

Study of near Miss Cases in Obstetrics

Shabina Khan¹, Parru Singh², Astha Gupta³

ABSTRACT

Introduction: Near miss cases are the acronym for the severe acute maternal morbidity (SAMM). It is a severe life-threatening obstetric complication necessitating an urgent medical intervention to prevent maternal mortality. It has direct causes like early and late pregnancy haemorrhage and indirect causes-anaemia, heart disease, infective hepatitis, malaria and other medical disorders in pregnancy. Aims: 1. To assess the Incidence of Near-Miss Case. 2. To analyse the causes of Near-Miss Cases. 3. To identify associated factors responsible for Near-Miss Cases.

Material and methods: A Prospective study conducted in the Department of Obstetrics and Gynaecology, Rohilkhand Medical College and Hospital, Bareilly, U.P for 1 year from 1st November 2017 to 31st October 2018. All cases of near miss, fulfilling WHO criteria, were included. The women presenting with life-threatening conditions and surviving a complication that occurred during pregnancy, childbirth or within 42 days of delivery and termination of pregnancy were. The sample size was 50, the alpha value was 5% and power was 80%. The software PS 2 was used.

Results: Out of 50 patients, 50% patients were 26-30 years. 35 patients were from rural area, 33 patients were unbooked. 18 patients had POG >28 weeks, majority of patients were multiparous and had vaginal delivery, 18 were of eclampsia, followed by severe pre-eclampsia, post-partum haemorrhage, ruptured ectopic, placenta previa, placenta percreta and ruptured uterus. 28 patients were admitted in the ICU followed by blood transfusion > 5 units in 22(44%) patients. 21 patients suffered from early organ system failure, 12 patients had features of early renal failure, 8 patients had features of early cardiac failure, and 6 patients had features of early hepatic failure.

Conclusion: Hypertensive disorders in pregnancy and severe obstetric hemorrhage were the major causes of SAMM in our study.

Keywords: Miss Cases, Obstetrics

INTRODUCTION

Near miss cases is the acronym for the severe acute maternal morbidity (SAMM). It is a severe life-threatening obstetric complication. The causes of Maternal Mortality are divided into- direct causes, such as haemorrhage in early pregnancy, and late pregnancy haemorrhage like placental abruption, placenta previa, rupture uterus etc., the most common cause of maternal death is postpartum haemorrhage. Other direct causes are pregnancy induced hypertension (pre-eclampsia, eclampsia), dystocia, uterine rupture, stroke, sepsis or severe systemic infection and obstetric hysterectomy. Indirect causes of SAMM includes anemia, heart disease, infective hepatitis, malaria and other medical disorders in pregnancy. One of the eight Millennium Development Goals (MDG) adopted

involves improving maternal health (MDG5) and Maternal Mortality Ratio (MMR) was assumed a key indicator set for monitoring progress towards the achievement of MDG5¹. MMR is an indicator of maternal health and obstetric care. The MMR of India has declined from 167 in 2011-2013 to 130 in 2014-2016². The decline has been most significant in EAG (Empowered action group) States and Assam from 246 to 188. With the fall in MMR in advanced countries SAMM (Severe acute maternal morbidity) has been proposed as an indicator of quality of obstetric care. In 2009, 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." The identification of near-miss cases is always retrospective, i.e. the woman needs to survive the life-threatening complication in order to be considered as a near-miss case. WHO has uniform set of identification criteria (clinical criteria, laboratory-based criteria, management-based criteria) for maternal near-miss cases³.

1. Clinical criteria: Acute cyanosis, Gasping, Respiratory rate >40 or <6/min, Shock, Oliguria non-responsive to fluids or diuretics, clotting failure, Loss of consciousness lasting ≥12 hours and absence of pulse/heartbeat, Stroke, Uncontrollable fit/total paralysis, Jaundice in the presence of Pre-Eclampsia.

2. Laboratory based criteria: Oxygen saturation <90% for ≥ 60 min, PaO₂/ fiO₂ < 200mmHg, Creatinine ≥300 umol/l or 6 mg/dl, Ph < 7.1, Lactate >5, Acute thrombocytopenia, Loss of consciousness and the presence of glucose and ketone bodies in urine.

