ORIGINAL RESEARCH PAPER

Volume-7 | Issue-2 | February-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

STUDY ON NEAR MISS CASE IN A TERTIARY CARE HOSPITAL

Gynaecology

Dr. Arpika Aparajita Behera Post Graduate Student, M.K.C.G. Medical College, Berhampur, Odisha

Dr. Subhasis Panigrahy* Senior Resident, M.K.C.G. Medical College, Berhampur, Odisha *Corresponding Author

ABSTRACT

Introduction-Maternal mortality traditionally has been the indicator of maternal health. More recently the review of cases of near miss obstetric event is found to be useful to investigate maternal mortality. Cases of near miss are those, where a woman nearly died but survived a complication that occur during pregnancy or child birth.

Aim and objective- To analyse near miss cases and to determine MNM indicator, to analyse the cause and contributing factors for it.

Material and method- This prospective observational study conducted in M.K.C.G. medical college, Berhampur from 1st November 2016 to 31th October 2016. All the cases of near miss cases defined by WHO criteria are taken. Information regarding demographic profile and reproductive parameters are collected and results are analysed.

Results –Out of 10321 deliveries 112 were near miss cases and 68 were maternal deaths. MMR was 720, near miss incidence 11.8, maternal death to near miss ratio was 1:1.64. Hypertensive disorder of pregnancy (45.5%) was the leading cause followed by haemorrhage. Maximum patients were identified as near miss as per management based criteria.

Conclusion –All the near miss cases should be interpreted as opportunities to improve the health care services.

KEYWORDS

MNM- maternal near miss, maternal death, hypertensive disorder of pregnancy, haemorrhage

INTRODUCTION

According to millennium development goals (MDG) 2015 ,the goal number 5 was to improve the maternal health is falling way below our target. Despite improvement in obstetric care over the few decades , maternal mortality and morbidity remains to be a challenge in developing countries. A Near Miss describes a woman who nearly died but survived a complication that occurred during pregnancy, child birth or within 42 days of termination of pregnancy. However, the wide concept of obstetric near miss has delayed the adoption of a uniform definition and various criteria have been used in different studies: severity of illness , scoring of symptoms , grading of organ dysfunction and management based classification. More recently WHO has suggested which criteria should be used to perform the baseline assessment .

Near miss cases have similar pathways as maternal deaths, with the advantage of offering a large number of cases for analysis, greater acceptability of individuals and institutions since death did not occur , and the possibility of interviewing the woman herself. Near miss concept is superior in drawing attention to surviving women's reproductive health and provides information about the burden of disease and highlights the deficiencies as well as positive elements in providing obstetric services in any health system.

AIMS AND OBJECTIVE

1. This study aims at analysing the near miss cases, the causes and contributing factors .
2. To determine different near miss indicators.

MATERIALS AND METHODS

This prospective observational study was worked out in the Dept. of Obstetrics & Gynaecology, M.K.C.G. Medical College & Hospital, Berhampur, Odisha from 1st January , 2016 to 31th December 2016. Out of all obstetric patients admitted all cases of near miss were taken, identified by WHO 2009 criteria. But all components could not be taken into consideration in our set up. Among laboratory based criteria measurement of pH and Pao_2/fio_2 was not done.

In all cases the demographic characteristics, frequency of near miss in each criteria, duration of hospital stay, distribution of referral categories, mode of termination, different interventions done and foetal outcome was noted. The following indices were calculated:

Absolute number of near miss cases: Number of near miss cases diagnosed by particular criteria.

Near miss incidence ratio: Number of near miss per 1000 live births

Severe Maternal Outcome Ratio (SMOR): Number of women in life threatening situation (MD+MNM) per 1000 live birth.

Maternal near miss to mortality ratio: Ratio between near miss and maternal death.

Mortality Index: $\frac{\text{Maternal Death}}{\text{Maternal Death+Near miss cases}}$ (%)

RESULTS

During this 12 months of study period 10321 women delivered at M.K.C.G. Medical College, out of which 9434 were live births. 112 were identified as near miss cases and 68 were maternal deaths. Near miss incidence was 11.8 per 1000 live births, and maternal mortality ratio (MMR) was found to be 720 per 1, 00,000 live birth. Maternal death to near miss ratio was 1:1.64. The severe maternal outcome ratio was 19.0 per 1000 live birth and mortality index was 37.7%.

