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Gynaecology

A STUDY OF MATERNAL NEAR MISS AT A TERTIARY CARE HOSPITAL

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ABSTRACT

BACKGROUND: Maternal health is an integral part of health care system. Maternal mortality is an indicator of maternal health and health care delivery system. Severe morbid conditions require comprehensive approach. The concept of Maternal Near Miss (MNM) has emerged to save the mothers from severe morbid conditions using comprehensive approach,hence WHO has laid certain guidelines regarding comprehensive approach. The data of maternal near miss helps to reduce the maternal death and helps to achieve the goals related to the maternal mortality rate of the country as well as the world and to improve the quality of life of the woman population by a quality care.

OBJECTIVES: (1) To determine the frequency of maternal near miss, maternal near miss incidence ratio (MNMR), maternal near miss to mortality ratio and mortality index. (2) To compare the nature of near miss events with that of maternal mortality. (3) To see the trend of near miss events

METHODS: A prospective observational study was conducted for a period of 6 month between June 20 2018 to Nov 20 2018 at Government General Hospital, Kurnool India. Admission to the ICU as well as Emergency room which fit in to the WHO maternal near miss criteria were included and studied.

RESULTS: WHO criteria for the MNM was followed in present study, there were 103 MNM cases and 15 Maternal Deaths out of 4234 live births giving a maternal mortality ratio of 354 /100000 live births (LB), Maternal Near Miss ratio of 24.7/1000LB, MNM:1MD ratio is 6.8% and mortality index (MI) is 12.7%. In our study 70 cases (80%) received multiple blood-transfusions, 10 case (9.7%) of sepsis, and 63 cases (61.1%) of hypertensive disorder of pregnancy (pre-eclampsia, eclampsia). There were 15cases (14.5 %%) had hemorrhage, 15cases (14.5%) that had more than one inclusion criteria.

CONCLUSION: Hypertensive disorders are the leading cause of near miss event.

KEYWORDS : Maternal Near Miss, Maternal mortality, Hypertensive disorders, Hemorrhage.

INDRODUCTION:

Maternal mortality is one of the important indicators used for the measurement of maternal health. Maternal mortality data in practical terms is the "Tip of an iceberg "and the maternal near miss data is the submerged part of it. Survival of a pregnant woman is dependent on the disease, her basic health, the health care facilities and health care personalle. A near miss case was defined as "any pregnant or recently delivered or aborted woman whose immediate survival is threatened and who survives by chance or because of the hospital care.On clarity WHO standardised the definition of the maternal near miss is as "a woman who nearly died but survived a complication that occurred during pregnancy, childbirth, or within 42 days of termination of pregnancy"[1].

Usually, near miss morbidity precedes maternal death. Therefore, identifying and analysing the cases of maternal near miss helps in understanding the factors that determine maternal mortality.[2,3]

There are many ways of identifying maternal near miss cases using various sets of criteria like disease specific, management specific and organ system dysfunction based. Amongst these, organ system dysfunction based criteria have been noted to be epidemiologically sound and less affected by bias .8 In 2009, WHO has developed new system based on organ system dysfunction which incorporates clinical, laboratory and management based criteria for identifying maternal near miss.4 It has been then recommended that WHO near miss approach in analysing the cases of near miss maternal mortality.It includes the following:

Severe maternal complications

- Severe postpartum haemorrhage
- Severe pre-eclampsia
- Eclampsia
- Sepsis or severe systemic infection
- Ruptured uterus
- Severe complications of abortion

Critical interventions or intensive care unit use

- Admission to intensive care unit
- Interventional radiology
- Laparotomy (includes hysterectomy, excludes
- caesarean section)
- Use of blood products

Life-threatening conditions (near-miss criteria)

