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Maternal Near Miss in Tertiary Care Center- Clinical and Demographic Aspects

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Abstract: ***Introduction: Maternal Near miss is defined as woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy. Maternal mortality is one of the most important indicators used for assessing maternal health. Materials and Methods: The present study was one and a half year prospective study from April 2016 to September 2017 conducted in the department of Obstetrics and Gynecology, Government Medical College, Patiala. The study was conducted on patients admitted in labour room including referred, emergency and booked admission. Women with severe complications of pregnancy/ labour/ puerperium irrespective of gestational age as per WHO near miss criteria were identified and studied. The eligibility was not restricted by the gestational age at which complications occurred. Results: Out of 6166 deliveries, there were 5461 live births and 123 maternal near miss cases which were included based on WHO 2010 maternal near miss approach. Mean age of patients was 25.8 years. The maternal near miss incidence ratio (MNMR) in present study is 22.5. Maternal near miss to mortality ratio is 1.89 : 1. Conclusion: Our study concluded that among patients with maternal near miss, there is a high frequency of women who have a low level of education and the 3 delays are one of the major factors contributing to maternal mortality and near miss. Hemorrhage and anaemia are still one of the major causes of maternal morbidity***

Keywords: maternal near miss, demographic, causes

1. Introduction

Maternal Near miss is defined as woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy. Maternal mortality is one of the most important indicators used for assessing maternal health.[1]

Social factors contributing to maternal near miss are: age at child birth, parity, too close pregnancies, family size, malnutrition, poverty, illiteracy, ignorance and prejudices, lack of maternity services, shortage of health man-power, delivery by untrained dais, poor environmental sanitation, poor communication and transport facilities, social customs, etc.[2] While some of them die, a proportion of women narrowly escape deaths which come under maternal near miss category. Many maternal deaths occur at home or in transit which makes it difficult to obtain complete information regarding maternal death and its cause especially in developing countries. Near miss cases survive these complications and therefore can provide vital information. By evaluating these cases with severe maternal outcome we can get to know about processes in health system (or lack of them) to deal with maternal morbidities.[2]

The near miss criteria developed by WHO technical group have been tested and validated as being able to provide robust and reliable data. In order to ensure that the evaluation of quality of care with the near-miss approach is comprehensive, a set of process indicators is developed which is considered to be beneficial and feasible method of auditing the quality of maternal health care.[3]

In this context WHO has recommended that all deliveries should be attended by a skilled health care worker so that effective intervention can be implemented to prevent and manage any complication that arise during childbirth.[3,4]

2. Material and Method

Inclusion criteria

The present study was one and a half year study from April 2016 to September 2017 conducted in the department of Obstetrics and Gynecology, GMC, Patiala, on patients admitted in labour room including referred, emergency and booked admission. Women with severe complications of pregnancy/labour/puerperium irrespective of gestational age as per WHO near miss criteria were identified and studied. The eligibility was not restricted by the gestational age at which complications occurred i.e. women having abortions or ectopic pregnancy as well as medical conditions and presenting with any of the inclusion criteria were eligible. The first step in implementing the near miss approach was to systematically identify women with severe complications of pregnancy.

Exclusion criteria

Women that developed those conditions unrelated to pregnancy i.e. not during pregnancy or 42 days after termination of pregnancy were excluded.

3. Observations

Table 1: Demographic characteristics

Age	*Number*	*Percentage*
<20 years	04	3.3%
20-35 years	118	95.9%
>35 years	01	0.8%
Mean age	25.8 years	
Parity		
Primipara	39	31.7%
Multipara	84	68.3%
Gestational Age		
<13 weeks	15	12.2%
13-28 weeks	22	17.8%
>28 weeks	52	42.4%
Postnatal	34	27.6%
Kuppuswami Socioeconomic Status		
Lower	78	63.41%
Upper Lower	24	19.51%
Lower Middle	21	17.08%
Mode of Delivery		
Vaginal	20	24.7%
Caesarean section	35	43.2%
Laparotomy for rupture uterus/ hysterectomy	8	9.9%
Laparotomy for ectopic	15	12.2%
Classical caesarean	3	3.7%
Type of Admission		
Referred (unbooked)	90	73.1%
Referred (Booked outside)	23	18.8%
Self (came on their own)	10	8.1%
ANC Care		
No antenatal visit	90	73.1%
3 or more antenatal visits	23	18.7%
Less than 3 antenatal visits	10	8.1%
No of Centres		
Visited 1 centre	119	96.7%
Visited 2 centres	4	3.3%
Visited >2 centres	0	
Time Taken		
1 hour	54	43.9%
Less than 3 hours	62	50.4%
3 or more hours	7	5.69%
Distance Travelled		
Less than 50km	54	43.9%
51-100 km	66	53.6%
More than 100km	3	2.43%

