

AN OBSERVATIONAL STUDY OF MATERNAL NEAR MISS CASES IN A TERTIARY CARE CENTREElizabeth Joseph¹, Noori Khalid²¹Associate Professor, Department of Obstetrics and Gynaecology, DM Wayanad Institute of Medical Sciences, Wayanad, Kerala.²Assistant Professor, Department of Obstetrics and Gynaecology, DM Wayanad Institute of Medical Sciences, Wayanad, Kerala.**ABSTRACT****BACKGROUND**

DM WIMS is the only tertiary care referral hospital in the hilly tribal district of Wayanad. This is an observational study of 20 maternal near miss cases that presented in our hospital over a period of 4 months.

MATERIALS AND METHODS

This study was conducted by collecting data over a period of 4 months. Total number of live births in this period was 373. There were 20 cases of maternal near miss cases. Maternal near miss cases were chosen based on the inclusion criteria provided by WHO near miss approach for maternal health.

RESULTS

There were 373 live births in the 4-month observational period. In these 4 months, there were 20 cases of maternal near miss cases in our hospital. That is, maternal near miss ratio was 53.6/1000 live births. The majority were referred cases with MNM ratio of intrahospital cases being 13.4/1000 live births. The potentially life-threatening complications were obstetric haemorrhage and hypertensive disorders, which coexisted in majority of the women. The obstetric haemorrhage was mainly due to abruptio placenta, which can be attributed to the hypertensive complications. Preexisting anaemia was present in 35% of the MNM cases increasing their morbidity.

CONCLUSION

The maternal near miss ratio was 53.6/1000 live births, which is high. This can be attributed to the fact that our hospital is the only tertiary referral hospital in the hilly tribal district of Wayanad. Despite the MNM ratio being high, there were no cases of maternal death in this period. Low maternal mortality indicates the good first line of management given at the periphery hospital.

KEYWORDS

Maternal Near Miss Cases, Severe Maternal Outcome, Obstetric Haemorrhage, Hypertensive Diseases in Pregnancy.

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BACKGROUND

Progress in the reduction of maternal mortality- a key millennium development goal has been slow in most countries that have high maternal mortality ratios and solutions to these problems are urgently needed.¹ In this context, WHO and others have recommended that all deliveries should be attended by a skilled healthcare worker, so that effective interventions can be implemented to prevent and manage any complications that arise during childbirth.² A more feasible and cost-effective approach might be to aim at reducing delays in the provision of effective care (including community-based actions) for all pregnant women with complications.³

By evaluating these cases with severe maternal outcomes (both "near-miss" cases and maternal deaths),

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much can be learnt about the processes in place (or lack of them) to deal with maternal morbidities.^{4,5,6}

The WHO technical working group also developed a set of indicators for the assessment of quality of care within a healthcare facility or the health system. They also provide information on intrafacility performance and on the extent to which the health system as a whole is successful in reducing delays for women in accessing a healthcare facility or referral hospital.⁷ In order to evaluate the quality of care, a set of process indicators have been developed.⁸ This guide by the WHO is intended for healthcare workers, programme managers and policy makers who are responsible for the quality of maternal healthcare within a healthcare facility or the entire health system. This approach has been suggested for routine use in national healthcare programmes.⁹

The ultimate purpose of the near miss approach is to improve clinical practice and reduce preventable morbidity and mortality. It should be used in conjunction with evidence based clinical guidelines along with local adaptation of the guidelines.¹⁰

The complete WHO near miss approach is best implemented in 3 steps;

1. Baseline assessment.
2. Situation analysis.
3. Interventions for improving healthcare.



A 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.^{7,11} In practical terms, women are considered near miss cases when they survive life-threatening conditions (i.e., organ dysfunction).

