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# A study on key determinants of near miss cases in a tertiary care hospital – Tamil Nadu

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## Abstract

**Background**: The major causes of maternal near miss (MNM) and maternal death (MD) are similar, so review of MNM cases is likely to yield valuable information regarding severe morbidity, which, if untreated may lead to maternal mortality

**Aim:** The objective is to determine frequency of near miss cases and identify the risk factors associated with MNM.

**Materials and methods:** An observational cross sectional study with sample size of 45 cases Critically ill pregnant,laboring,postpartum and post abortal women admitted in Og ICUfrom Jan 2023-June 2023 at Dindigul medical college and hospital.Data was collected using patient records, case sheets, maternal death audit notes.According to WHO Near Miss identification criteria minimum one criteria from each clinical findings,investigations,interventionor one criteria like cardio pulmonary collapse is Maternal Near Miss case.

**Results:** In this study it was found among 7891 deliveries, 45 near miss cases and 1 MDs, resulting in maternal mortality ratio of 12/100,000 live birth (LB), The majority of the respondents have more than 20 years of age where near miss cases were higher in multiparous women. First delays (delay in women seeking help) were almost a third in numbers to affect the maternal mortality and morbidity.

Hypertension, hemorrhage and anemia were the major leading cause of obstetrical complications. About 66% of the maternal near miss cases needed the interventional management that was ICU admission, mechanical ventilation and blood transfusion.

**Conclusion**: Most of the near miss cases experienced delay in decision to seek health care, which resulted from underestimating the severity of various pregnancy-related conditions. Poor knowledge of the risk of warning signs of pregnancy plays a major part in the delay of management.

**Keywords:** Delays, Maternal Death, Maternal Near Miss.

## Introduction

According to World Health Organization (WHO), maternal near-miss occurs when women present with life-threatening complications during pregnancy, childbirth, or within 42 days of termination of pregnancy but survived by chance or because they received care in

health facilities. In Sustainable Development Goals (SDG), improving maternal health remains an important issue, which was planned to reduce the global Maternal Mortality Ratio (MMR) to less than 70 per 100,000 live births by the year 2030.The advantages of investigating near miss events are-Near miss cases are more common than maternal deaths, One can learn from the women themselves since they survived and are available for interview about the care they received, improve the quality of service provision. The major reasons and causes are same for both, so review of MNM cases is likely to yield valuable information regarding severe morbidity, which, if untreated may lead to maternal mortality. This study was planned to determine the frequency of maternal near miss and identify the risk factors of Maternal near miss.

**Aims and objectives**

- To determine the frequency of severe maternal complications, maternal near –miss cases and maternal deaths.
- Identify the risk factors of Maternal near miss.
- To raise awareness about and promote reflection of quality care issues and foster changes towards the improvement of maternal health care.

**Materials and methods**

A Cross sectional study was conducted from Jan 2023 – Jun 2023 at Dindigul medical college and hospital. The study population were MNM cases identified from the records. Cases were those who met minimum 3 criteria– one from clinical findings (either signs or symptoms), investigations and interventions done or any single criterion, which signifies cardiorespiratory collapse, according to the National Health Mission MNM-Review Operational Guidelines 2014

Consecutive sampling was used to collect the total of 45 samples.

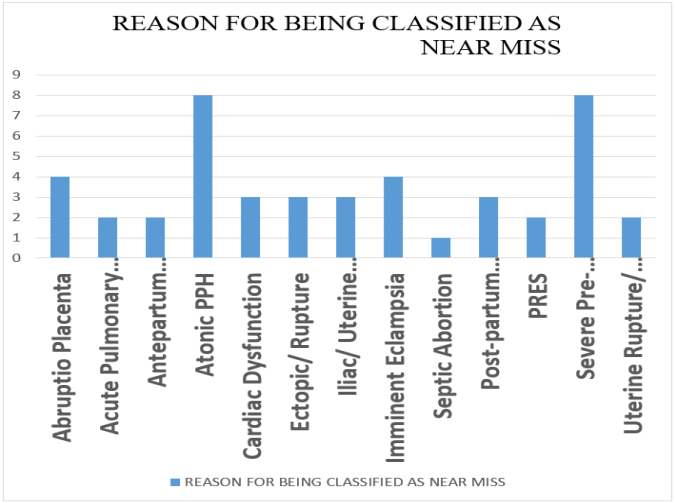
**Data analysis**

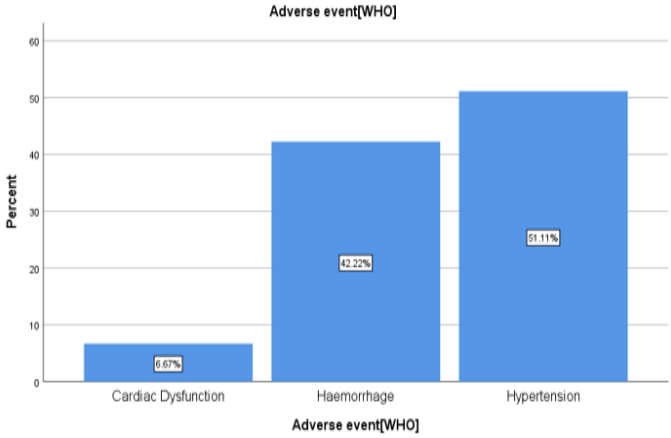
| Age of the NEAR MISS patients | | |
|---|---|---|
| | Frequency (n=45) | Percent |
| <19 years | 2 | 4.4% |
| 20-29 years | 34 | 75.5% |
| 30-40 years | 9 | 20% |

