

A review on causes of maternal near miss morbidity in a tertiary care centre

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Abstract

Background: Near miss morbidity(NMN) concept has led to a more comprehensive and better assessment of efficacy of care on maternal health. To define a case as near miss, three groups of criterias are there, one was disease specific criteria, second one was management/intervention based criteria and third one was organ dysfunction based criteria. **Aims and objective:** To evaluate the causes for maternal near-miss morbidity and categorise them as per WHO criteria (MNMR). **Materials and Methods:** This was a cross sectional study conducted in one year period (JULY 2014 –JUNE 2015). All the antenatal and postnatal patients who come under the definition of SAMM and who fulfil WHO criteria (2011) for near miss morbidity are included in this study. **Results:** Total 74 Near miss cases identified over period of one year. Mortality index in this study is 0.17 and Maternal Near miss Mortality ratio is 4.6. Age range of study population was 18 to 40 years. Most common co morbidity observed with the present pregnancy was GHTN seen in 41.9% patients which was further associated for increased incidence of Thrombocytopenia, Abruption and DIC seen in 37.8%, 24.3% and 31.1% patients respectively. **Discussion:** In this study among 74 near miss cases, patients were unstable at the time of admission and also maximum patients were multipara. Most common comorbidity associated with present pregnancy was GHTN followed by thrombocytopenia. **Conclusion:** Most common criteria for near-miss cases in this study was coagulation dysfunction 81% cases followed by uterine dysfunction in 16.2% cases, cardiovascular, hepatic, and respiratory dysfunction seen in 8.1% cases Near miss mortality ratio will guide us to improve overall status of maternal health.

Keywords: Near miss, WHO criteria.

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INTRODUCTION

Over the past few decades, a concept of near miss has been of interest globally for reducing the maternal mortality. WHO define maternal near miss case “a women who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy”¹. MNM incidence ratio (MNMR) was defined as number of maternal near miss cases per 1000 live births. Maternal near-miss mortality ratio(MNM:1 maternal death) refers to the ratio between

maternal near miss cases and maternal death. Higher ratios indicate better care. Mortality index(MI) refers to the number of maternal deaths divided by the number of woman with life threatening conditions expressed as a percentage. [MI= MD/(MNM+MD)]. The higher the index the more woman with life threatening conditions die(low quality of care), whereas the lower the index the fewer the women with life threatening conditions die(better quality of care).²To define a case as near miss, three groups of criterias are there, one was disease specific criteria, second one was management/intervention based criteria and third one was organ dysfunction based criteria. Clinical criteria for cardiovascular dysfunction was shock, cardiac arrest with pH <7.1 lactate >5mmol/L which was managed with continuous vasoactive drugs and cardiopulmonary resuscitation. That for respiratory dysfunction is acute cyanosis, gasping, respiratory rate > 40/min, respiratory rate < 6/min with oxygen saturation <90% for >60mins, PaO₂ / FiO₂ <200 managed by intubation and ventilation not related to anaesthesia. For renal dysfunction clinical criteria was oliguria not responsive to fluids or diuretics, with creatinine >3.5 mg/ dL managed by dialysis for acute

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renal failure. Failure to form clots with acute severe thrombocytopenia (< 50000/ cu.mm) indicates haematological/ coagulation dysfunction managed with transfusion of >5 units of blood or packed red cells. Clinical criteria for hepatic dysfunction was jaundice in the presence of pre-eclampsia and bilirubin >6.0mg/dL, whereas any loss of consciousness lasting >12 hours stroke, uncontrollable fits/ status epilepticus, total paralysis indicates neurological dysfunction. Disease specific criteria are severe preeclampsia/eclampsia/severe haemorrhage/severe sepsis and uterine rupture. Management based criteria are admission to ICU, obstetric hysterectomy, massive blood transfusion, known anaesthetic intubation and ventilation.²