Table 2: Distribution of maternal near miss according to complication of pregnancy

Complications	*Number*	*Percentage*
Anaemia without hemorrhage	42	34.1%
Hemorrhage	32	26%
Eclampsia	23	18.7%
Sepsis	12	9.8%
Liver disease	7	5.7%
Rupture uterus	5	4%
Respiratory disease	5	4%
Obstructed labour	4	3.2%
Heart disease	2	1.6%

Table 3: WHO based clinical, laboratory and management criteria

Clinical Criteria	*No. of cases*	*Percentage*
Loss of consciousness >12 hours	23	18.7%
Shock	17	13.8%
Clotting failure	16	13%
Respiratory rate <6/min or > 40/min	10	8.1%
Oliguria	09	7.3%
Jaundice in presence of pre eclampsia	7	5.7%
Laboratory Findings		
Oxygen Saturation <90% for >60min	18	14.6%
Acute thrombocytopenia <50,000	7	5.6%
S.Bilirubin >6mg/dl	7	5.6%
S. Creatinine >3.5 mg/dl	1	0.8%
Intervention		
Massive blood transfusion	67	54.47%
Magnesium sulphate therapy	27	21.95%
Laparotomy	23	18.69%
ICU admission	18	14.63%
Higher antibiotic use	17	13.82%
Inotrope use	15	12.19%
Peripartum Hysterectomy	4	3.25%

4. Discussion

About 80% of maternal deaths are due to direct causes i.e. obstetric complications of pregnancy, labor and puerperium or inappropriate and inadequate interventions, treatment and/or referral. Remaining 20% of maternal deaths are due to indirect causes. Out of total deliveries of 6166, there were 5461 live births and 123 maternal near miss cases which were included based on WHO 2010 maternal near miss approach.

Mean age of patients was 25.8 years. Maximum number of patients between age group of 21-35 years i.e. 96%. A study done in Coimbatore also had a similar result of maximum patients falling under age group 21-30years (75%.3).[5]

31.7% primipara and 68.3% multipara. Study by Rajakumari[6] at Coimbatore also showed that multipara 59% and primipara were 41%. Our results also matched with study by Bansal et al[7] multipara 64.1% and primipara 35.89%.

The number of MNM were more in third trimester i.e. 42.4% comparable to Rajakumari et al[6] and Bansal et al[7]. Roopa et al[8] and Bashour et al[9]had similar results of 43.6% and 43.2% respectively.

The MNM incidence ratio is 22.5. Literature reports the similar trends and MNMR varies between 15 to 40 per 1000 live births.[10,11]

Maternal near miss to mortality ratio is 1.89 : 1 in the present study. The ratio is similar to a study conducted in Bastar district of Chhattisgarh and western Rajasthan, India which had a ratio of 2:1.0 [6,7]Our results are also similar to those of African countries where range is 2-11:1.[12] A study conducted in Coimbatore, India showed a maternal near miss mortality ratio of 20.21:1[5] which is very high and shows a very good level of maternal care.

