07-2023 / Revised: 18-08-2023 / Accepted: 20-09-2023

Corresponding author: Dr. Radhika Mekale

Conflict of interest: Nil

Abstract:

Background: According to World Health Organization (WHO), “A maternal death is defined as death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related to or aggravated by pregnancy or its management but not from accidental or incidental causes”. Maternal mortality is considered a key health indicator and the direct causes of maternal deaths are well known and largely preventable and treatable.

Methods: A retrospective study which was conducted in the Department of OBG, Gulbarga Institute of Medical Sciences, Kalaburagi by analyzing the maternal death which occurred during the period of January 2019 to December 2020. Data was collected from facility based maternal death review forms and death summary of each maternal mortality case.

Results: In the our study, total of 66 maternal death were analyzed-maternal mortality ratio was 354 per 1-lakh live births. Most deaths occurred in the age group of 20-30 years (81.8%), 60.59% of deaths occurred within 24-hours after admission. Hypertensive disorders (30.3%), hemorrhage (22.72%) and sepsis (13.63%) are the most common direct causes of maternal mortality. Anemia and other medical disorders with cardiac diseases being important indirect causes of maternal mortality.

Conclusions: Our center being a tertiary care teaching hospital, patients are referred from periphery and private hospitals. Maternal mortality was found to be on higher side. Proper referral services, prompt implementation of government policies with community participation are needed to prevent maternal deaths.

Keywords: Maternal mortality; Hemorrhage; Sepsis; Hypertensive disorders

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Introduction

India has the largest number of maternal deaths in the world and accounts for 22% of all maternal death[2]. According to World Health Organization (WHO), “A maternal death is defined as death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related to or aggravated by pregnancy or its management but not from accidental or incidental causes” [1]. Maternal mortality is considered a key health indicator and the direct causes of maternal deaths are well known and largely preventable and treatable.

The major complications that accounts for nearly two-thirds of all maternal deaths are severe bleeding (mostly bleeding after childbirth), infections

(usually after child birth), high blood pressure during pregnancy (pre-eclampsia and eclampsia), complications from delivery and unsafe abortions.

Maternal Mortality Ratio (MMR) of India for the period 2016-18, as per the latest report of the National Sample Registration System (SRS) data is 113/100,000 live births, declining by 17 points from 130/100,000 live births in 2014-16 [3].

Ending preventable maternal mortality (EPMM) is one of the challenging tasks in most of the country [4]. Sustainable development goal (SDG) 3 includes an ambitious target of reducing the global maternal mortality rate (MMR) to less than 70 per 100,000 births by 2030 with no country having a maternal

mortality greater than 140, a number twice the global average [5].

Aims/ Objectives: To evaluate the factors contributing to maternal mortality in a tertiary care hospital.

Inclusion & Exclusion Criteria

Inclusion Criteria

1. All maternal deaths recorded in the Department of OBG, GIMS, Kalaburagi will be included in the study.
2. All maternal deaths in other departments other than OBG will also be included in the study.

Exclusion Criteria: Accidental or incidental causes of death during pregnancy and childbirth will be excluded from the study.

Materials and Methods

The study will be conducted in the Department of OBG, GIMS, Kalaburagi. It is a retrospective study which will be conducted by evaluating the maternal deaths which occurred during the period from January 2019 to December 2020 as per the inclusion criteria mentioned above.

As per the hospital records, maternal deaths which occurred during the 2-years study period were 66. Every maternal death was scrutinized from various aspects likely to be related to death such as age, locality of residence, parity, gestational age, antenatal care, admission-death interval, condition of the women at admission, cause of death and communication facility and delay if any in reaching the tertiary care hospital from the primary care centre.

Statistical Method: Data will be analyzed by using appropriate statistical tests (percentages and proportions). SPSS version 10 was used for analysis of the data.

Results

The maternal mortality in the present study was 354/1,00,000 live birth. There were 66 maternal deaths in the study period. Most deaths occurred in the 20-30 years age group (81.8%). 60.59% of deaths occurred within 24 hours after admission. Hypertension disorders (30.30%), hemorrhage (22.72%), sepsis (13.63%) are the most common direct causes of maternal death. Anemia and other medical disorders with cardiac diseases being important indirect causes of maternal death.

Table-1: Age wise distribution of maternal deaths

Age group (years)	Number	Percentage
<20	3	4.5
20-30	54	81.8
30-35	7	10.6
>35	2	3.03

A total of 66 maternal deaths were retrospectively analyzed over a period of 2-years. Most of maternal deaths occurred in the age group of 20-30 years (81.8%) and 3.03% were in the age group above 35years.