- Cardiovascular dysfunction - shock, cardiac arrest (absence of pulse/ heart beat and loss of consciousness), use of continuous vasoactive drugs, cardiopulmonary resuscitation, severe hypo perfusion (lactate >5 mmol/l or >45 mg/dl), severe acidosis (pH <7.1).
- Respiratory dysfunction - acute cyanosis, gasping, severe tachypnea (respiratory rate >40 breaths per minute), severe bradypnea (respiratory rate <6 breaths per minute), intubation and ventilation not related to anaesthesia, severe hypoxemia (O2 saturation <90% for ≥60 minutes or PAO2/FiO2 <200)
- Renal dysfunction - oliguria nonresponsive to fluids or diuretics, dialysis for acute renal failure, severe acute azotemia (creatinine ≥300 µmol/ml or ≥3.5 mg/dl)
- Coagulation/haematological dysfunction - failure to form clots, massive transfusion of blood or red cells (≥5 units), severe acute thrombocytopenia (<50 000 platelets/ml)
- Hepatic dysfunction - jaundice in the presence of pre-eclampsia, severe acute hyperbilirubinemia (bilirubin >100 µmol/l or >6.0 mg/dl)
- Neurological dysfunction – prolonged unconsciousness (lasting ≥12 hours)/coma (including metabolic coma), stroke, uncontrollable fits/status epilepticus, total paralysis
- Uterine dysfunction - uterine haemorrhage or infection leading to hysterectomy

METHODS:

A prospective observational study was conducted Data was analysed in terms of obstetric emergencies (pre-eclampsia, eclampsia, ante partum haemorrhage, post partum haemorrhage, ectopic pregnancy etc.) and their management medically and surgically, antenatal and postnatal cases, parity, gestational age ≤34weeks to 40 weeks, registration of cases (booked, unbooked and referred cases), modes of delivery(vaginal, Caesarean, home), duration of hospital stay (≤24hrs-13days), duration of ICU stay (≤24hrs-4days). The study was conducted as per the criteria defined by the WHO. The following criteria of WHO were included in present study.

- Clinical criteria
- Laboratory criteria
- Management criteria

The following indicators were calculated:

Maternal mortality ratio (number of maternal death per 1lakh live birth)

Maternal near miss ratio MNM ratio refers to the number of maternal near-miss cases per 1000 live births (MNMR = MNM/LB).

Maternal near-miss mortality ratio ((MNM: 1 MD) refers to the ratio between maternal near miss cases and maternal deaths.

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)]

SMOR (Severe maternal outcome ratio (SMOR) refers to the number of women with life-threatening conditions (MNM + MD) per 1000 live births (LB**).**

RESULTS :

A prospective observational study was conducted, and data was collected from case sheets of live births (LB) in a year between the period of June 20 2018 and Nov 20 2018. Out of 4234 live births 15 were maternal deaths (/100000 LB).Out of 148 obstetrics emergency cases 103cases were selected for the study who met the WHO criteria for the MNM, (Table 1).

Table -1:

TOTAL LIVE BIRTH (June 20-nov20)	4234
MATERNAL NEAR MISS	103
MATERNAL MORTALITY	15
TOTAL ICU ADMISSION	118

Out of 103 cases of MNM all 103cases (100%) were taken from ICU admission. Near miss ratio of 24.7/1000LB. MNM: 1MD ratio is 6.8% this means for every maternal death there were 6.8% cases of MNM. Mortality Index (MI) is 12.7%

Table 2: The age wise distribution of MNM

<20 years	16
20-25years	59
26-30	28

There were 15.5% (16) cases in ≤20years of age, 57.2% (59) In 21-25yeras of age, 27.1% (28) in 26-30 years.

Table 3: Distribution of cases by parity

G1	53
G2	28
G3	15
G4	7

In antenatal cases 51.4 %(53) were Gravid 1, 27.1% (28) cases were Gravid 2 nd 14.5% (15) were Gravid 3, 6.7 %(7) were gravid 4.

Table 5: Distribution of cases by gestational age in Weeks.

<34 wk	12	11.6%
34-<37	46	44.6%
37-<39	29	28.1%
>39	16	15.5%

There were 11.6% (12) cases in the Gestational age group of <34Wk, 44.6 %(46) in 34-<37wks, 28.1 %(29) in 37-<39wks, 15.5 %(16) >39 wks.