Table 1 Incidence and characteristics of maternal near miss cases

- Total deliveries…10321
- Total live births…9434
- Cases of near miss…112
- Maternal deaths…68
- Near miss incidence (per 1000 live birth)…11.8
- Maternal mortality ratio…720
- Maternal death to near miss ratio…1:1.64
- Severe maternal outcome ratio (SMOR)…19.0
- Mortality index (%)…37.7

Most of the patients in the near miss cases (67.8%) were in the age group 20-30 years. Most of them were primi(58.9%), belonged to rural area(81.2%) and lower socio economic status(57.2%). 75.9% of near miss cases were unbooked with 78.5% were referred from peripheral hospitals. Most common type of delay (73.2%) was type 1 delay.

Table 2 Demography

Characteristics	n	%
Age group(year)	26	23.2
≤20	76	67.8
20-30	10	9.0
≥30		
Parity	66	58.9
Primi	46	41.1
Multi		

Rural	91	81.2
Urban	21	18.8
Socio-Economic Status	13	11.6
Upper	35	31.2
Middle	64	57.2
Lower		
Booked	27	24.1
Unbooked	85	75.9
Type of Delay	82	73.2
Type 1 delay	12	10.7
Type 2 delay	18	16.1
Type 3 delay		
Referral	88	78.5
Yes	24	21.5
No		

Out of all near miss cases 60 fulfilled clinical criteria, 30 laboratory based criteria, and 64 fulfilled management based criteria. In the present study more than 1 criteria was fulfilled concurrently in the same patient. In clinical criteria shock was the most common criteria (n=36), in laboratory criteria Creatinine ≥300µmol/L or 3.5mg/dL was the most common (n=12) and in management criteria use of continuous vasoactive drugs was the most common (n=30) followed by hysterectomy following infection or haemorrhage(n=22).

Table 3 Distribution of near miss cases according to different criteria as per WHO

Clinical criteria	n=60	Laboratory based criteria	n=30	Management based criteria	n=64
Jaundice in the presence of preeclampsia	8	Oxygen saturation <90% for ≥60 min	1	Use of continuous vasoactive drugs	30
Loss of consciousness lasting ≥ 12 hours	8	Creatinine≥300µmol/Lor 3.5mg/dL	12	Hysterectomy following infection or haemorrhage	22
Oliguria non responsive to fluids or diuretics	2	Acute thrombocytopenia (<50,000/cumm)	10	Dialysis for acute renal failure	7
Respiratory rate>40 or <6/min	2	Serum bilirubin >100mmol/L or >6.0mg/dL	7	Transfusion of ≥5 units red cell	5
Shock	36				
Stroke	4				

Table 4 Distribution of cases according to organ system dysfunction

Organ system involved	Cases	%	Obstetric cause
Cardio vascular	40	35.7	PPH/ruptured ectopic/rupture uterus
coagulation	16	14.2	Severe preeclampsia/eclampsia
respiratory	3	2.6	Asthma \pulmonary edema
Renal	13	11.6	Severe preeclampsia/eclampsia
Cerebral	10	8.9	Severe preeclampsia/eclampsia
Hepatic	6	5.6	Severe preeclampsia/eclampsia
Uterine dystocia	24	21.4	Rupture uterus/PPH

Cardiovascular system (35.7%) is the most common system involved among near miss cases, the 2nd most common system was coagulation (14.2%),followed by uterine dystocia(21.4%).

Table 5

	Diagnosis	Cases	%
Direct causes	**Hypertensive disorder of pregnancy**	51	45.5
	• Severe preeclampsia	30	26.7
	• Eclampsia	19	16.9
	• HELLP Syndrome	2	1.9
	Haemorrhage	20	17.8
	• Ruptured ectopic pregnancy	10	8.7
	• Abruptio placenta/placenta praevia	4	3.8
	• PPH	6	5.3
	Rupture uterus	18	16.0
Indirect causes	Cardiac disease	2	1.9
	Severe anaemia	8	7.1
	Malaria	11	9.8
	Asthma	2	1.9

Most common cause contributing to near miss is hypertensive disorder of pregnancy(45.5%), next in order is haemorrhage(17.8%) followed by rupture uterus(16%). Among indirect causes malaria (9.8%) is the major cause followed by severe anaemia (7.1%). Both cardiac disease and asthma contributed to 1.9% each.