MATERIALS AND METHODS

The present study was conducted in the Department of Obstetrics and Gynaecology, Govt. Medical College, Thiruvananthapuram. Primary objective of this study was to identify and study the causes of SAMM/Near miss cases and to propose recommendations to decrease the burden of SAMM. Total 74 Near miss identified over period of one year. All antenatal and postnatal patients who comes under definition of SAMM cases and who fulfil WHO criteria (2011) for near miss was used for identification of near miss cases that includes mainly five severe maternal complications and life threatening conditions associated with them. Eligibility is not restricted by gestational age at which complication occurs. This criteria is used as inclusion criteria for this study. These five severe maternal complications are: Severe post partum haemorrhage, Severe pre eclampsia, Eclampsia, Sepsis or severe systemic infections, Ruptured uterus, Severe complications of abortion Life threatening conditions associated with these conditions are: Cardiovascular dysfunction, Respiratory dysfunction, Renal dysfunction, Coagulation/ haematological dysfunction, Neurological dysfunction, Uterine dysfunction, Hepatic dysfunction.

EXCLUSION CRITERIA: Women who develop these conditions unrelated to pregnancy (i.e. not during pregnancy or 42 days after termination of pregnancy) are not eligible. Morbidity from accidental or incidental causes no way related to pregnancy like morbidity from automobile accidents or suicide are not included in this study.

OBSERVATIONS AND RESULTS:

Total 74 Near miss cases identified over period of one year. Maximum number of cases was 27% belonged to 26-30 year of age group.

Table 1: Age wise distribution of study population

AGE(YEARS)	FREQUENCY	PERCENT
<25	21	28.4
26-30	27	36.5
31-35	20	27
36-40	6	8.1
TOATL	74	100

Table 2: Parity wise distribution of study population

PARITY	FREQUENCY	PERCENT
Para 1	35	47.3
Para 2	10	13.5
Para 3	2	2.7
Primigravida	27	36.5
Total	74	100

Maximum number of patient had parity1, only 2.7% patients were Para 3, none of the patients had parity of more than three.

Table 3: Co morbidities in present pregnancy

Co morbidities		
GHTN	31	41.9
Thrombocytopenia	28	37.8
DIC	23	31.1
Abruption	18	24.3
GDM	14	18.9
Jaundice	8	10.8
HELLP	6	8.1
Pre eclampsia	6	8.1
Partial HELLP	5	6.8
Hypothyroidism	5	6.8
Impending eclampsia	5	6.8
Placenta previa	5	6.8
Drug allergy	5	6.8
Placenta accrete	4	5.4
C/c HTN	3	4.1
Bronchial asthma	3	4.1
Renal disease	2	2.7
Placenta percreta	2	2.7
Overt DM	1	1.4
Heart disease	1	1.4
SLE	1	1.4
Eclampsia	1	1.4

Table 4: MgSO4 given

MgSO4 given	Frequency	Percent
No	67	90.5
Yes	7	9.5
Total	74	100

6 patients came with complaint of pre eclampsia, 5 patients came with complaint of impending eclampsia and 1 patient came with complaint of eclampsia. MgSO4 was given to 7 patients.

Table 5: Mode of termination of pregnancy

Mode of termination of pregnancy	Frequency	Percent
Vaginal delivery	21	28.4
CS	48	64.9
Laparotomy	5	6.7
Total	74	100

Caesarean section was mode of termination of pregnancy for 64.9% patients. Laparotomy was done for 6.7% cases for ectopic gestation and 28.4% underwent normal vaginal delivery.

Table 6: Post partum haemorrhage

Post partum haemorrhage	Frequency	Percent
Traumatic	3	33.3
Traumatic+ atonic	2	22.2
Atonic	4	44.5
Total	9	100

9 patients had history of post partum haemorrhage. 44.5% patients had atonic type of post partum haemorrhage. 33.3% patients had traumatic type of postpartum haemorrhage, while 22.2% patients had combined both atonic and traumatic type of post partum haemorrhage.

Table 7: Uterine rupture

Uterine rupture	Frequency	Percent
Absent	71	95.5
Present	3	4.1
Total	74	100

4.1% patients were diagnosed with ruptured uterus.

Table 8: H/o adherent placenta

Adherent placenta	Frequency	Percent
Absent	63	85.1
Present	11	14.9
Total	74	100

14.9% patients were identified to have adherent placenta during third stage of labour.