3. Management based criteria: Use of continuous vasoactive drugs, Obstetric Hysterectomy following

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infection or haemorrhage, Transfusion of > 5 units red cell transfusion, Intubation and ventilation for ≥ 60 min not related to anaesthesia, Dialysis for acute renal failure, Cardio pulmonary resuscitation.

MATERIAL AND METHODS

It was a prospective study conducted in the Department of Obstetrics and Gynaecology, Rohilkhand Medical College and Hospital, Bareilly, U.P for the duration of one year from 1st November 2017 to 31st October 2018. All cases of near miss fulfilling WHO criteria were taken, written informed consent was taken, detailed history of the patient regarding maternal characteristics, all data on pregnancy and delivery and data on specific complication and its associated factors was taken in the proforma. A woman presenting with any of the life-threatening conditions and surviving a complication that occurred during pregnancy, childbirth or within 42 days of delivery and termination of pregnancy was included in the study. Exclusion Criteria included the women who did not give the consent or women with SAMM (Severe acute maternal morbidity) due to non-obstetrics causes (due to poisoning and trauma) or women with SAAM at more than 42 days after delivery or termination of pregnancy.

To assess the incidence and factors of Near-miss cases as per WHO criteria.

Potentially life-threatening complication were noted and they included - Haemorrhagic disorders like -placental abruption , placenta Accreta/increta/ percreta ,ectopic pregnancy ,PPH .ruptured uterus ,abortions and hypertensive disorders like- severe pre-eclampsia, eclampsia, severe hypertension, hypertensive encephalopathy, HELLP syndrome, other systemic disorders lik -endometritis ,pulmonary edema, respiratory failure, seizures, sepsis, shock, thrombocytopenia<100000, thyroid crisis .Severe management indicators like- the need of blood transfusion >5 units, central venous access , hysterectomy, ICU admission or Prolonged hospital stay (>7 days)

RESULT

In our study, maximum 25 (50%) patients were in age group of 26-30 years followed by

15 (30%) patients who were in age group of 31-35 years, the mean age of the patients was 28.7 ±3.7years. Out of a total 50 patients 35 (70%) were from rural area and 15 (30%) were from urban area and 33(66%) cases were unbooked whereas 17 (34%) cases were booked. In our study 35(70%) patients were multiparous and 15 (30%) patients were primipara. Maximum 33 (66%) patients were admitted directly in our hospital, but 16 (32%) patients had single referrals, that is they had been referred from one institution only, and only a single patient (2%) was referred from multiple institution to our hospital. Figure 1 shows distribution of patients according to modified kuppuswamy classification was such that ,out of 50 patients maximum 26 (52%) were in class V category followed by 16 (32%) who were in class IV category, followed by 6 (12%) who were in class III category and only 2 (4%) patients were in class II category. In our

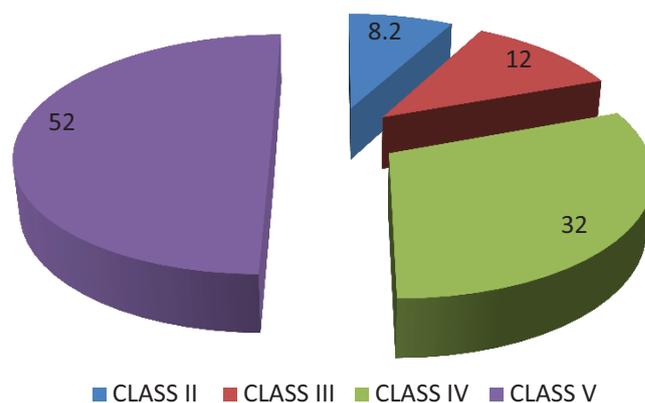


Figure-1: Pie chart showing distribution of patients according to socio economic status.

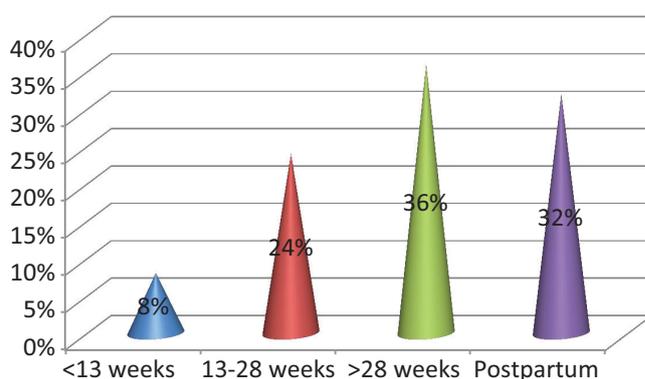


Figure-2: Bar chart showing gestational age in weeks of patients.