Maternal death is defined as death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration or site of pregnancy from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.¹²

Severe maternal complications are defined as potentially life-threatening conditions. A summary list of potentially life-threatening conditions has been produced by the WHO Working Group on Maternal Deaths and Morbidity Classifications.⁷

Some of the maternal near miss indicators are;

1. Severe Maternal Outcome Ratio (SMOR) refers to the number of women with life-threatening conditions per 1000 live births. ($SMOR = (MNM + MD) / LB$) SMOR gives an estimate of the amount of care and resources that would be needed in an area or facility.
2. MNM ratio (MNMR) refers to number of maternal near miss cases per 1000 live births. $MNMR = MNM / LB$.
3. Maternal near miss mortality ratio (MNM:1 MD) refers to the ratio between maternal near miss cases and maternal death. Higher ratios indicate better care.
4. Mortality index refers to the number of maternal deaths divided by the number of women with life-threatening conditions expressed as a percentage. ($MI = MD / (MNM + MD)$). Higher ratios indicate low quality of care.
5. Basic standard care for maternal events have been defined and process indicators to know about the implementation of these have also been defined.

Some basic standard cares are;

1. All women should receive 10 units of oxytocin just after delivery for the prevention of postpartum haemorrhage.¹³
2. All women with postpartum haemorrhage should receive oxytocin.¹⁴
3. All women with eclampsia should receive magnesium sulphate.¹⁵
4. All women having a caesarean section should receive prophylactic antibiotics.¹⁶
5. All women with severe systemic infections or sepsis should receive intravenous antibiotics.¹⁷
6. All women delivering a live preterm infant should receive corticosteroids for foetal lung maturation.¹⁸

AIMS AND OBJECTIVES

To evaluate the maternal near miss cases based on WHO guidelines.

1. Baseline assessment.
2. Situation analysis.
3. Interventions for improving healthcare.

MATERIALS AND METHODS

The study conducted was an observational study over 4 months. 20 cases of maternal near miss cases were studied. They were chosen on the basis of the inclusion criteria laid down by WHO near miss approach for maternal health, which has been discussed before.

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 below said conditions or who developed these conditions while in hospital are eligible for the study. Women who are already dead when they are brought to the hospital or those who die on arrival are included in the study. Eligibility is not restricted by gestational age at which complications occur.

1. Severe maternal complications; haemorrhage in pregnancy more than 1000 mL or bleeding with hypotension or requiring blood transfusion, severe preeclampsia/eclampsia, sepsis or severe systemic infection, rupture uterus and severe complications of abortion.
2. Critical interventions; admission to intensive care unit, interventional radiology, laparotomy (includes hysterectomy, excludes caesarean section) and use of blood products.
3. Life-threatening conditions; cardiovascular dysfunction, respiratory dysfunction, renal dysfunction, coagulation dysfunction, hepatic dysfunction, neurological dysfunction and uterine haemorrhage.
4. Maternal death.

Exclusion Criteria

Women who develop these conditions unrelated to pregnancy are excluded from the study.

RESULTS

MNM ratio/1000 live births was 53.6/1000.

MNM ratio in already booked cases in the hospital was 13.4/1000.

Mortality index was 0.

Obstetric haemorrhage including both antepartum and postpartum was present in 75% of cases.

40% of MNM cases were due to hypertensive complications. Preexisting anaemia added to the morbidity of 10% of the cases.

40% of the MNM cases needed ICU admission.

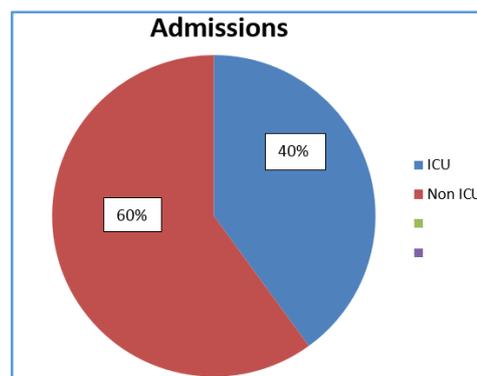


Figure 1. ICU Admissions

20% of cases needed laparotomy for obstetric hysterectomy, uterine devascularisation, B-Lynch procedure and abdominal packing.

There was no maternal mortality, but one patient had long-term neurological sequelae and paralysis.

65% of cases with severe maternal outcome occurred in preterm pregnancy. 61.5% of the babies were salvaged (figure 2). Of the term SMOs, 1 baby died.

Period of gestation of MNM cases.

