



MATERNAL NEAR MISS - INDICATOR OF MATERNAL HEALTH

Obstetrics & Gynaecology

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ABSTRACT

Since maternal mortality is a devastating event, maternal near miss has been used as a proxy indicator for measuring maternal health. Maternal near miss (MNM) refers to a woman who nearly died but survived of complications during pregnancy, childbirth or within 42 days of termination of pregnancy. Maternal near-miss remains a significant public health problem in both developed and undeveloped countries. Therefore, the study aimed to investigate the indicators of maternal near-miss among women admitted to the Tertiary care center. During present study it was found that Age, educational level, antenatal care follow-ups, medical disorder during pregnancy, mode of admission, and mode of delivery were significant predictors of maternal near-miss.

KEYWORDS

Maternal Near Miss, Maternal Health, Quality of Care, Severe Acute Maternal Morbidity

INTRODUCTION

The most devastating end to a pregnant woman is maternal death, and it is sometimes characterized as only the "tip of the iceberg," while maternal morbidity is the "base," and many more will live for every woman who dies, but often suffer from lifelong disabilities.¹ The world health organization (WHO) working groups describe maternal near-miss (MNM) as a woman who nearly died but survived a complication that occurred during pregnancy, childbirth, or within 42 days of termination of pregnancy, due to the quality of care she receives or by chance.^{2,3} For MNM cases, the diagnostic criteria are potentially life-threatening pregnancy conditions; the provision of critical interventions; and organ dysfunction.^{4,6}

Southern Asia alone contributes approximately 22% of maternal death globally.⁴ MMR for 2014-2016 in India is reduced to 130/100,000 live births (LB). Couple of States such as Kerala and Maharashtra have lowered MMR to as low as 46 and 61, respectively, and achieved the Millennium Development Goal (MDG) goal for 2015 (100/1 lakh live births).⁵

The state of Tamil Nadu has been successful in observing a significant decline in maternal mortality due to series of initiatives such as skilled birth attendance for all births and making emergency obstetric care more available and accessible. The key lesson learnt from the success is to focus on specific evidence-based strategies to reduce maternal mortality.

Maternal near-miss surveillance is helpful to identify subgroups of risk that require special health care and resource allocation. Women who survived life-threatening complications related to pregnancy and childbirth have many common aspects with those who die of such complications. Exploring women who survived life-threatening conditions provides a complete assessment of the quality of maternal health care.⁷

Maternal near-miss remains a significant public health problem in both developed and undeveloped countries. According to a recent systematic review and meta-analysis study, the global prevalence of maternal near miss was 1.4%. Recently, in a review by Kulkarni R, 2021, the incidence of MNM in India varied widely from 3.9 to 379.5 per 1000 live births and 7.6-60.⁴ per 1000 deliveries. MNM: Maternal Death varied from 1.7:1 to 21.8:1. In explaining this disparity, access to quality care during pregnancy, childbirth, and the postnatal period was critical.^{3,5} Rural residents, low level of education, being unmarried, lack of antenatal care, history of stillbirth, referred cases, and far distance of health institutions had a statistically significant association with MNM.^{8,9}

However, limited studies have been done to explore those at-risk mothers in Maharashtra India. Therefore, the study aimed to investigate the indicators of maternal near-miss among women admitted to the Tertiary care center.

AIMS AND OBJECTIVES

Aims:

1. Determine severe acute maternal morbidity.

OBJECTIVES:

1. Study various demographic factors responsible for maternal near miss.
2. Analyse causes of maternal near miss.
3. To identify the health system response to maternal emergencies.

MATERIALS AND METHODS

This study was a Prospective study carried out in the Department of Obstetrics and Gynecology, at a tertiary care centre. All High-Risk Pregnant cases admitted during the study period (i.e. Sep 2021 to Aug 2022) as per the inclusion criteria. Total number of cases during the study period: 200 cases.

Inclusion criteria:

Women who were pregnant or in labor or delivered or aborted; up to 42 days from termination of pregnancy, admitted in the obstetric department with any of the following listed conditions or those who developed any of these conditions during the indoor stay.

Major obstetric hemorrhage, Eclampsia, Renal or liver dysfunction, Cardiac arrest, Pulmonary edema, Acute respiratory dysfunction, Coma, Cerebrovascular event, Status epilepticus, Septicemic shock, Intensive care admission, coronary care admission, and Emergency obstetric hysterectomy.

Exclusion criteria

Nonobstetric morbidity

1. Morbidity resulting from causes not related to pregnancy or its complication or management, e.g.: hepatic failure as a result of cirrhosis, malignancies like carcinoma breast, etc.
2. Morbidity from accidental or incidental causes no way related to pregnancy, e.g.: morbidity from automobile accident/suicide

Study procedure:

Data was collected from the records of patients admitted to the Government Medical College, critical care unit, during the period of September 2021 to August 2022, who satisfied the criteria of maternal near-miss. Data was compiled to include the parity, date of near-miss,

obstetric score, duration of hospital stay, diagnosis, past history, treatment modalities, neonatal/ maternal outcomes, and mode of termination and area of lack in health care.

