



MATERNAL NEAR MISS: ADDRESSING THE ISSUES IN A TERTIARY CARE CENTRE

Gynaecology

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ABSTRACT

This study was conducted in Fr.Mullers Medical college hospital, Mangaluru from January 2016 to June 2016 to determine the etiology and outcome of near miss mortality in obstetrical patients. During the 6 months period, there were 1702 deliveries at our institution and 28 cases were identified as near miss cases. 17 cases were due to haemorrhage, 11 due to Hypertensive disorders of pregnancy. 4 patients had sepsis. 3 patients died during the study, one each due to eclampsia, HELLP syndrome and cardiac failure. As near miss analysis indicates quality of health care, it is worth presenting in national indices.

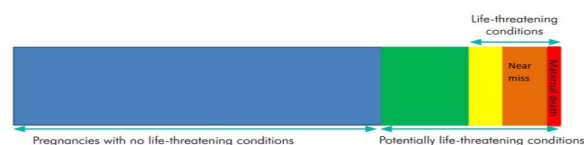
KEYWORDS

near miss, maternal mortality rate

INTRODUCTION

Significant reduction in MMR has been made in INDIA to reach 178/100000 livebirths. The 12th 5 year plan has set an MMR target of 100/100000 to be achieved in 2017. As maternal mortality is constantly decreasing, the focus is shifted on maternal near miss which describes severe maternal morbidity. As we move closer to 2018, the goal number 5 of the millennium development goals (MDG), to improve maternal health is falling way below our target. Pregnant women's health status is not reflected by mortality indicators alone. Hence the concept of severe acute maternal morbidity (SAMM) is apt for the present health providing system^{2,3,4}. SAMM has been extensively studied in the recent past to evaluate the quality of care in a particular institution.

Maternal near miss case is defined as "a woman who nearly died but survived a complication that occurred during pregnancy, childbirth, or within 42 days of termination of pregnancy"⁵. Stones et al was the first to use the term near miss morbidity encompassing potential life threatening episode³.



Aims and objectives

- To audit the maternal near miss in our institution
- To determine the etiology and outcome of near miss mortality in obstetrical patients
- Improve clinical skills and to reduce preventable morbidity and mortality with evidence based guidelines

MATERIALS AND METHODS

This study was conducted in Fr.Mullers Medical college hospital, Mangaluru from January 2016 to June 2016. In addition to providing twenty-four-hour emergency obstetric services, this hospital also provides antenatal care and delivery services for both low and high risk pregnant women. Hospital has 24-hour facility for blood component therapy, high dependency unit (HDU) in labor room complex and intensive care unit.

Potentially life threatening conditions were diagnosed, and those cases which met WHO 2009 criteria for near miss were selected. WHO criteria included a set of clinical, laboratory, and management-based criteria. Maternal mortality during the same period was also analyzed. Patient characteristics including age, parity, gestational age at admission, booked (more than three antenatal visits to our hospital irrespective of the gestational age), mode of delivery, ICU admission, duration of ICU stay, total hospital duration, and surgical intervention to save the life of mother were considered. Patients were categorized by final diagnosis with respect to hemorrhage, hypertension, sepsis /organ failure.

Inclusion criteria

Women who are pregnant, in labour, or who delivered or aborted up to 42 days ago arriving at the facility with any of the listed conditions or those who develop any of those in Box 1.