Table 6: Distribution of cases by registration with our Hospital.

BOOKED	13	12.62%
UNBOOKED	27	26.21%
REFFERED IN	63	61.16%

12.62% (13) of cases were booked cases, 26.21% (27) of cases Were unbooked and 61.16 %(63) cases were referred to our Hospital

Table 7: Distribution of cases in various modes of Delivery.

VAGINAL	25	24.27%
CAESSAREAN	47	45.6%
OUTSIDE DELIVERED	17	16.50%
ABORTION	14	13.5%

In the MNM cases selected, Total 25 cases of vaginal delivery conducted at our hospital and 17 were conducted in other hospitals and referred to our hospital. Total 47 cases of caesarean section cases selected which were conducted at our hospital. 14case of hypovolemic shock due to abortions

DISTRIBUTION OF CASES IN OUR STUDY

HYPERTENSIVE DISEASE	63	61.1%
SEPSIS	10	9.7%
MEDICAL DISORDER	15	14.5%
HEMORRHAGE	15	14.5%

DURATION OF STAY IN ICU

<2 DAYS	25	24.2%
3-5 DAYS	35	33.9%
5-9 DAYS	29	28.1%
>10 DAYS	14	13.5%

DISCUSSION:

Maternal mortality remains unacceptably high in India about 120 maternal death in a day[4],Apart from maternal death several women survive life threatening events during pregnancy and child birth referred to near maternal miss[5].we screened all women who got admitted with pregnancy related complication at government general hospital Kurnool over a period of 6 months from June 2018-nov 2018 to identify cases of maternal near miss.Out of 4234 obstetric emergencies 103 cases were selected for study as they could met WHO criteria for MNM

Maternal near miss ratio is present study in 24.7/1000 live births same studies done in developing countries like Nepal , Pakistan , Africa showed the same trend and vary from 15 to 40 / live birth[6,7,8]

The maternal mortality ratio in our setup was 354/l lakh live birth,An Indian study by Roopa et al showed similar range of 313/l lakh live birth,A Brazilian study showed 260/1 lakh live birth,In other studies from developing coutries showed a similar range of 423/1 lakh live birth,324/1 lakh live birth

The near miss to mortality ratio was 6.8:1which means for every 6-7 life threatening condition there was one maternal death. Higher the ratio indicates better care.A Syrian study shows a ratio of 60:1 which is very high, Where as a Nepal based study showed 7.2:1[9,10]if the ratio increases over a period of time it reflects on improvement achieved in obstetric care. Higher the care better the care.

Most of cases of maternal near miss in our study is age group 0f 20-25yrs(51.2%)which is similar to other studies[11,12]

In our study majority were primi underwent near miss which is contrary to other studies shows Multiparous[9,13,1,15]

Third trimester was the worst time for the pregnant women to land up in life threatening situation as in present study and other study

Ours being tertiary care centre majority of cases been referred from peripheries which is supported by other studies too[10,16,17,18]

The most common cause for maternal near miss as per our study is hypertensive disorder 61% which is similar to a Syrian study, hypertension is followed by hemorrhage 14.5% in our study where as in most of other study hemorrhage stood the top followed by hypertensive disorders[19,20,21,22]

CONCLUSION :

Maternal near miss and maternal mortality pass by a same pathway

where MNM and MD are complementary to each other. Hence I insist upon the same type of concentration and commitment towards near maternal miss cases which may allow us to know the right and proper way of management and to correct pitfalls in management of risk cases.Hence investigating MNM cases aids in taking measures for further improvement of health care system at periphery level by establishing proper intensive care setup,availability of blood bank and improving man power facilities,allocating health care budget to improve peripheral healthcare system.By doing this finally we can place our society and nation at the top list of maternal health care systems.The present study shows major reason of near maternal miss in our institution is hypertensive disorders which compromises 60% which is followed by haemorrhage.

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