The most common inciting factor for maternal near miss in our study was anemia without hemorrhage 34.1% followed by hemorrhage 26% cases, hypertensive disorders 18.7%, sepsis 9.8% and rupture uterus and respiratory disorders 4% each. Liver disorders contributed 5.7% cases. Study by Bansal et al[7] also reported hemorrhage as most common complication of pregnancy causing near miss, which matched our study. Anemia and rupture uterus was reported in 15.38% cases , hypertensive disorder in 12.38%, liver disorder in 2.56% cases. Similar results were reported by Kalra et al[6] hemorrhage 56% as leading cause of maternal near miss followed by hypertension 17.8%, sepsis 5.35%, rupture uterus 8.92% and medical complications 11.6%. study by Rajakumari et al[5] reported hypertensive disorder as most common cause for near miss contributing to 45.7% cases, hemorrhage 26.64%, anemia 10.6%, sepsis 5.6% and heart disease 4.6%. Taly et al[13] reported hemorrhage 60% as number one cause followed by hypertensive disorder 34%, sepsis 4% and rupture uterus 5%.

In cases identified according to clinical criteria, 18.7% cases had loss of consciousness for more than 12 hours, 13.8% cases were in shock, 13% had clotting failure, 9.8% were gasping followed by respiratory distress in 8.1% cases and jaundice with severe preeclampsia in 5.7% cases. Study conducted by Taly et al[13] reported 52% cases of shock, clotting failure in 1% cases, respiratory distress in 1% cases. Brace et al[3] reported shock 3% cases, clotting failure in 7.74%, respiratory distress in 9% and loss of consciousness 13%. Das et al[14]reported shock in 53% cases, respiratory distress 17.7%, clotting failure in 4% cases and loss of consciousness in 11.3%. Study by Rajakumari et al[5] reported blood transfusion in 31% cases, ICU admissions in 73.49%, peripartum hysterectomy in 3.53% cases.

5. Conclusion

Maternal Near miss describes a situation of complication during pregnancy, childbirth and/or puerperium which if not identified and treated in time, can lead to maternal death. The causes of near miss and maternal deaths are more or less the same and interlinked. The advantage of studying near miss is that it can provide us with valuable information regarding the delays and gaps in the system being it the delay on part of the patient, delay on the part of access to health care facilities/services or delay in the treatment of the patient once admitted to a health facility. One can also learn from the women itself about the care they received and how the events preceded as they have survived a life threatening condition. Studying about maternal near miss cases also gives a boost to the health care providers to achieve the herculean goals of lowering the maternal mortality rates and ratios by continuing their efforts towards saving the mothers and reinforcing best practices. Ours is a tertiary referral centre and one of the busiest hospitals of Punjab state. Besides, the work load is increasing by leaps and bounds due to the introduction of mother and child beneficiary scheme Janani Shishu Suraksha Karyakram (JSSK). The observations of our study reflect the status of obstetric care to a save a mother thereby helping her to continue with obstetrical career (certain cases being an exception) and and also help health care policy makers and providers to improve services in the region and achieve the desirable goal of maternal near miss to maternal death ratio of 6:1.The need for identifying the patient conditions and deciding for the referral on time and to the right centre is a critical step towards saving a maternal death. The core of the health system should emphasize on ‘when to refer’ and ‘where to refer’ policy. Referral should be on time so that any untoward incident can be averted and referring a patient to a tertiary care centre where all the emergency backup facilities are available like ICU, 24 hour Blood bank services, apex obstetrical intervention and inter departmental expertise and care. A stratification of delays is also the need of the hour to improve the maternal outcome and improve the maternal near-miss and maternal death ratio. The education and awareness needs to be created among the patients and their attendants by addressing their problems like- money, ignorance and reluctance on the behalf of relatives to approach a health facility. The problem of money and reluctance has been solved by Government programs like JSSK, JSY and PMSMA. In these programs government is providing free of cost delivery, drugs and food for the postnatal patients and the institutional delivery rate has increased since these implementations. Administrative delays like transport, has been addressed by 24 hour free of cost ambulance service started by Punjab government (commonly called as Dial 108) which transports an antenatal patient in any time of the day to a health care facility. The availability of a 24 hour blood bank service also solves the problems of taking up high risk cases for caesareans and other operative procedures. Our study concluded that among patients with maternal near miss, there is a high frequency of women who have a low level of education and the first two delays are one of the major factors contributing to maternal mortality and near miss. Hemorrhage and anaemia are still one of the major causes of maternal morbidity.

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