

An Observational, Cross-Sectional, Hospital-Based Study of Maternal Near Miss in Tertiary Care Centre of Bastar DistrictKaruna Meravi¹, Sonam Kunjam², Rashmi Ranjana³, Abhilasha Jain⁴¹Assistant Professor, Department of Obstetrics and Gynecology, SPGMC, Mandsaur, MP²Senior Resident, Govt Medical College Jagdalpur, Bastar, CG³Senior Resident, Department of Obstetrics and Gynecology, RIMS, Raipur, CG⁴Assistant Professor, Department of Obstetrics and Gynecology, Ram Krishna Medical College Hospital and Research Centre, Bhopal, (M.P.)

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Abstract:

“Make every mother and child count”- the slogan for World health day 2005 reflects the reality and need of the society even today. Pregnancy and childbirth are a universally celebrated event. Every minute every day, a woman dies as a result of pregnancy and childbirth somewhere in the world, be it an unwed adolescent, a teenage bride for want of blood or drugs.

Every year, approximately 600,000 women die of pregnancy related causes. Worldwide about half a million women die as results of complications of pregnancy and childbirth. In India, many women die due to pregnancy-related complications and those who survive suffer from severe maternal morbidity. During the study period, 19185 number of patients received care in the OP [obstetrics alone] of whom 11465 were new OP patients and 7720 were old OP patients. 7592 patients were admitted and treated.

There were 5713 deliveries; of which 2512 were Labour Natural, 205 were Assisted Vaginal deliveries and 2996 were Caesarean Sections. There were 5570 live births. Out of 280 cases of maternal morbidity and mortality, it was found that 267 were referred accounting for 95.35% of cases and 247 were unbooked 84.63% ,33 was booked 15.4% of the cases. In 280 cases, 14 cases belong to class I Near miss (5%), 144 cases belong to class II (51.4%), 130 cases belong to class III (46.4%).

Finally We can concluded that through better antenatal care, early detection and proper management of risk factors like pre-eclampsia, anaemia and active management of third stage of labor with careful fetomaternal monitoring, multidisciplinary approach for near miss cases i.e. cardiovascular support, ventilatory support, surgical intervention, dialysis, transfusion of blood and blood products and better NICU facilities the absolute goal of Obstetrics of reducing maternal morbidity and mortality, and having a healthy mother and healthy.

Keywords: Maternal, Near Miss Cases.

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Introduction

“Make every mother and child count”- the slogan for World health day 2005 reflects the reality and need of the society even today. Pregnancy and childbirth are a universally celebrated event. Every minute every day, a woman dies as a result of pregnancy and childbirth somewhere in the world, be it an unwed adolescent, a teenage bride for want of blood or drugs. [1]

Every year, approximately 600,000 women die of pregnancy related causes. Worldwide about half a million women die as results of complications of pregnancy and childbirth.[1] In India, many women die due to pregnancy-related complications and those who survive suffer from severe maternal morbidity. [2] Mothers in the lowest economic bracket have about a two and a half times higher mortality rate.

Maternal mortality has been identified as a priority on health policy and research agendas for developing countries. [3] Maternal mortality is a vital index of the effectiveness of obstetric services prevailing in country. [4] Over the years the ratio consistently declined in developed countries. [5,6]

Maternal deaths arise from many factors including poor quality care from health services, risks attributable to pregnancy and childbirth. [7]

Maternal mortality is “Just the tip of iceberg” has vast base to the iceberg maternal morbidity which remains undescribed. “Maternal near miss” surveillance is an effective tool for improving safe motherhood programs. [8] We have been impressed that the same obstetric conditions that kill mothers are also responsible for most of the stillbirths and many of the neonatal deaths as well. [9]

Mother and baby must be considered as one unit. Health of the baby and the mother are so closely linked that each has the capacity to influence the other. The outcome of pregnancy in terms of a healthy newborn is dependent on the physical, physiological, mental and nutritional state of the mother during pregnancy.

The purpose of our study is to analyse the cases where the mother affected in form of mortality or morbidity. Hence, we have undertaken the present study to observe associated factors like parity, gestational age, mode of delivery in cases of maternal near miss i.e., maternal morbidity and mortality. These conditions need special focus as the joy of childbirth is converted into a scene of double sorrow in no time. Study focuses on treatment modalities which can focus on interventions to prevent maternal and perinatal morbidity and mortality can be made to achieve the goal of obstetrics of having a healthy mother with a healthy baby at the end of every pregnancy.

