



A STUDY OF MATERNAL INTENSIVE CARE AND NEAR MISS IN OBSTETRICS AT A TERTIARY CARE CENTRE IN INDORE.

Gynaecology

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ABSTRACT

Maternal mortality is 'Just the tip of iceberg' and has vast base to the iceberg, maternal morbidity which remains described. WHO has come up with clinical, laboratory, and management criteria for the identification of the near miss cases. This retrospective cohort study was conducted in the MGM MEDICAL COLLEGE AND MY HOSPITAL ,INDORE , a tertiary referral teaching institute during period of July 2015 To June 2017 with the aim to identify the near miss cases, to study their demographics, common causes of obstetric ICU admissions and interventions carried out. Maternal near miss incidence ratio in the study was found to be 18.75 per thousand live births .Maternal near-miss mortality ratio is 3.43:1, which means for every 3.4 women who survived life-threatening WHO severity markers listed in Table 1,one woman died .Maternal Mortality rate in the study was 532 .

KEYWORDS

INTRODUCTION

Despite the improvements in obstetric care over the few decades, maternal morbidity and mortality remains to be a challenge in the developing countries. Global MMR dropped by 45 % between 1990 and 2013. The millennium development goals to reduce maternal mortality by 75 % have not been met with. MDG 2014 report says that India is amongst 10 nations with highest MMR and still accounts for 17 % of total maternal deaths^[1]. An estimated 289,000 maternal deaths occurred in 2013 around the world^[1]. Out of that, 50,000 women died in India alone. Most of the burden of maternal deaths is carried by low-income countries, but maternal mortality is still a relevant public health problem amongst developing countries. Maternal mortality is 'Just the tip of iceberg' and has vast base to the iceberg, maternal morbidity which remains described.

Till recently there were no criteria set for identification of these cases for routine implementation, and wider application of this concept was limited. But in 2009^[2] WHO has come up with clinical, laboratory, and management criteria for the identification of these cases. 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”^[3]

AIMS AND OBJECTIVES

1. To study the demographics and understand the common causes of obstetric ICU admissions.
2. To identify the near miss cases and calculate the near miss incidence , Maternal near-miss-to-mortality ratio and mortality index.

MATERIALS AND METHODS

This retrospective cohort study was conducted in the tertiary care referral MGM MEDICAL COLLEGE AND MY HOSPITAL ,INDORE, is a tertiary referral teaching institute and caters local and population of rural India. It is a referral hospital for both public and private hospitals in Indore District and nearby suburbs. Our hospital has 24-h emergency obstetric services, antenatal outpatient department which provides antenatal care for 18000 patients annually. The hospital has 24-h facility for blood bank.

Intensive care unit with 24-h facility is available . Out of total obstetric patients admitted in the Department of Obstetrics and Gynaecology during study period JULY 2015-JUNE 2017 those who met new WHO set of severity markers for near-miss cases for acute severe maternal morbidity were selected (Table 1). All maternal deaths during the same period were analysed and compared with near-miss ones.

Data collection

For each eligible patient, medical records were reviewed. Their socio-demographic features, mode of delivery, diagnosis on admission,

surgical intervention, ICU admission, duration of hospital stay and ultimate outcome were collected. All the maternal deaths during study period were analysed and compared with near-miss cases. Following indices were calculated.

Near-miss cases—Survivors of the WHO pregnancy related life-threatening conditions as severity markers (Table 1) are classified as maternal near-miss cases. Maternal near-miss incidence ratio—It refers to the number of maternal near-miss cases per 1000 live births^[4]

Mortality index—It is the number of maternal deaths divided by the number of women with life-threatening conditions, expressed as a percentage.^[5]

Maternal near-miss-to-mortality ratio—It is the proportion between maternal near-miss cases and maternal deaths^[6]

Maternal death—Maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy and from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes. Data were expressed as percentage rate 100,000 live births^[7]

Table 1 WHO set of severity markers (life-threatening conditions) used in maternal near-miss assessments

