



A CRITICAL ANALYSIS OF DETERMINANTS OF MATERNAL NEAR MISS CASES AT RURAL TERTIARY HEALTH CARE CENTRE

Pooja Sharma

Resident Inst- Jawaharlal Nehru medical college Dept- gynaecology
City- wardha State Maharashtra Country-india

Dr. Arpita jaiswal

Associate professor Inst- Jawaharlal Nehru medical college Dept-
gynaecology City- wardha State- Maharashtra Country-india

ABSTRACT

Introduction- Pregnancy and labour are physiological events and should have joyful culmination with a healthy mother and a healthy baby, however, the potential for dramatic and even catastrophic complications during pregnancy, labour or postpartum are real, either because of aggravation of a pre existing illness or disorder arising during pregnancy, labour, postpartum. However, maternal physiologic changes and adaptations in pregnancy and concern for the fetus often make the diagnosis of conditions in critically ill more difficult and their treatment complicated. This study was aims to determine the magnitude and the type of life threatening maternal complications in near miss women who were pregnant or within 6 weeks of delivery. **Material and methods-** The present study was done at a rural tertiary health care center. This study was Cross Sectional study of critically ill pregnant women admitted in Obstetrics Department and Intensive Care Unit. **Results-** In the present study, out of 59 near miss cases, maximum patients 50(84.74%) were in the third trimester. out of 59 near miss cases, 46 (77.9%) were rural, 13(22%) were urban. out of 46 rural patients 36(61.01%) patients were unbooked and 10(16.9%) were booked. out of 13 urban patients, 4(6.77%) were booked and 9(15.2%) were unbooked. maximum patients 20(33.8%) were from socioeconomic class IV. Out of the 50 patients in 3rd trimester 31 (62%) had hypertensive disorders and 19 patients (38%) had medical disorder. out of 31 patients with hypertensive disorder, Maximum patients had preeclampsia (28%) in hypertensive disorders. **Conclusion-** The aim of the study was to know the burden of near miss patients in rural setup. During the period of analysis of 2 years, our study revealed that hypertensive disorder of pregnancy is still the most frequent underlying cause of maternal mortality and morbidity.

KEYWORDS : - Maternal near miss, Hypertensive disorders, Demographic profile.

INTRODUCTION-

"Whose faces are behind the numbers? What were their stories? What were their dreams? They left behind children and families. They also left behind clues as to why their lives ended so early"

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. Maternal mortality is just the tip of the iceberg has a vast base to the iceberg maternal morbidity which remains undescribed.

The goal number 5 of the millennium development goals, to improve maternal health is falling way below set target. Our target is reducing maternal mortality by 75% has not been met with. Pregnant women's health status is not reflected by mortality indicator alone. Hence the concept of severe acute maternal morbidity (SAMM) is apt for the present health providing system. SAMM has been studied extensively in the recent past as a complement for maternal mortality and also to evaluate the quality of obstetric care. This concept is superior over maternal death in drawing attention to surviving women, reproductive health and lives and is equally applicable in developing countries as well as developed countries.

Maternal mortality has fallen to single digits, whereas near miss cases are more and hence useful in evaluation of the present system.

Severe maternal morbidity and mortality represent the largest public health discrepancy in the world Lewis et al (2003).

Non-availability of accessible, acceptable, quality health care, including emergency obstetric care during pregnancy and childbirth, compounded by inability of women to recognize the need and seek health care during pregnancy and childbirth is the cause of high morbidity rates in developing countries.

It is estimated that maximum maternal deaths could be prevented or avoided through actions that are proven to be effective and

affordable, and none of the interventions are complex or beyond the capacity of a functional health system even in resource poor countries. But the lack of appropriate antenatal, intranatal, postnatal care, safe abortion and contraception facilities and also the suboptimal care provided to critically ill makes the maternal mortality and morbidity ratio much higher in countries with poor resources. Number of deprived is likely to be much higher in India in view of its vast population and diversity in the literacy levels and health facilities available.

The center where study is being done provides tertiary health care services to the rural population. With more than 2900 deliveries per year the hospital receives complicated and life threatening obstetric emergencies from nearby villages and townships. In the present study WHO 2009 criteria has been followed and attempts were made to get an overview of maternal near miss cases among pregnant women admitted in obstetrics department and intensive care unit to know the magnitude of severe maternal morbidities, status of women's health during pregnancy, the basic condition, superimposed insult and predisposing factors which affected her health and also to get socioeconomic and demographic profile of critically ill pregnant women in both community and at the institute.