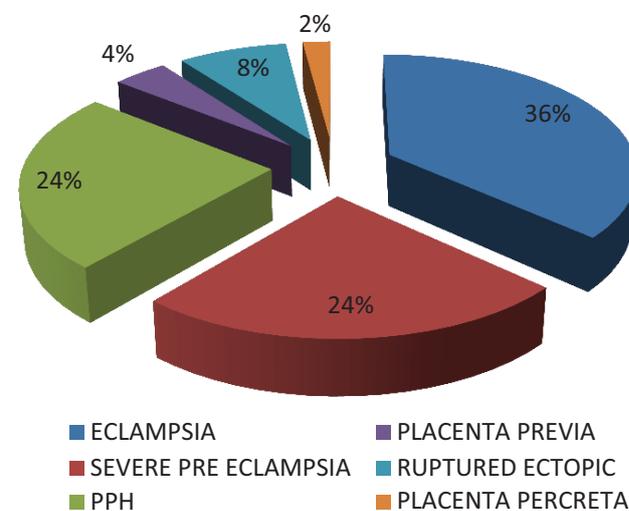


Figure-3: Disorders associated with SAMM

study, as show in figure 2 ,18 (36%) patients had gestational age of >28 Weeks and 16 (32%) patients were post-partum, 12 (24%) patients were 13-28 weeks of gestational age, and 4 (8%) were < 13 weeks of gestational age. Out of 50 patients 35 (70%) patients were multiparous and out of these 35 multiparous patients 12 (34.3%) patients had previous LSCS and 23 (65.7%) patients had previous vaginal deliveries .As shown in figure 3,in our study the maximum number of patients ie 18 patients (36%) were of eclampsia, followed by each 12 (24%) of severe pre-eclampsia, and post-partum haemorrhage. There were 4 (8%) cases of

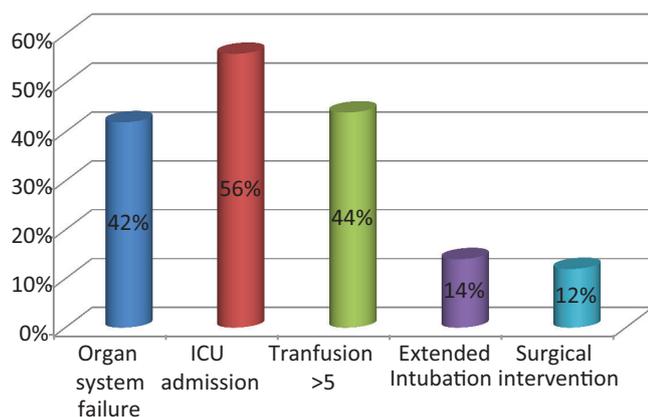


Figure-4: Bar diagram showing distribution of cases according to five factor scoring system.

Type of organ System failure	Number	Percentage (%)
Renal failure	12	24%
Coagulation failure	6	12%
Cardiac failure	8	16%
Hepatic failure	6	12%

Table-1: Types and frequency of organ system failure in near – miss cases.

ruptured ectopic, 2(4%) were of placenta previa, 1 case each (2%) of placenta percreta and ruptured uterus. According to five factor scoring system, as shown in figure 4, ICU admission was the most common factor in our study which was associated with SAMM in 28 (56%) patients followed by blood transfusion > 5 units in 22 (44%) patients, which was closely followed by organ system failure in 21 (42%) patients, extended intubation was seen in 7 (14%) patients and surgical intervention was done in 6 (12%) patients. As shown in table 1, in our study 21 patients suffered from early organ system failure, 12 patients had features of early renal failure, 8 patients had features of early cardiac failure, 6 patients had features of early coagulation failure, and 6 patients had features of early hepatic failure.