Clinical conditions	Less risk (SOFA category 1, 2)	Greater risk (SOFA category 3, 4)
Cardiovascular dysfunction	Shock	pH < 7.1
	Lactate > 5	Use of continuous vasoactive drugs
Respiratory dysfunction	Acute cyanosis	Cardiac arrest
	Respiratory rate >40 or <6 per min.	Cardio-pulmonary resuscitation
	Oxygen saturation <90 % for ≥60 min	Gaping
Renal dysfunction	Oliguria non-responsive to fluids or diuretics	PaO ₂ /FIO ₂ < 200 mmHg
		Intubation and ventilation not related to anaesthesia
Clotting/hematological dysfunction	Clotting failure	Creatinine ≥300 mmol/l or ≥3.5 mg/dl
	Transfusion of ≥5 units of blood/platelets	Dialysis for acute renal failure
Hepatic dysfunction	Jaundice in the presence of pre-eclampsia	Acute thrombocytopenia (<50,000 platelets)
Neurological dysfunction	Metabolic coma (loss of consciousness and the presence of glucose and ketonoids in urine)	Bilirubin >100 mmol/l or >6 mg/dl
	Status epilepticus/uncontrolled focal/total paralysis	Coma/loss of consciousness for 12 h or more
Uterine dysfunction	Hysterectomy due to infection or haemorrhage	

The classification is based on Sequential Organ Failure Assessment (SOFA) score

Observations.

Demographic details of near miss and maternal mortality

Characteristic	Near miss (n=561)	Death(n=159)
Age(years)		
Mean(SD)	23.63(+/-3.12)	24.12(+/-3.32)
Statistical Significance	P=0.5(not significant)	
Parity		
Primipara	240(42.08%)	70(44.02%)
Multipara	321(57.2%)	89
Gestational Period		
First Trimester	0	0

Second Trimester	98(17.46%)	22(13.83%)
Third Trimester	357(63.63%)	34(21.38%)
Post Natal	106(18.89%)	102(64.15%)
Post Abortal	0	1(0.62%)
Statistical Significance	P<0.001 (Significant)	P<0.001 (Significant)

Common direct and indirect causes of maternal near miss and death

Diagnosis/cause	Near miss (n=561)	Death (n=159)
Hypertensive Disorders	289(51.51%)	70(44.02%)
Hemorrhage	112(19.96%)	31(19.49%)
Anemia	75(13.36%)	18(11.3%)
Sepsis	46(8.1%)	24(15.09%)
Hepatitis	23(4.1%)	12(7.54%)
Others	16(2.85%)	4(2.51%)

Inteventions carried out in intensive care

Intervention	Near miss(n=561)	Mortality(n=159)
Hemodynamic support	486(86.6%)	142(89.3%)
Ventilatory support	24(4.9%)	138(86.10%)
Surgical intervention	58(10.3%)	36(22.3%)

Results

During this period of 2 years total emergency admissions were obstetrics 40,995 .Over 2 years there were 31,642 women delivered (29,8800 live birth) with 159 maternal deaths (532/100,000). 2660 women required ICU transfer for critical care (89/1000). Of the 2660 patient transferred to ICU five hundred and sixty-one patients were near-miss cases as per WHO set of severity markers for acute maternal morbidity. Multiparas were marginally more in number in both near-miss and mortality group. In near-miss group, 63.32 % of patients (n = 357) were in third trimester, While 64.38 % patients (n = 102) were in post-natal period in maternal death group. The mean age of the patients was 23.63 years in maternal near-miss cases and 24.12 years in maternal death group. Maternal near miss incidence ratio in the study was found to be 18.75 per thousand live births .Maternal near-miss mortality ratio is 3.43:1, which means for every 3.4 women who survived life-threatening WHO severity markers listed in Table 1,one woman died .Maternal Mortality rate in the study was 532 .

Conclusion

Women who survive life-threatening conditions arising from complications related to pregnancy and childbirth have many common aspects with those who die of such complications.^[8] Hypertensive disorders of the pregnancy were the leading causes of death, followed by hemorrhage and septicemia. As being rural and tribal region, many pregnancies are still unregistered and without proper follow up , overlooking the initial opportunity for diagnosis of hypertensive disorders in time .There is a high prevalence of anaemia in our region. Delay in seeking help , decreased immunity because of anaemia and malnutrition may be the aggravating factors for acute severe morbidity .Exploring the similarities, the difference and the relationship between women who died and those who survived provide more complete assessment of quality in maternal health care^[9]. Near-miss audits will allow the care of critically ill women to be analyzed, deficiencies in the provision of care to be identified, and comparison within and between institutions and, ultimately, improve the quality of obstetric care and further reduce maternal morbidity and mortality^[11]

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