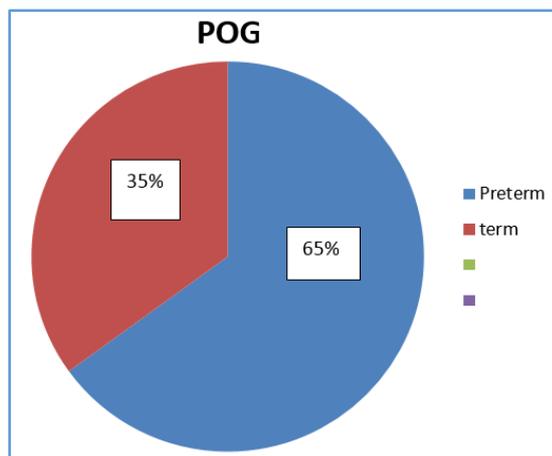


Figure 2. POG

DISCUSSION

Being the only tertiary hospital in the remote tribal hilly district, the MNM ratio was 53.6 of 1000 live births, which is high. The expected prevalence as suggested by WHO is only 7 per 1000 live births.

MNM ratio for the intrahospital cases was 13.4/1000 live births.

Mortality index was seen to be zero.

Obstetric haemorrhage and hypertensive disorders were seen to be the leading cause of maternal near miss. In most cases, both hypertensive disorder and obstetric haemorrhage in the form of abruption placenta coexisted.

Incidence of isolated postpartum haemorrhage was not much. There were a total of 12 in 20 cases of obstetric haemorrhage. There was 1 case of PPH due to atonicity and another due to placenta percreta. The remaining 10 cases were due to abruption placenta with antepartum and postpartum haemorrhage. All the cases with obstetric haemorrhage needed blood transfusion.

40% of cases needed ICU admission. 20% of cases needed laparotomy for reasons other than LSCS. The laparotomies were for obstetric hysterectomy, uterine devascularisation surgeries and B-Lynch sutures. 10% of women needed relaparotomy for reexploration and abdominal pack removal.

There were no maternal mortalities, but one patient had long-term neurological sequelae and paralysis.

65% of the cases were preterms. Of the preterms though, all were given the first dose of corticosteroids on arrival for foetal lung maturity. None could be administered the second dose as their underlying pathology required

immediate delivery for maternal indications. 61.5% of the preterm babies were salvaged.

35% of the maternal near miss cases were in the term gestation. Except for 1, all babies in this group were salvaged.

100% of women delivering in our institute had received oxytocin 10 units at the time of delivery for prevention of PPH. Also, 100% of women with eclampsia received MgSO₄.

CONCLUSION

Despite the maternal near miss ratio being high, maternal mortality index was low. High SMO in the above circumstances is probably due to lack of regular antenatal check up in the tribal population leading to a delayed detection of preexisting complications like iron-deficiency anaemia, sickle cell anaemia and mild preeclampsia.

All women who delivered in the hospital received oxytocin for the prevention of PPH. Also, 100% of women with severe preeclampsia/eclampsia received MgSO₄. MgSO₄ loading dose was administered from the referring hospital before referral. This shows the high level of awareness in the peripheral hospitals. Probably, this administration of the loading dose of MgSO₄ at the point of contact has a significant role in keeping the maternal mortality low.

Low maternal mortality indicates the good first line of management given at the level of the periphery hospitals before referral in terms of administering loading dose of MgSO₄ before transferring a hypertensive patient. Low maternal mortality also indicates the good infrastructure of the referral unit.

But, it is yet sad to see that in the tribal belt, majority of the SMOs are still due to obstetric haemorrhage and hypertension signifying the status of a still developing society.

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ABBREVIATIONS

- MNM- Maternal Near Miss.
- MNMR- Maternal Near Miss Ratio.
- SMO- Severe Maternal Outcome.
- SMOR- Severe Maternal Outcome Ratio.
- MI- Mortality Index.
- MD- Maternal Death.
- LB- Live Birth.
- LSCS- Lower Segment Caesarean Section.
- ICU- Intensive Care Unit.
- PPH - Postpartum Haemorrhage.
- WHO- World Health Organisation.
- MgSO₄- Magnesium Sulphate.
- POG- Period of Gestation.
- DM WIMS- Dr. Moopen's Wayanad Institute of Medical Sciences.

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