This study was aims to determine the magnitude and the type of life threatening maternal complications in near miss women who were pregnant or within 6 weeks of delivery during admission and stay in the Obstetrics Department or Intensive Care Unit of rural tertiary health care centre.

The objective of the study was to describe the demographic and pregnancy related characteristics of 'near miss' cases and to determine the magnitude and types of life threatening maternal complications in near miss case.

Material and Method-

This study was a Cross Sectional study of critically ill pregnant women admitted in Obstetrics Department and Intensive Care Unit. During the period of analysis of 2 years from 1st August 2014 to

31st July 2016 and WHO 2009 Criteria was followed in the study as inclusion criteria and 59 antenatal near miss patients getting admitted to us were included in this study and details were gathered regarding admission pattern, demographic profile, types of life threatening maternal complication. A detailed history was obtained with a predesigned proforma which included age, parity, residence (urban/rural), registration, socio economic status, underlying medical, surgical illness with detailed menstrual and obstetric history, previous hospitalization, past pregnancy, antepartum, intrapartum, postpartum complications. Examination findings along with signs of hemodynamic instability, respiratory, liver, renal failure, coagulation and neurological deficit at the time of admission in the wards and at the time of transfer to critical care unit or at the time of admission to critical care in case a patient was admitted directly to critical care were recorded and case specific investigations were done.

OBSERVATIONS AND RESULTS-

In the present study, out of 59 critically ill patients, 6 patients were in first trimester (10.16% of all critically ill), 3 were in second trimester (5.08% of all critically ill) and 50 were in third trimester (84.7% of all critically ill).

In the present study, out of 59 near miss cases, 46 patients were from rural setup (77.9% of all critical ill) and 13 patients were from urban setup (22% of all critical ill).

Table 1 Maternal Near Miss Cases According to Socio-Economic Class (n=59)

Socioeconomic Class	Rural					Urban				
	I	II	III	IV	V	I	II	III	IV	V
Number	2	6	12	20	6	0	2	3	6	2
%	3.38	10.1	20.3	33.8	10.1	3.38	5.08	10.1	3.38	3.38

In the present study, There were total 59 near miss patients, Out of which 46(77.9%) patients were from rural setup of which 2 were from SEC I (3.38% of all critically ill), 6 (10.1% of all critically ill) cases were from SECII, 12 (20.3% of all critically ill) cases were from SECIII, 20 (33.8% of all critically ill) cases were from SECIV and 6 (10.1% of all critically ill) cases were from class V. Out of 13(22%) Urban patients, 2 (3.38% of all critically ill) cases were from SECII, 3(5.08% of all critically ill) cases were from SECIII, 6 (10.1% of all critically ill) cases were from SECIV and 2 (3.38% of all critically ill) cases were from class V.

In the present study, Out of 59 critically ill patients, 46(77.9%) patients were from rural setup of which 10(16.9% of all critically ill) were booked admission and 36(61.01% of all critically ill) were unbooked admission. Out of 13(22.0%) patients from urban setup, 4(6.77% of all critically ill) were booked admission and 9 (15.2% of all critically ill) were un-booked admission

Table 2: Distribution of Maternal Near Miss Complication in Gestation (≤13 weeks) with Age and Gravida - (n=6)

Age	Gravida	ECTOPIC	ANEMIA
Upto20	1	-	-
	2	-	-
	3	-	-
	>3	-	-
21-25	1	1	-
	2	1	-
	3	-	-
	>3	-	-
26-30	1	-	-
	2	-	1
	3	-	-

	>3	-	-
>30	1	1	-
	2	-	-
	3	1	-
	>3	1	-

*-GRAVIDA-1(primigravida), 2(second gravida).3(third gravida),>3 gravida Out of 6 patients in 1st trimester, 5 patients (83.33%) had ectopic pregnancy while the remaining one patient had anemia. Out of the 5 patients with ruptured ectopic pregnancy, maximum patients were in the age group of more than 30 years. 2 patients out of the total 6 patients were primigravida

Table 3. Distribution of Maternal Near Miss Complication in Gestation (14-28weeks) with Age and Gravida - n=3

Age	Gravida	Hypertensive Disorders Eclampsia	Medical Disorder Infection
21-25	1	-	1
	2	-	-
	3	-	-
	>3	-	-
26-30	1	-	-
	2	-	-
	3	1	1
	>3	-	-

Out of the 3 patients in 2nd trimester, 2 patients (66.66%) had infection while only one(33.33%) patient had eclampsia. Two patients were in the age group of 26.30 years and were 3rd gravida.