Table 9: Causes of near miss

Causes of near miss	Freq	%
Shock	6	8
Cardiac arrest	2	3
Use o of continuous vasoactive drugs	5	7
Severe tachypnoea	1	1
Intubation and ventilation not related to anaesthesia	5	7
Severe acute azotemia	3	4
Failure to form clots	16	22
Massive transfusion of blood or red cells	39	53
Severe acute thrombocytopenia	31	42
Severe acute hyperbilirubinemia	6	8
Hysterectomy due to infection or haemorrhage	12	16

Most common cause for near miss was massive transfusion of blood or red cells (≥ 5 units) seen in 53% patients, followed by severe acute thrombocytopenia ($< 50,000$ platelets/ml) seen in 42% cases, coagulation dysfunction failure to form clots seen in 22% cases, hysterectomy due to infection and haemorrhage in 16% cases.

Table 10: System wise criteria for near miss

Criteria of nearmiss	Frequency	Percent
Cardiovascular+respiratory+coagulation dysfunction	2	2.7
Cardiovascular dysfunction	1	1.4
Cardiovascular +coagulation dysfunction	3	4
Respiratory dysfunction	2	2.7
Respiratory+coagulation +uterine dysfunction	1	1.4
Respiratory+coagulation dysfunction	1	1.4
Renal dysfunction	2	2.7
Renal+coagulation dysfunction	1	1.4
Coagulation dysfunction	44	59.4
Coagulation +uterine dysfunction	8	10.8
Hepatic dysfunction	6	8.1
Uterine dysfunction	3	4

DISCUSSION

Maximum number of patients (36.5%) were in age group of 26-30 years. 28.4% patients were below 25 years of age, 27% patients were in 31-35 years of age group and only 8.1% patients belong to 36-40 years of age group. These findings are different from the study done in Myanmar, in which maximum number of near-miss cases belongs to 30-39 years of age group³. In this study, maximum number of women were multipara (63.5%) that was similar to the results obtained in a study which was done in Assam and the study from Wayanad district in Kerala⁴. Caesarean section was mode of termination of pregnancy in 64.9% patients, 28.4% patients underwent vaginal delivery and 6.7% patients underwent laparotomy for ectopic gestation, compared to the study done at Assam in which 54.2% patients delivered vaginally⁵. Another study done in Ahmedabad also shows more number of vaginal deliveries in near-miss cases⁶. Most common comorbidity associated with present pregnancy was GHTN (42%) followed by thrombocytopenia (38%), DIC (31%), abruption (24%) and GDM (18%) and jaundice (14%). These findings of high prevalence of GHTN and related complications are compared to other studies done at Assam, Ahmedabad and Myanmar³. MgSO₄ infusion was given to 7 patients among 6 patients who came with complaints of preeclampsia, 5 patients who came with complaints of impending eclampsia and 1 patient with eclampsia. A study done in Assam shows effect of MgSO₄ in decreasing case fatality ratios in patients with eclampsia⁵. Most common criteria for near-miss cases in this study was coagulation dysfunction 81% cases followed by uterine dysfunction in 16.2% cases, cardiovascular, hepatic, and respiratory dysfunction seen in 8.1% cases and renal dysfunction was seen only in 4.1% cases. No case of neurological dysfunction was present. In a study done at Ahmedabad

most common cause of near-miss was coagulation dysfunction, respiratory dysfunction and hepatic dysfunction. In this study coagulation dysfunction was most common cause in both antenatal and postnatal patients which was in accordance with the study done at Fernandez hospital, Hyderabad in 2017⁶. Hence from our study we recommend the importance of making the pregnant ladies aware about early diagnosis of complications, timely and judicious intervention to reduce the morbidity. Optimum and standard antenatal care is important to decrease near miss morbidity. Antenatal classes involving the patient and family members will enlighten about early warning signs and it will contribute a lot in reducing SAMM.

CONCLUSION

Every mother should live beyond pregnancy and childbirth. Why do women die, what could have been done, where did we missed out, answers to all these questions related to maternal mortality are hidden in the details of the morbidity. Near miss cases occur more often than maternal death and may generate more information because the women herself can be a source of data. Review of near miss cases has the potential to highlight the deficiencies as well as the positive elements in the provision of obstetric services in any health system.

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