Material and Methods

All the cases getting admitted in our institute are analysed for maternal outcome. It is a tertiary care institution with primary health centers attached to it. It is a referral hospital for both public and private hospitals. In addition to providing twenty-four-hour emergency obstetric services, the hospital also provides antenatal care and delivery services for both low and high-risk pregnant women. Hospital has 24-hour facility for blood component therapy. High dependency unit (HDU) in labor room complex and intensive care ICU with 24-hour facility for multidisciplinary specialty also function well.

Definition of near miss: a woman who survives a severe life-threatening condition (either after receiving emergency medical or surgical intervention or otherwise) during pregnancy, abortion, childbirth or within 42 days of pregnancy termination. There were several criteria to define near miss; But in 2009, WHO came up with a comprehensive criterion (which included clinical,

laboratory and management-based criteria) for identification of near miss.

In this study, WHO comprehensive criteria were adopted for identification of MNMM. In this study, all the maternal near miss cases which met the comprehensive criteria of WHO from AUG 2019 to Aug. 2020 were included. All women with severe life-threatening conditions who fulfilled.[10]

The WHO criteria were identified and flagged. Their course of hospital stay was followed closely. A total of 100 cases were included in the study. Each case was documented with respect to the adverse event, the disorder and organ dysfunction. Coordination from different specialties was obtained, the care given was reviewed at several levels, feedback given to the care giving team which improved their care wherever possible.

Patient characteristics including age, education level, parity, booking status, whether came directly or referred from outside, hospital where antenatal care received, whether in life threatening condition at arrival or became so later on, Gestational age at admission, h/o previous LSCS were recorded.

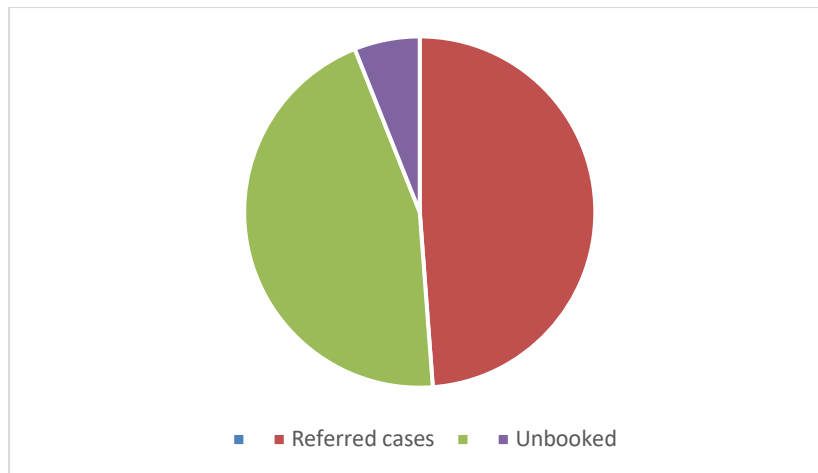
Results

Ethical committee approval was obtained prior to the start of the study from institutional Ethics committee of medical college prior to commencement of the study. During the study period of 8months, there were 3238 admissions 2928 Antenatal admissions and 2481 deliveries conducted in the hospital and 1411 referred cases of outside hospital, it was found that there were 280 cases of maternal near miss i.e. the cases where mother affected. During the study period,19185 number of patients received care in the OP [obstetrics alone] of whom 11465 were new OP patients and 7720 were old OP patients. 7592 patients were admitted and treated;

There were 5713 deliveries; of which 2512 were Labour Natural, 205 were Assisted Vaginal deliveries and 2996 were Caesarean Sections. There were 5570 live births.