Table 6

Parameters	Near miss	%
Surgical intervention	42	37.5
Peripartum hysterectomy	22	19.7
B lynch suture	18	16.0
Internal iliac ligation	1	0.9
Relaparotomy	1	0.9
ICU Admission	8	7.1
Admitted to our ICU	3	2.6
Referred to other ICU	5	4.5

Among all near miss cases surgical intervention was required in 42 cases. Peripartum hysterectomy was done in 22 cases, B lynch suture in 18 cases, internal iliac artery ligation in 1 case and relaparotomy in 1 case. Total 8 patients were admitted to ICU that to 3 cases admitted to ICU in our hospital and 5 cases were referred to other hospital for ICU facility.

Table 7

Parameters	Near miss	%
Mode of termination	27	24.1
Vaginal	53	47.3
Caesarean section	32	28.6
Laparotomy		
Blood transfusion	81	72.3
Yes	31	27.7
No		
Duration of hospital stay	40	35.7
≤7 Days	72	64.3
>7 Days		

Maximum number of cases were delivered by caesarean section (47.3%) among near miss cases followed by laparotomy and vaginal route. 72.3% (n=81) of near miss cases received blood transfusion. The hospital stay ranged between 4 and 20 days, and the mean duration was 8.37 days. Most patients stayed for >7 days.

DISCUSSION

Women who survive life threatening conditions arising from complications related pregnancy and child birth have many common aspects with those who die of such complications. This similarity lead to development of near miss concept in maternal health.

In our study MMR was found to be 720 , maternal near miss to be 11.8 per 1000 live birth and maternal death to near miss ratio was 1:1.64 which is in concordance with Bansal M et al (2016) [1].

In the present study maximum number of near miss cases (67.8%) occurred in the age group 20-30 years like in Rajarajeswari R et al (2016) [2]. Most cases were primi, multi were 41.1% which correlates with Talat Naz et al (2014) [3], belonged to rural areas(81.2%) like Beenu Khuswas et al (2014)[4] and from lower class like Alka Patnkar et al (2016) [5].Unbooked cases were 75.9% as in Talat Naz et al (2014) [3] and Beenu Khuswas et al (2014)[4] . Most common type of delay was at patient's level (73.2%) as in Anju Taly et al (2004)[6].majority were referred from peripheral hospital (78.5%) like in Ernestina David et al (2014)[7].

Among near miss cases fulfilling clinical criteria shock was the most common criteria (n=36) and continuous vasoactive drugs was the most common in management based criteria (n=30) which is in accordance with Pandey Amita et al (2014) [8] and Beenu Kuswah et al (2014) [4]. Cardiovascular system (32.3%) is the most common system involved among near miss cases which correlates with Sujata P et al (2016) [9].

Criteria for admission to ICU are variable and depend upon the availability and capacity of ICU. As in our facility there is only 1 ICU bed and that to not available at all time because it is under medicine

department. So we had to refer our patients to other hospital for ICU facility. Organ system based criteria on the other hand is regarded as the most specific means of identifying near miss cases provided the availability of laboratory tests and medical technology. ICU admission used as a marker of Mentel's criteria [10] does not seem to be useful criterion in a low resource setting as we identified only 3 cases on the basis of this criteria.

Most common cause for near miss was hypertensive disorder of pregnancy (45.5%) followed by haemorrhage which is in well agreement with Sujata P et al (2016) [9].47.3% of near miss cases delivered by caesarean section like in Sujata P et al (2016) [9] and Shilpa GR et al (2016) [11], 28.6% delivered by laparotomy as in Sujata P et al (2016)[9].

Transfusion of blood was required in 72.3% which is in accordance with Sujata P et al (2016) [9]. The mean duration of hospital stay among near miss cases was 8.37 days, which is in concordance with Asma Ansari et al (2016) [12] and in 64.3% of near miss cases it was more than 7 days like in Pandey Amita et al (2014)[8].

CONCLUSION

Maternal near miss has emerged as an adjunct to investigations of maternal death as the two represent similar pathological and circumstantial factors leading to severe maternal outcome. As the number of maternal near miss cases is more than the maternal death and the cases are alive to directly inform on problems and obstacle that had to be overcome during the process of health care, they provide useful information on quality of health care at all levels.

The most vital purpose of the near miss approach is to improve clinical practice and reduce preventable morbidity and mortality through the use of best evidence based practice.

Based on our findings, we recommend a number of government actions to avert future maternal deaths as following;

1. Improving antenatal care to help early identification of high risk pregnancy including preeclampsia and eclampsia.
2. Developing protocols to prevent/manage PPH including raising the awareness about active management in third stage.
3. Training obstetric health professionals on managing infrequent but fatal conditions like sepsis.

Reviewing the referral system and emergency obstetric care.

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