| Educational status of the NEAR MISS patients | | |
|---|---|---|
| | Frequency (n=45) | Percent |
| Illiterate | 5 | 22.2% |
| Primary | 8 | 17.7% |
| Secondary | 24 | 53.3% |
| Hr sec | 1 | 2.2% |
| Graduate | 9 | 20% |

| Previous LSCS in NEAR MISS patients | | |
|---|---|---|
| | Frequency (n=45) | Percent |
| Primary LSCS | 31 | 68.8% |
| Prev. 1 LSCS | 11 | 31.4% |
| Prev. 2 LSCS | 3 | 6.6% |

| REASON FOR BEING CLASSIFIED AS NEAR MISS | FREQUENCY | PERCENTAGE (n=45) |
|---|---|---|
| Abruptio placentae | 4 | 8.88 |
| Acute pulmonary edema | 2 | 4.44 |
| Antepartum eclampsia | 2 | 4.44 |
| Atonic PPH | 8 | 17.77 |
| Cardiac dysfunction | 3 | 6.67 |
| Ectopic /rupture | 3 | 6.67 |
| Iliac/uterine artery ligation | 3 | 6.67 |
| Imminent eclampsia | 4 | 8.88 |
| Septic Abortion | 1 | 2.22 |
| Post-partum eclampsia | 3 | 6.67 |
| PRES | 2 | 4.44 |
| Severe pre-eclampsia | 8 | 17.77 |
| Uterine rupture/ (sub/total hysterectomy) | 2 | 4.44 |






| Another Contributing factors in NEAR MISS | | |
|---|---|---|
| | Frequency (n=45) | Percent |
| Diabetes | 4 | 8.7 |
| Anaemia | 23 | 51.1 |
| Hypertension | 12 | 26.6 |
| other | 7 | 15.5 |

| Organ system in NEAR MISS | | |
|---|---|---|
| | Frequency (n=45) | Percent |
| Cardiovascular System | 8/45 | 17.7 |
| Central Nervous System | 3/45 | 6.66 |
| Haematological System | 20/45 | 44.4 |
| Respiratory System | 9/45 | 20 |

| Inter Pregnancy interval in Near miss patients | |
|---|---|
| <18 mt | >18 mt |
| 2 (4.4%) | 18 (40%) |

| Other history in Near miss patients | | |
|---|---|---|
| H/o PIH | H/o DM | GDM |
| 3 (6.6%) | 2 (4.4%) | 1 (2.2%) |

| Gestational period in Near miss patients | |
|---|---|
| <37 weeks | >37 weeks |
| 18 (40%) | 27 (60%) |

| Weight of the baby in NEAR MISS patients | | |
|---|---|---|
| | Frequency (n=45) | Percent |
| < 2 kg | 11 | 24.4% |
| 2-2.5 kg | 13 | 28.8% |
| 2.5-3 kg | 16 | 35.5% |
| 3-3.5 kg | 4 | 8.8% |
| >3.5 kg | 1 | 2.2% |

| Refer-in places in NEAR MISS patients | | |
|---|---|---|
| | Frequency(n=45) | Percent |
| Private clinic | 9 | 20% |
| Primary Health centres | 14 | 31.1% |
| Government Hospitals | 6 | 13.3% |
| Corporate Hospitals | 2 | 4.4% |

| Delay in NEAR MISS patients | | |
|---|---|---|
| | Frequency(n=45) | Percent |
| Ist-DELAY | 15 | 33.3% |
| IInd-DELAY | 17 | 37.7% |
| IIIrd-DELAY | 13 | 28.8% |

**Results**

- The study involved in total of 45 maternal near miss cases.
- The majority of the respondents have **more than 20 years of age** where near miss cases were **higher in multiparous women.**
- First delays (delay in women seeking help) were almost a third in numbers to affect the maternal mortality and morbidity.
- **Hypertension, Hemorrhage and Anemia** were the major leading cause of obstetrical complications.

- About 66% of the maternal near miss cases needed the interventional management that was ICU admission, mechanical ventilation and blood transfusion.

**Conclusion**

- Pregnancy Hypertension, Postpartum Hemorrhage, And Severe Anemia continue to be important determinants of maternal morbidity.
- MNM R is complementary to MATERNAL DEATHS and the purpose is to identify the gap in service delivery at the earliest.
- First-referral unit facilities and training should be improved so that they can better respond to basic obstetric emergencies.

Study of maternal **Near miss** is to **not to miss** the cases in future.

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