

# Maternal Near Miss: A case series study at a tertiary care Hospital in North Karnataka

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## Abstract

**Background:** Maternal mortality ratio is an important indicator for the assessment of maternal health of a region. Interventions targeting reduction of maternal deaths cannot be planned effectively because although maternal mortality ratio remains high, maternal deaths in absolute numbers are rare in a community. On the other hand, the proportion of near miss cases in relation to maternal deaths is high, and the causes are similar. Reviewing near miss cases provides an opportunity to study the potential causes of maternal mortality and aids in planning and implementation of effective interventions in a particular region.

### Objectives:

1. To assess the maternal near miss ratio per 1000 live births
2. To assess the factors responsible for maternal near miss

**Methods:** A record based case series study was conducted in the department of OBG at SNMC. The study was conducted between January 2015 and December 2017. Maternal near miss cases were identified according to WHO criteria. The primary factors responsible, hospital stay, ICU admission and special interventions were noted.

**Results:** 6053 women delivered during the study period and 100 women were identified as having near miss event. During the same period, there were 13 maternal deaths. The maternal death to near miss ratio was 13:100 and the maternal near miss ratio was 16.43/1000 live births. Of the women with near miss events, 46% had PPH, 42% had eclampsia and 7% presented with jaundice. All 100 patients required ICU admission. 17% required multiple blood transfusions, 11% developed acute renal failure, 11% required ventilatory support and 17% were managed for multi-organ dysfunction. 19% required hysterectomy and 22% needed uterine compression sutures.

**Conclusion:** Majority of the maternal near-miss cases were due to PPH and eclampsia. Hence, study of maternal near-miss cases is important to identify lacunae in the health care system and plan effective strategies for preventing maternal mortality and morbidity.

**Keywords:** maternal mortality; morbidity; eclampsia; maternal near- miss

### Introduction

Maternal mortality ratio is an important indicator for the assessment of maternal health of a region. Interventions targeting reduction of maternal deaths cannot be planned effectively because although maternal mortality ratio remains high, maternal deaths in absolute numbers are rare in a community. Reviewing near miss cases provides an opportunity to study the potential causes of maternal mortality and aids in planning and implementation of effective interventions in a particular region.

Maternal near miss is said to have occurred when women presented with life threatening during pregnancy, child birth and within 42 days after delivery, but survive by good institutional care<sup>[1,2]</sup>.

### Objectives

- To assess the maternal near miss ratio per 1000 live births
- To assess the factors responsible for maternal near miss

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## Materials and Methods

Three years of record based case series study was done at S. Nijalingappa Medical College from 2015 Jan to 2017 Dec. The number of ANC admissions was 6053; among them 100 were near miss cases based on WHO criteria. Information during the study period was obtained from case records, labour room and ICU registers. Patient characteristics including age, parity, gestational age, mode of delivery, ICU admission and surgical intervention to save the life of mother were noted. Data was calculated using open epi software version 2.3.1.

## Results

Of the 6053 deliveries during the study period, 100 were identified as near miss cases based on WHO criteria. The maternal near miss incidence ratio was 16.43/1000 live births in our study - 33% were in 21-25 years age group, 36% were unbooked, 68% were multipara and 44% were low income 80% were rural, 63% were antenatal.

**Table 1. Demographic profile of patients**

Age in years	Number of cases (n=100)
15-20	28
21-25	33
26-30	22
31-35	17
<b>ANC status</b>	
Booked	44
Unbooked	36
<b>Parity</b>	
Primi	32
Multi	68
<b>Gestational age</b>	
Term	54
Preterm	46
<b>Socio economic status</b>	
Low income group	44
Medium income group	31
High income group	25
<b>Residence</b>	
Urban	20
Rural	80
<b>Pregnancy status</b>	
Antenatal	63
Postnatal	37

**Table 2. Clinical presentation at the time of admission**

Signs and symptoms	Number of cases
Bleeding PV	43
Icterus	09
High blood pressure	17
Nausea/ vomiting	10
Abdominal pain	16
Fever	05

**Table 3. Distribution of cases depending on diagnosis**

Diagnosis	Number of cases (n=100)
Preeclampsia-eclampsia	42
Traumatic PPH	19
Atonic PPH	27
Secondary PPH	05
Pregnancy with jaundice	07

**Table 4. Distribution of cases based on complications**

Complications	Number of cases (n=100)
ARF/Dialysis	11
DIC	12
Multiorgan failure	06
ICU admission	40
Multiple blood transfusions	17
Shock/ventilator	11
Hepatic dysfunction (serum bilirubin elevated)	03

**Table 5. Distribution of cases on intervention done based on complications**

Intervention done	Number of cases (n=100)
Manual removal of placenta	16
Uterine packing	43
Postpartum hysterectomy	19
Uterine compression sutures	
B-Lynch sutures	07
Cho sutures	05
Haymen sutures	10

**Table 6. Causes of near missed mortality in relation to maternal outcome**

Causes	Caesarean	Vaginal delivery	Hysterectomy
Hypertensive disorders	30	23	-
Haemorrhage	10	10	04
Sepsis	07	05	04
Pregnancy with jaundice	03	04	-
Total	50 (50%)	42(42%)	08(8%)

**Discussion**

The maternal near miss ratio was 16.43/1000 live births, comparable to study by Roopa PS et al<sup>[3]</sup> 17.8/1000 live births. In our study, 43% patients presented with bleeding per vaginum, 27% presented with PPH, 42% presented with eclampsia. In comparison, a study by Chhabra P et al<sup>[4]</sup> found eclampsia 34%, hemorrhage 34%, sepsis 12%, 9.5% obstructed labour and others 14.5%.

Hemorrhage and hypertensive disorders are the major contributors to maternal death in developing countries. In our study at the same time there were 13 maternal deaths, whereas study conducted by Mehata et<sup>[5]</sup> al showed 60 maternal deaths.

In our study severe pre eclampsia was 30%, eclampsia 10% HELLP syndrome was 2%. Study was Souza JP<sup>[6]</sup> et al had a incidence of severe pre eclampsia 36%, eclampsia 9.7% and HELLP syndrome was 5.6%.

Appropriate modifications to the WHO criteria, evolved and validated for local needs are required as they currently underestimate near misses in India<sup>[7]</sup>.

**Conclusion:** The study of maternal near-miss cases is important to identify lacunae in the health care system and plan effective strategies for preventing maternal mortality and morbidity.

Based on our findings we recommend a number of actions to be taken by the government for prevention of maternal deaths as following

- I. Improvement of Antenatal care to help early identification of high risk pregnancies.
- II. To manage PPH including by using active management of third stage of labour.
- III. Training obstetric health professionals.

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