Table-2: Parity Wise Distribution

Parity	Number	Percentage
Primi-para	31	46.90
Multi-para	30	45.4
Grand multi	5	7.57

In the present study it is observed that Primi (46.9%) and multipara-45.4% shared almost equal incidence. The least number of incidence was observed in the age group >35 years (3.03%).

Table-3: Distribution based on Residential Background

Residential Background	Number	Percentage
Rural	53	80.30
Urban	13	19.69

As evident from the Table 3: 80.3% of deaths were from rural background, and 19.69% belong to urban areas. Majority of these cases were unbooked and referred.

Table-4: Distribution based on Gestational Age

Gestational Age (weeks)	Number	Percentage
Preterm	16	24.24
Term	32	48.48
Puerperal	18	27.27

Table 4 estimates 48.48% of maternal death occurred at term gestation, which is similar in comparison to other studies, where most complications occurred at term gestation. A study by Pratima Devi et al[6] has shown that majority of

death occurred at term i.e., 57.5%. Around 27.27% were delivered and puerperal cases, which were referred from PHCs, CHCs and Private Hospitals. Medical disorders, post-partum hemorrhage, and sepsis were the major causes of deaths.

Table-5: Admission to Death Time Interval

Admission to Death Time Interval	Number	Percentage
Less than 1-hour	5	7.57
1-12 hours	26	39.39
12-24 hours	9	13.63
24-48 hours	10	15.15
>48 hours	16	24.24

60.59% of deaths occurred within 24 hours of admission. Majority of the cases were due to post-partum hemorrhage, antepartum eclampsia, 2 were ruptured ectopic pregnancy and ruptured uterus, which were again referred cases admitted in irreversible shock. Some were medical disorders like cardiac diseases and SARI (COVID-19) infection. It is evident from the Table 5 that Maternal Deaths were with onset of complication before admission and nearly one third patients presented late to hospital.

The common complaints patient presented with includes history of high blood pressure with imminent symptoms, antepartum eclampsia, fever with chills, LRTI, severe anemia and rest were referred in shock.

Discussion

Maternal deaths make a severe impact on the family community and eventually on nation. Overall estimate 1.3 (95% CI, 1.26-1.35) maternal death occurred in India between 1997 and 2020. SRS-special bulletin on maternal mortality in India-2017-2019 declared, MMR of India has declined by 10

points. It has declined from 113 in 2016-18 to 103 in 2017-19 (8.8% decline). Progressive reduction in MMR was noticed[7].

But even today, large number of maternal deaths were due to hypertension, hemorrhage and sepsis. 30.30% of MMR is due to hypertensive disorders. 22.72% due to hemorrhage, 13.63% due to sepsis leading to 66.65% which is comparable to study done by Pal et al[8] where there was a statistically significant increase in cases of preclampsia and eclampsia. Also by Konar et al [9]. analysis the leading cause of deaths were determined as hypertension (29.4%) hemorrhage (21.56%) sepsis (15.05%) which accounted for 66.01%. comparable to our present study.

In a developing nation like India, hemorrhage still form the leading cause of death [10], whereas in the present study, there was change in this trend and hypertensive disorders were the most common cause like in a developed country. The leading causes of death over the year have changed to hypertensive disorders from hemorrhage.

Table-6: Causes of Death

Causes of death	Number	Percentage
Hypertensive disorders	20	30.30
Hemorrhage	15	22.72
Anemia	9	13.36
Sepsis	9	13.36
Cardiac	4	6.06
Medical disorders and others	9	13.63

Medical disorders including cardiac causes and respiratory infections, CVT and other complications were also noticed around 13.63% of MMR. Our study findings were almost similar to the study by Jadhav et al [11], Pal et al [8] and Mukherjee et al [12].and statistically significant.

Conclusion:

Our Centre being a tertiary care teaching hospital, patients are referred from periphery and private

hospitals. Maternal mortality was found to be on higher side. Proper referral with necessary intervention, prompt decision is needed to prevent maternal deaths. Priorities for improvement of maternal health and reducing maternal mortality are made.

Developing simplified standard guidelines protocols, setting of skill labs for different training programmes to strength quality of capacity building of different cadres of health care providers.

Streamlining of referral transport and improving availability of essential drugs in PHCs and CHCs.

Acknowledgements

The authors are very much thankful to Department of OBG and Medical Records Department for their support during the course of study.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee.

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