Box 1: WHO INCLUSION CRITERIA 2009

1) Severe maternal complications Severe post partum haemorrhage Severe pre eclampsia Eclampsia Sepsis or severe systemic infection Rupture uterus Severe complications of abortion	c) Renal dysfunction oliguria not responsive to fluids or diuretics, dialysis for acute renal failure, severe acute azotemia (s.creatinine > 3.5mg%)
2) Critical interventions or intensive care unit Admission to Intensive care unit Interventional radiology Laparotomy Use of blood products	d) Coagulation/haematological dysfunction failure to form clots, massive transfusion or red cells (5 or more units), severe acute thrombocytopenia (<50,000 platelets/ml)
3) Maternal vital status -Maternal death	E) Hepatic dysfunction Jaundice in the presence of pre eclampsia, severe acute hyperbilirubinemia (bilirubin >6mg/dl)
3) Life threatening conditions a) Cardiovascular dysfunction Shock, cardiac arrest, use of continuous vasoactive drugs, cardiopulmonary resuscitation, severe hypoperfusion and acidosis. b) Respiratory dysfunction Acute cyanosis, gasping, tachypnea (RR>40c/min), severe bradypnea (RR<6c/min), intubation and ventilation not related to anaesthesia, severe hypoxemia (oxygen saturation <90% for more than 60 minutes or PaO ₂ /FiO ₂ <200)	h) Neurological dysfunction prolonged uncounsciousness (lasting 12hrs or more)/coma, stroke, status epilepticus, total paralysis
	i) Uterine dysfunction uterine haemorrhage or infection leading to hysterectomy

Exclusion criteria

Women that develop those conditions unrelated to pregnancy (i.e. not during pregnancy or 42 days after termination of pregnancy).

OBSERVATIONS AND RESULTS DEMOGRAPHIC DISTRIBUTION

CHARACTERISTICS	NUMBER	PERCENTAGE
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AGE	<19YRS	3	10.71
	20-35YRS	19	67.85
	>35YRS	6	21.44
PARITY	PRIMI	8	28.57
	G2	4	14.29
	G3	4	14.29
	>G3	9	32.14
	POSTNATAL	3	10.71
GESTATION NAL AGE	<13WEEKS	6	21.44
	13-28WKS	3	10.71
	>28WEEKS	16	57.14
	POSTNATAL	3	10.71
BOOKING STATUS	BOOKED	14	
	REFFERED	8	

During the 6 months period ,there were 1702 deliveries at our institution and 28 cases were identified as near miss cases according to WHO inclusion criteria .

Among 28 patients most of them were among age group of 20-35 years (67.85%) with majority of them being multiparous followed by primigravida (28.5%). Near miss was highest in third trimester(after 28 weeks) and first trimester , least in 2nd trimester.

TOTAL NUMBER OF CASES N=28		No. of cases	Mortality
HYPERTENSIVE DISORDERS		5	0
a) SEVERE PREECLAMPSIA		3	1
b) ECLAMPSIA		3	1
c) HELLP SYNDROME			
HAEMORRHAGE		5	0
a) ECTOPIC PREGNANCY		1	0
b) ABORTION		3	0
c) ABRUPTIO PLACENTA		1	0
d) PLACENTA PRAEVIA		6	0
e) PPH		1	0
f) UTERINE INVERSION			

17 cases were near miss due to haemorrhage, out of which 6 cases were post partum haemorrhage requiring massive transfusion with shift to intensive care unit . 5 cases of ruptured ectopic, 3 cases of massive abruption and 1 case of uterine inversion.

Hypertensive disorder of pregnancy was another important condition and accounted for 11 cases with death of two patients. Cases of eclampsia and severe pre eclampsia were given magnesium sulphate as anticonvulsant with intrapartum mortality in 1 patient.

SEPSIS/ORGAN FAILURE

a) CARDIAC FAILURE	1	1
b) RENAL FAILURE	1	0
c) RESPIRATORY FAILURE	1	0
d) NEUROLOGICAL	1	0

We had 4 patients with organ failure out of which 1 patient of severe mitral stenosis died postpartum due to cardiac failure.

Cases which required surgical intervention

POST PARTUM HAEMORRHAGE	1
RUPTURED UTERUS	1
RUPTURED ECTOPIC	5
PUS IN PERITONEAL CAVITY	1
UTERINE INVERSION	1

Among 28 cases, 6 patients underwent emergency laparotomy. 5 in view of rupture ectopic and 1 patient for pus in peritoneal cavity leading to sepsis. 3 patients underwent peripartum hysterectomy for postpartum haemorrhage , ruptured uterus & uterine inversion .