DISCUSSION

In our study out of 50 patients, 33 (66%) patients were unbooked and 17 (34%) patients were booked. In the study done by I A Iwuh et al⁴ majority of the women (88.4%) were booked for antenatal care while 11.6% were unbooked for antenatal care. In our study 35 (70%) patients were multipara and 15 (30%) patients were primipara. In a study conducted by Kedar k et al⁵ while analysing gravidity, near miss death was seen to be more common in primigravida. However, the occurrence of near miss death was not statistically significant between multigravida and primigravida. Thus, suggesting that increase in gravidity is not an isolated risk factor for the occurrence of near miss death according to their study. In a study by Rakesh H.J. et al⁶ 62.96% patients were multipara. Study done by Oliveira L.⁷ 44.7% were primiparous. In our study 33 (66%) patients were admitted directly in our hospital, 16 (32%) patients had single referrals that is they had been referred from one institution only and only 1(2%)

patient was referred from multiple institution. Study by I A Iwuh et al⁴ showed that in terms of health system factors, 63 (56.3%) of the near-misses initially occurred at a primary care to the tertiary hospital; 38 (33.9%) of near-misses initially occurred at the secondary hospitals and 11 (9.8%) at the tertiary hospital. All near-misses occurring at primary care were referred to the tertiary hospital, and 26 of the 38 occurring at the secondary hospitals were referred to tertiary hospital. Another study was conducted by Purandare c et al⁸ which showed that 42% were admitted with severe morbidity, 39% were referred with severe morbidity. Of these 11.4% came from private hospitals, 27.6% from public hospitals and the rest had reported directly from home. Out of 50 patients, maximum 26 (52%) patients were in class V category followed by 16 (32%) patients who were in class IV category, followed by 6 (12%) patients who were in class III category and only 2(4%) patients were in class II category according to modified kuppuswamy classification. In a study conducted by Rulisa S. et al⁹ showed that SAMM was mostly associated with lower socio-economic status. In our study out of 50 patients, 18 (36%) patients had gestational age of >28 weeks and 16 (32%) patients were post-partum, 12 (24%) patients were 13-28 weeks of gestational age, and 4 (8%) were < 13 weeks of gestational age. In a study by Rakesh H J et al⁶ 59.25% patient were in third trimester and 3.73% were in second trimester. Study done by Roopa S. et al¹⁰ showed that near miss outcome at gestational age 1-12, 13-28, >28 weeks and postnatally were 17 (12.9%), 6 (4.8%), 75 (57.2%) and 33 (25.1%) respectively. Lotufo FA. et al¹¹ did a study according to which mean gestational age associated with SAMM was 37±2.6 weeks. Out of 50 patients 35 (70%) patients were multiparous and out of 35 multiparous patients 12 (34.3%) patients had previous LSCS and 23 (65.7%) patients had previous vaginal deliveries in our study. In a study by Oliveira L.¹² 20.5% had previous cesarean section. In our study, the maximum 18 (36%) patients were of eclampsia, followed by each 12 (24%) patients of severe pre-eclampsia, and post-partum haemorrhage. There were 4 (8%) patients of ruptured ectopic, 2 (4%) patients were of placenta previa, 1 (2%) patient each of placenta percreta and ruptured uterus. In a study by Oliveira L. Et al.¹² the main disorders presented by the study participants were hypertension (62.7%), haemorrhage (53.7%), infections (49%), heart disease (4.7%) and thromboembolism (2.4%). Among the 160 cases of hypertensive disorders, 108 (42.3%) were severe pre-eclampsia, 35 (13.7%) were eclampsia, and 17 (6.7%) were chronic hypertension exacerbated by pregnancy. 105 (41.2%) participants had HELLP syndrome. A study done by Bindal J.¹³ concluded that major causes of near miss were hypertensive disorders (44.04%) followed by severe haemorrhage (26.19%) A study by Javarathnam et al.¹⁴ represents near miss from a developed country, and preeclampsia, PPH, and sepsis were major causes. Findings in our study are comparable to other studies done in low resource countries¹⁵. Severe pre-eclampsia was the main diagnosis associated with near miss, coinciding with the findings of Brazilian study¹⁶. According to five factor scoring

system, ICU admission was most common factor in our study which was associated with 28 (56%) patients followed by blood transfusion > 5 units in 22 (44%) patients, which was closely followed by organ system failure in 21 (42%) patients, Extended intubation was seen in 7 (14%) patients and surgical intervention was done in 6(12%) patients. In a study by Bower G et al ICU admissions was present in 122 (100%) patients, Blood transfusion of >5 units in 11(9%) patients, Organ system failure in 44(36.10%) patients and surgical intervention was done in 20(16.40%) patients. In our study 21 patients suffered from early features of organ system failure, 12 patients had early features of renal failure, 8 patients had early features of cardiac failure, 6 patients had early features of coagulation failure, and 6 patients had early features of hepatic failure. In study by Shrestha J et al¹⁷ 5% patients had early features of renal failure, 5% patients had early features of cardiac failure, 12.5% patients had early features of coagulation failure and 2.5% patients had early features of hepatic failure.