OBSERVATIONS AND RESULTS

This present prospective study observed 287 high risk pregnant patients visited our departmental OPD during the study period. Out of 287 patients, 200 cases were observed to be maternal near miss cases. Out of these 287 cases, 245 were institutional deliveries and 42 were outside deliveries. Overall 8 ectopic pregnancies were observed, out of which 1 left ovarian, 4 left tubal and 3 right tubal rupture were noted.

PARAMETERS FOR the YEAR 2021- 2022 total Number Of Live Births 15436 number Of Maternal Near Miss Cases (mnm) 200 total Number Of Maternal Deaths 87 maternal Mortality Ratio 263.61 mnm Incidence Ratio 1.27 mnm/mortality Rates 9.56 smor (severe Maternal Outcome Ratio) 14.08 mortality Index (mi) 3.29%

Eighty-eight patients (30.66%) were referred within 1 hour followed by 118 patients (41.11%) who were referred within 2-6 hours. 54 cases and 18.81% were illiterate and 50.52% were studied upto 8th std only. This suggests educating women about antenatal care and informing regarding the physiological changes in pregnancy is important for the welfare of society. 259 cases and 90.24% of patients were immunized and 28 cases were non immunized.

We observed that out of 287 high risk patients, 200 cases (69.68%) were near miss while 87 cases were death (30.31%). We observed that 106 patients (53%) were near miss cases on arrival 184 cases (91.81%) were delivered at a tertiary centre of which many were referred in antenatal period for high-risk management.

In present study, 116 cases (58%) underwent LSCS, 69 cases (34.5%) delivered vaginally. We observed that 13 near miss cases had associated condition of lower respiratory tract infection (LRTI) and 9 cases had acute renal injury (4.5%) Antepartum Eclampsia was found to be major diagnosis affecting 57 cases (28.5%) followed by anemia, sepsis and atonic PPH affecting 28 cases each (14%). Reviewing near-miss cases helps in identifying the pattern of severe maternal morbidity and mortality, strengths and weakness in the referral system, the clinical interventions available and the ways in which improvements can be made. Hypertensive disorders of pregnancy and anemia are leading causes of near-miss events.

In 63% of near-miss cases, vascular and hematological dysfunction were prominent followed by cerebral causes (46%) due to increased prevalence of severe preeclampsia and antepartum eclampsia. 197 cases having a hospital stay of 10-20 days with 98.5%. ICU stay of near-miss cases with the majority having a stay of 1-4 days (92.5%) The maximum stay for ICU is 08 days and the hospital is 41 days.

Of 200 near-miss cases admitted, 111 cases did not require a blood transfusion. Of the 89 near-miss cases transfused blood, 17 cases required all blood products, PCV + FFP + PRP. 15.5% of near-miss cases required mechanical ventilation while 84.5% did not require mechanical ventilation. 14% of near-miss cases were on inotropes i.e. 28 patients.

The near miss cases were further managed by providing the following standardized management protocols as deemed necessary to the patients need. In our study, the near miss cases were further managed by providing the following standardized management protocols as deemed necessary to the patients need. Bakri Balloon Procedure was performed in 4 patients for atonic PPH. Surgical management using compression suture and bilateral internal iliac artery ligation was performed in 9 patients. Obstetric hysterectomy was done in 19 patients while majority of the patients were medically managed.

Feedback Responses to identify the gaps and contextualize corrective measures to be taken in the health care system. Wherein we have observed that majority of the females (62.5%) were responsible for decision making; 54 (61.4) females didn't delay to decide to come to the hospital, 35 (63.6) females failed to understand the problem and delayed to take decision to visit the hospital. Fifty-Four females (61.4) had ambulance as their means of transport. Sixteen females (61.5) didn't reach hospital strait away due to lack of transport. Sixty Eight females (77.3) have travelled more than 10 kms to visit the hospital. About 80 (90.9) Females were attended in less than 30 mins after visiting the hospital and 71 (80.7) haven't face any problem in the hospital.

DISCUSSION

Maternal mortality has, since times immemorial been accepted as a traditional indicator and as a conventional criterion of choice in evaluating women's health in general and in assessing the quality of obstetric care in particular. There is a story behind every maternal death or life-threatening complication. So, a better knowledge of the spectrum, characteristics, and outcomes of the disease involving this group of patients is the first step towards achieving prevention and hence reducing both maternal morbidity and mortality. Also, management of critically ill obstetric women in the intensive care unit is a unique challenge to Intensive care unit physicians and obstetricians as it is a dual job involving two lives.

This present prospective study observed 287 high risk pregnant patients visited our departmental OPD during the study period. Out of 287 patients, 200 cases were observed to be maternal near miss cases.