Table 4: Distribution of Maternal Near Miss Complications in Gestation (>28 weeks) with Age and Gravida (n=50)

Age	Gravida	Hypertensive Disorders(31)			Medical Disorder (19)			
		PE(14)	EC(6)	HELLP(11)	Infection	DK	Anemia	ARF
Upto20	1	-	1	1	1	-	1	1
	2	-	-	2	-	-	-	-
	3	-	-	-	-	-	-	-
	>3	-	-	-	-	-	-	-
21-25	1	7	3	3	-	-	4	-
	2	3	-	1	-	-	2	1
	3	-	-	-	-	-	1	-
	>3	-	-	-	-	-	-	-
26-30	1	1	2	2	-	-	-	-
	2	2	-	-	2	-	5	-
	3	1	-	-	-	1	-	-
	>3	-	-	-	-	-	-	-
>30	1	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-
	3	-	-	1	-	-	-	-
	>3	-	-	1	-	-	-	-

Out of the 50 patients in 3rd trimester 31 (62%) had hypertensive disorders and 19 patients (38%) had medical disorder. out of 31 patients with hypertensive disorder 17 patients were in the age group of 21-25 years and maximum were primigravida. Out of 31 patients of hypertensive disorders, 14(%) patients had preeclampsia, 6 (%) patients had eclampsia, 11(%) patients had HELLP. Out of 19 (%) patients of medical disorders, Maximum patients had anemia 13(%) and were in the age group of 21-25 years and were second gravida, 3 patients had infection, 2 patients had acute renal failure and 1 patient had diabetic ketoacidosis.

Out of 14(45.16% of all hypertensive disorders) patients of pre-

Eclampsia, one patient (7.69%) had severe anemia and one(7.69%) patient with antepartum haemorrhage. 4(30.77%) patients had uncontrolled blood pressure.

Out of 6(19.35% of all hypertensive disorders) patients of Eclampsia, 1(12.50%) patient developed sinus venous thrombosis with left lateral rectus muscle palsy and 3 (37.50%) patients had status eclampticus who required ventilator for further management and 1(12.50%) patient landed up into acute renal failure and her serum urea was 206mg% and serum creatinine was 6.8mg%

Out of 11(35.48% of all hypertensive disorders) patients of HELLP syndrome, 1(9.09%) patient with antepartum haemorrhage and 1(9.09%) patient had haemorrhagic infarct with cortical venous thrombosis leading to status eclampticus and acute renal failure. 2(18.18%) patients landed up into acute renal failure and they both required dialysis and 2(18.18%) patients developed multiorgan dysfunction syndrome, 1 of 2 required ventilator support.

DISCUSSION

In present study all the patients were antenatal out of all antenatal, 10.16% of all critically ill came in first trimester, 05.08% of all critically ill came in second trimester, 84.74% of all critically ill came in third trimester.

Comparable results were observed in the study done by **Roopa PS et al (2013)**, 57.2% were in third trimester at the near miss events. In the present study, majority of the patients were primigravida 58%. Study done by **Souza JP et al (2009)**(World Health Organization 2005 global survey) reported that majority of the near miss patients were multigravida (3.54%) which was in contrast to our present study.

In the study done by **Roopa PS et al (2013)**, majority of the patients were primigravida (50.84%) which is in correlation to the findings of our study.

Study done by **Naderi T et al (2015)**, 41.5% near miss cases were primiparous which is again in correlation to the present study. In the present study, 11.86% of women were in their teens, Majority were in the age group of 21-25 years(47.45%). 32.20% of women were in the age group of 26-30 years and 08.47% were >30 years of age group.

Study done by **Pruhal et al (2000)** have reported similar pattern of age distribution among women with severe maternal morbidity. In their study the mean age was 25 years and 29.7% cases fell into the age group under 20 years and above 35 years.