CONCLUSION

Hypertensive disorders in pregnancy and severe obstetric haemorrhage were the major causes of severe acute maternal morbidity in our study. In order to decrease SAMM all round efforts from public and private agencies are required. These should aim at improving antenatal care with Effective referral system and facilities like blood bank, operation theatre for timely obstetric intervention.

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REFERENCES

- Nielsen HS, Eggebo TM. Millennium development goal 5—an obstetric challenge. *Acta obstetrica et gynecologica Scandinavica*. 2012;91(9):1007-8.
- Special bulletin on Maternal mortality in India 2014-16, Sample registration system, Office of registrar general, India, May 2018. Published and issued by Office of the Registrar General, India, Ministry of Home Affairs, Govt. of India, New Delhi.
- Bulletin of The World Health Organization. October 2009;87(10):733-804.
- Iwuh IA, Fawcus S, Schoeman L. Maternal near-miss audit in the Metro West maternity service, Cape Town, South Africa: A retrospective observational study. *South African Medical Journal*. 2018;108(3):171-5.
- Kedar K, Choudhary A. Maternal Near Miss Death among Women with Eclampsia in Tertiary Care Center. *International Journal of Scientific Study*. 2015;3(6):93-8.
- Rakesh HJ, Diana V. Study of prevalence and factors associated with Maternal Near Miss (MNM) cases and maternal death at Rajiv Gandhi Government Women and Children Hospital, Pondicherry, India. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. 2018;7(3):1049.
- Oliveira LC, Costa AA. Maternal near miss in the intensive care unit: clinical and epidemiological aspects. *Revista Brasileira de terapia intensiva*. 2015;27(3):220-7.
- Purandare C, Bhardwaj A, Malhotra M, Bhushan H, Chhabra S, Shivkumar P. Maternal near miss reviews: lessons from a pilot programme in India. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2014;121:105-11.
- Rulisa S, Umuziranenge I, Small M, van Roosmalen J. Maternal near miss and mortality in a tertiary care hospital in Rwanda. *BMC pregnancy and childbirth*. 2015;15(1):203.
- Ps R, Verma S, Rai L, Kumar P, Pai MV, Shetty J. “Near miss” obstetric events and maternal deaths in a tertiary care hospital: an audit. *Journal of pregnancy*. 2013;2013.
- Lotufo FA, Parpinelli MA, Haddad SM, Surita FG, Cecatti JG. Applying the new concept of maternal near-miss in an intensive care unit. *Clinics*. 2012;67(3):225-30.
- Oliveira LC, Costa AA. Maternal near miss in the intensive care unit: clinical and epidemiological aspects. *Revista Brasileira de terapia intensiva*. 2015;27(3):220-7.
- Bindal J, Solanki G. Clinical and Etiological Study of Maternal Near-Miss at a Tertiary Referral Hospital of Central India. *Indian Journal of Obstetrics and Gynecology Research*. 2016;3(1):28-31.
- Jayarathnam S, De Costa C, Howat P. Developing an assessment tool for maternal morbidity ‘near miss’—A prospective study in a large Australian regional hospital. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2011;51(5):421-5.
- Kalra P, Kachhwaha CP. Obstetric near miss morbidity and maternal mortality in a Tertiary Care Centre in Western Rajasthan. *Indian journal of public health*. 2014;58(3):199.
- Pattinson RC, Hall M. Near misses: a useful adjunct to maternal death enquiries. *British medical bulletin*. 2003;67(1):231-43.
- Shrestha J, Shrestha R, Tuladhar R, Gurung S, Shrestha A. Maternal Near Miss in a Tertiary Care Teaching Hospital. *American Journal of Public Health*. 2015;3(5A):17-22.

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