Table 1: Antenatal care status of the patients with Near Miss

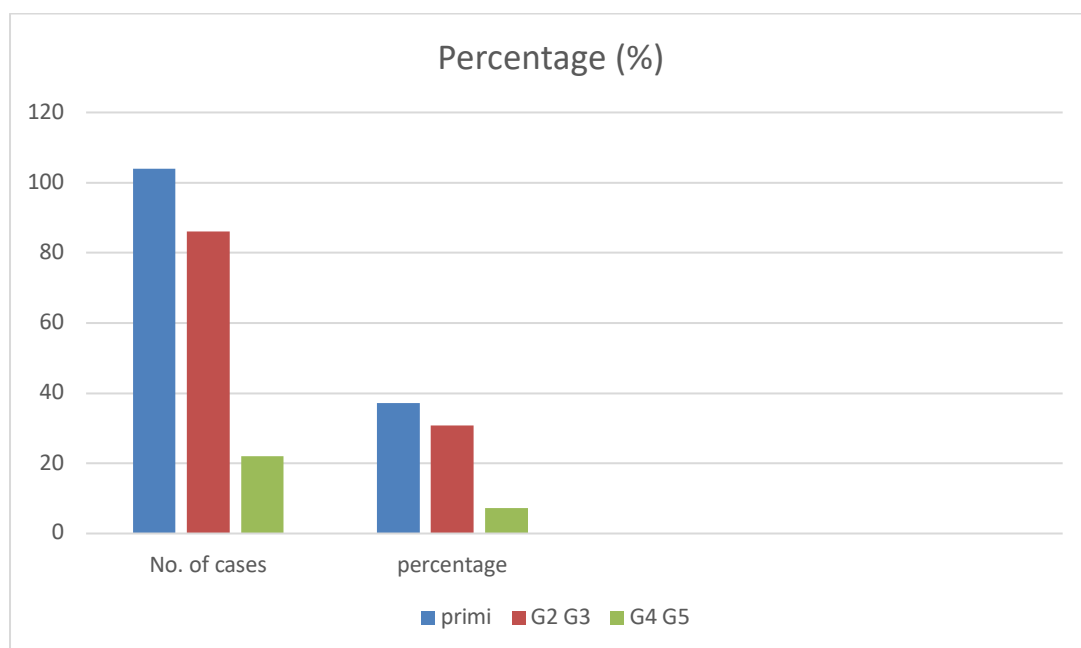
ANC status	No of cases of near miss	Percentage (%)
Referred cases	267	95.35%
Unbooked	247	84.6 %
Booked	33	15.4 %
Total	280	100 %



Out of 280 cases of maternal morbidity and mortality, it was found that 267 were referred accounting for 95.35% of cases and 247 were unbooked 84.63%, 33 was booked 15.4% of the cases. The value of z is 3.078. The value of p is 0.00208. The result is significant at $p < 0.05$

Table 2: Parity in cases of Near miss:

Parity	No. of cases	Percentage (%)
Primi	104	37.14%
G2, G3	86	30.74%
G4, G5	22	7.3%



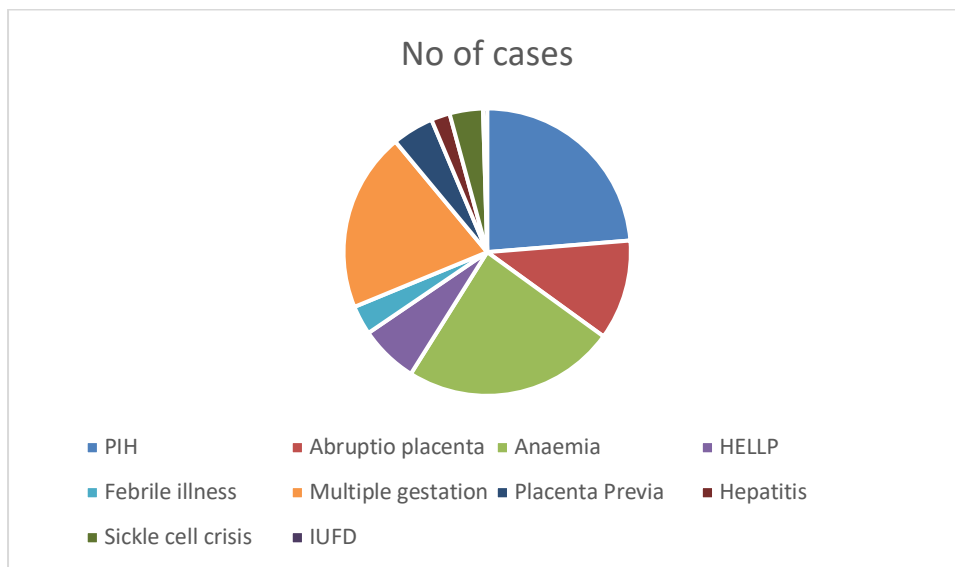
Out of 280 cases of maternal and perinatal morbidity and mortality, it was found that 104 were primigravida accounting for 37% of cases and 86 were, G2G3and 7.3% were G4, G5 multigravida accounting for 37% of the cases. The value of z is 1.6065. The value of p is 0.1074. The result is not significant at $p < 0.05$.