Cases which needed medical intervention

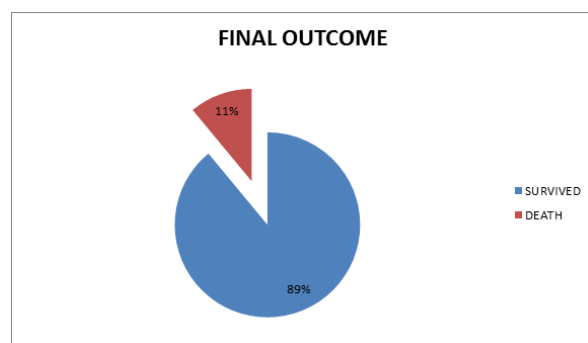
DIALYSIS	1
IONOTROPES	1
BLOOD/BLOOD PRODUCTS	12
VENTILATOR	7
ANTICONVULSANTS	2

Among 28 patients 12 patients received blood and blood products and 7 patients required ventilatory support with 1 patients requiring

anticonvulsants for status epilepticus and 1 patient on inotropic support and another patient underwent dialysis for acute renal failure.

Mode of termination

VAGINAL DELIVERY	3
LSCS	15
LAPAROTOMY FOR RUPTURE ECTOPIC	5
LAPAROTOMY FOR RUPTURE UTERUS	1



DISCUSSION

Obstetric deaths represent the quality of maternal care. But for the present scenario it may not reflect the global situation with regard to obstetric care. WHO 2009 criteria included laboratory values as well as clinical parameters.

WHO 2009 DEFINITIONS

- Maternal death is defined as death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.
- Maternal near miss case is defined as “a woman who nearly died but survived a complication that occurred during pregnancy, childbirth, or within 42 days of termination of pregnancy”
- Severe maternal complications is defined as “potentially life-threatening conditions”. 1. Severe postpartum haemorrhage 2. Severe pre-eclampsia 3. Eclampsia 4. Sepsis/severe systemic infection 5. Ruptured uterus.
- Maternal near miss ratio defined as number of maternal near miss per 1000 live births
- Maternal near miss mortality ratio-It is the ratio between number of maternal near miss cases and maternal deaths. Higher ratio indicates better care.

In our study among 1702 deliveries we had 28 near miss cases and 3 maternal deaths. maternal death near miss ratio is 1: 9.3. the most common near miss events were atonic post partum hemorrhage (32.14%) followed by hypertensive disorders in primigravidas. .52% received blood and blood components ,30% required ventilatory support whereas majority underwent cesarean section.(62.5%).

A study by Jayarathnam et al showed preeclampsia, PPH, and sepsis as the major causes of near miss. Probably the study would have been more complete if the authors had commented about the maternal mortality ratio and near miss to maternal mortality ratio⁶.

Mantel GD et al concluded that a near miss describes a patient with acute organ dysfunction, which if not treated could result in death⁷.

According to Murphy DJ et al, all women admitted for ICU in pregnancy or upto 42 days post partum are considered as near miss mortality⁸.

A study done by shrestha et al said that most of the near miss were less than 13 weeks and in 3rd trimester which is in correlation with our study⁹. Another comparable study done by Ranathunga et al from Srilanka concluded that near miss were gravida 2-3 which is similar to our study¹⁰.

However Roopa et al had majority of near miss cases who were primigravida. Unlike our study, sepsis was the leading cause of mortality in this study followed by haemorrhage³.

Chabra et al conducted a study in a teaching hospital which concluded that hemorrhage (34%) followed by eclampsia and preeclampsia (32%) and sepsis (4%)¹¹.

Delayed diagnosis, inappropriate transfer, and inadequate utilization of resources might have been the cause for maternal morbidities and mortalities in most of the studies.

CONCLUSION

Hemorrhage and hypertensive disorders followed by rupture ectopic are the leading causes of near miss events. New-onset viral infections have emerged as the leading cause of maternal mortality. Along with increased awareness of one's own health, health education may go a long way in improving the quality of obstetric care. As near miss analysis indicates quality of health care, it is worth presenting in national indices.

LIMITATIONS OF THE STUDY

It is a single audit; data collection was limited. Good data collection spanning over a few years would give a true picture of the improvement in obstetric care and also the long-term effects

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