In the present study, 77.9% of women were from rural setup and 22.0% women were from urban setup.

David et al (2014) conducted a study in 5 health facilities offering comprehensive emergency obstetric care and found that majority of maternal near miss cases resided in suburban area 46.3%, followed by 42.2% cases who resided in rural area and only 10.6% cases resided in urban area.

Litorp et al (2014) conducted a cross sectional study and found that majority of MNM cases 41% resided in semi urban area while 34% in urban area and only 21% in rural area.

In the study done by **Naderi T et al (2015)** Error! Bookmark not defined. southeast Iran 51% near miss cases were urban and 47.1% were rural.

Out of 59 critically ill patients, 46(77.9%) patients were from rural setup of which 10(16.9% of all critically ill) were booked admission and 36(61.01% of all critically ill) were unbooked admission. Out of 13 patients from urban setup, 4(6.77% of all critically ill) were booked admission and 9 (15.2% of all critically ill) were unbooked

admission

STUDIES	Booked Cases (%)	Unbooked Cases (%)
Present study	23.7	76.2
Osinaike et al 2006¹²	22	78
Chhabra et al 2008¹³	38	62
Shrestha NS et al (2010)¹⁴	30	70
Roopa PS et al (2013)^v	3.81	96.18
Purandare CN (2013)¹⁵	61.2	38.8
Purandare C et al (2014)¹⁶	69.3	30.7

In the present study the commonest primary cause of maternal near miss over the period of 2 years was complications due to hypertensive disorders, which were 32, Out of 32 patients, majority(23.72%) of the patients developed preeclampsia and second most common cause was medical disorder occurring in 22(37.28%), out of 22 patients majority of the patients had anemia. In the study done by **Roopa PS et al (2013)**, hemorrhage was leading cause of near miss (44.2%) and hypertension was (23.6%) followed by sepsis (13.2%) which was in contrast to our present study.

In the study done by **Oliveira LC et al (2015)**, hypertension (62.7%), hemorrhage (53.7%), infection (49%), heart disease (4.7%) and thromboembolism (2.4%). among hypertensive disorder, majority of the patients had severe preeclampsia followed by HELLP. Most common infectious disorder was endometritis followed by pneumonia and sepsis.

In the study done by **Naderi T et al (2015)** southeast Iran observed that the causes of near miss were severe preeclampsia 27.3%, ectopic pregnancy 18.4%, abruption placentae 16.2% which was in near correlation to our present study.

In the study done by **Venkatesh S et al (2015)** observed that severe preeclampsia was leading cause of near miss (64.9%) followed by anemia 41.45%, ectopic pregnancy(22.22%), antepartum hemorrhage (19.65%), Post-partum hemorrhage(17.09%), cardiac disease complicating pregnancy(12.39%).

CONCLUSION:

The present study was done at a rural tertiary health care center. The aim of the study was to know the burden of near miss patients or critically ill patients in the area to get information about disorders, baseline social and medical factors which add on to the disorders leading to severe morbidity and to make an estimation and evaluation of major issues which affected the outcome of critically ill, so as to make attempts for prevention of deaths and disabilities from severe maternal morbidities. During the period of analysis of 2 years from 1st august 2014 -31st July 2016, out of 59 near miss cases maximum patients 50(84.74%) were in the third trimester followed by 6(10.16%) in first trimester and 3(3.08%) in second trimester. out of 59 near miss cases, 46 (77.9%) were rural, 13(22%) were urban. out of 46 rural patients 36(61.01%) patients were unbooked and 10(16.9%) were booked. out of 13 urban patients 4(6.77%) were booked and 9(15.2%) were unbooked. out of 46 (77.9%) rural patients maximum patients 20(33.8%) were from socioeconomic class III. out of 59 near miss cases maximum patients 50(84.74%) were in the third trimester. Out of the 50 patients in 3rd trimester 31 (62%) had hypertensive disorders and 19 patients (38%) had medical disorder. out of 31 patients with hypertensive disorder, 17 patients were in the age group of 21-25 years and maximum were primigravida. Maximum patients had preeclampsia (28%) in hypertensive disorders. Out of 19(38%) patients with medical disorders, maximum patients had anemia 13(26%) and were in the age group of 21-25 years.

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