Patankar A et al¹⁰ (2016), prospective observational study, stated that the Mean of age was 27.84 ± 3.43 years which is very similar to our study. The majority of the cases were multipara, 39 (39.78%) cases were multipara, 26 cases (26.54%) were primipara, followed by 33 cases (33.68%); cases who were nullipara. Panda B et al¹¹ (2018), studies found 86.5% of near-miss cases were found in 20-34 years of age group.

Patankar A et al¹⁰ (2016) in this study, 62 (63.26%) were from rural area, while 36 patients (36.73%) were from urban area, in present study too rural patients are more than urban patients, which is similar to the present study where near-miss cases are predominantly from rural areas. Thereby it suggests the availability of resources, manpower and the required infrastructure is essential for the management and also for the essential care of near-miss cases.

In present study, majority of patients had primigravida (36.45%) followed by G2 (20.98%). Similar Results were observed in other studies.¹²⁻¹⁴

We observed 113 patients (39.37%) with the gestational age between 37-41 weeks. Nineteen deliveries (6.62%) were less than 28 weeks. Similar Results were observed in other studies.¹³⁻¹⁵

Educating women about antenatal care and informing regarding the physiological changes in pregnancy is important for the welfare of society. Patankar A et al¹⁰ (2016), in this study, majority of patients, i.e., 61 cases (62.25%) had received their primary education followed by 16 cases (16.32%) who had received secondary education, and only 4 cases (4.08%) who had received higher secondary education and above. There were 17 (17.34%) patients who were illiterate. Similar results were observed in present study.

Rathod AD et al¹⁶ (2016), represents somewhat reference data from our study like A total of 43 patients (26.70%) of near-miss cases required ICU admission and 6 patients (3.72%) required emergency per partum hysterectomy for the management of PPH, while in our study 48.6% near-miss cases required ICU admissions. In the present study, 197 cases having a hospital stay of 10-20 days with 98.5%. Junu S. et al¹⁷ (2015) studies on near-miss cases approximately 75% of cases were admitted in intensive care unit.

In present study, Antepartum Eclampsia was found to be major diagnosis affecting 57 cases (28.5%) followed by anemia, sepsis and atonic PPH affecting 28 cases each (14%).

Patankar A et al¹⁰ (2016), more than two obstetric events occurred concurrently in the same patient. Hypertensive disorder of pregnancy was a major obstetric factor, that is, 50 patients (51.02%), out of these, 29 (29.59%) had severe pre-eclampsia, 16 (16.32%) had eclampsia, and 5 (5.1%) had HELLP followed by other diagnosis. Mansuri F et al¹⁸ (2019), in contrast to the present study Eclampsia, was the leading cause of potentially life-threatening conditions (29.45%) followed by preeclampsia (25.46%) and severe postpartum hemorrhage (22.39%), respectively.

Very similar to the present study, Patankar A et al¹⁰ (2016), the maximum number of cases (46) was delivered by cesarean section amounting to 46.93%. Next in order of frequency were patients who delivered vaginally, that is, 44 (44.89%). 3 patients had an abortion; one aborted in their institute while 2 had undergone abortion in the

rural health Centre and were referred to as post-abortion sepsis. In the present study, 58.8% were delivered by cesarean section followed by 41.20% by vaginal which is consistent with the findings. Panda et al¹¹ (2017) studies on the mode of delivery of near-miss cases, 46.1% were delivered by vaginal mode while 53.9% by caesarean section.

Anuradha J et al¹⁹ (2016), Massive blood transfusion i.e. more than 5 units of blood transfusion was required in 40% of the cases but in our study, the same is much less i.e. 23.63% in form of PCV+FFP+PRP.

Anuradha J et al¹⁹ (2016) studies on maternal near-miss cases, 32% of cases required per partum hysterectomy, 40% required multiple blood transfusions, 6.18% required dialysis secondary to multiple organ dysfunction due to shock or renal failure secondary to abruption and due to sepsis. 45.7% near-miss cases were on mechanical ventilation and 32.3% required magnesium sulfate. Manjunatha S. et al²⁰ (2018) studies on near-miss cases 08% required per partum hysterectomy while the majority of 48% cases of near-miss required multiple blood transfusion and 08% required laparotomy. Patankar A et al¹⁰ (2016) studies on near-miss cases showed 19.3% cases required multiple blood transfusions. 13.2% cases required mechanical ventilation. Similar results were observed in present study.

CONCLUSION

Present study concluded that Age, educational level, antenatal care follow-ups, medical disorder during pregnancy, mode of admission, and mode of delivery were significant predictors of maternal near-miss. Socio-demographic development, use of ANC services, early detection and management of medical diseases, reducing cesarean section, and improving the referral systems are crucial to minimizing the maternal near-miss. Besides, the zonal health departments would improve access to maternal health care services for all mothers at the lowest health facilities.

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