Table 3: Risk factors in cases of Near Miss

Risk factors	No of cases	Percentage (%)
PIH	101	36%
Abruptio placenta	48	17.1%
Anaemia	102	36.4%
HELLP	28	10%
Febrile illness	14	5%

Multiple gestation	86	30%
Placenta Previa	20	7.14%
Hepatitis	9	3.2%
Sickle cell crisis	16	5.7%
IUFD	2	.714%

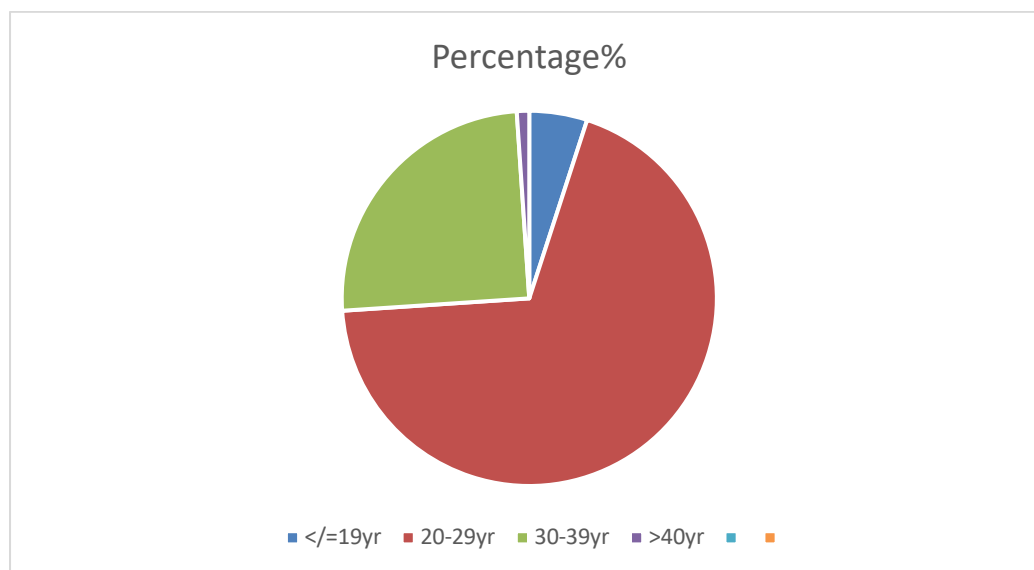
Note: Percentage is calculated with 280 as its denominator



The value of z is 0.0879. The value of p is 0.92828. The result is not significant at $p < 0.05$

Table 4: Age distribution in cases of Near Miss

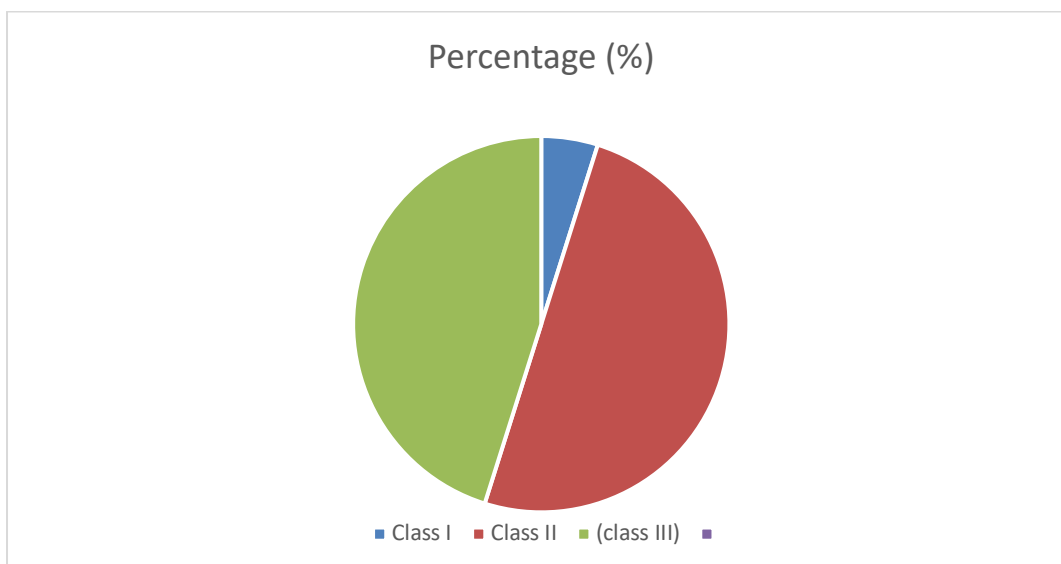
Age distribution	No of cases of double mishap	Percentage
≤ 19 yr	14	5%
20-29yr	195	69%
30-39yr	70	25%
>40 yr	3	1.07%
Total	280	100%



The value of z is 10.5796. The value of p is < 0.00001 . The result is significant at

Table 5: Class of Near miss

Cases of Near miss	No. of cases	Percentage (%)
Class I	14	5%
Class II	144	51.4%
(class III)	130	46.4%
TOTAL	280	100%

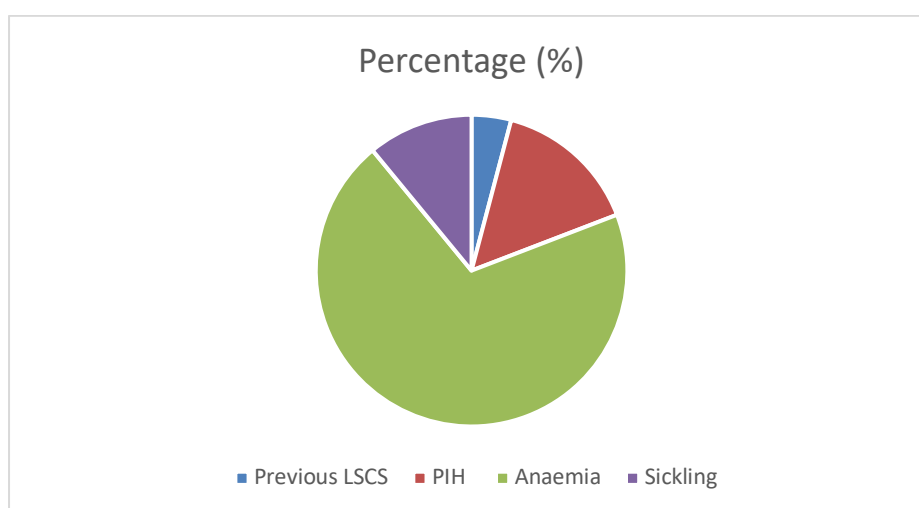


In 280 cases, 14 cases belong to class I Near miss (5%), 144 cases belong to class II (51.4%), 130 cases belong to class III (46.4%). The value of z is 10.5796. The value of p is < 0.00001. The result is significant at p < 0.05

Table 6: Past history in cases of Near Miss:

Past history	No of cases	Percentage (%)
Previous LSCS	6	2.14%
PIH	22	7.85%
Anaemia	102	36.42%
Sickling	16	5.714%

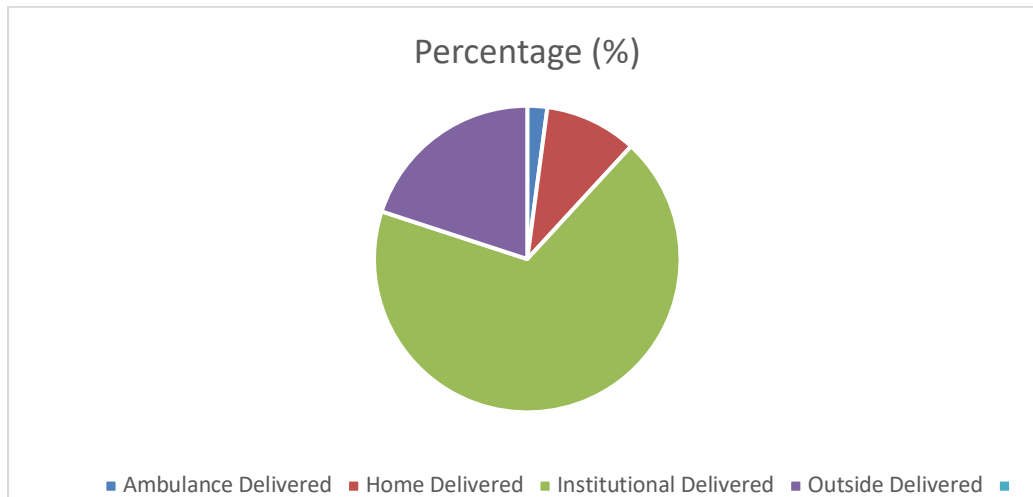
Note: Percentage is calculated with 280 as its denominator.



Among the cases of Near Miss, there were 6 cases with history of previous LSCS [2.14%], 22 cases had history of hypertension in past pregnancy [7.85%], 102 cases had history of anemia in past history [36.42%], 16 cases past history of Sickle cell disease. The value of z is 8.142. The value of p is < 0.00001. The result is significant at p < 0.05.

Table 7: Delivery status of patients with Near Miss:

Delivery status	No of cases	Percentage (%)
Ambulance Delivered	5	2.10%
Home Delivered	20	9.7%
Institutional Delivered	140	67.96%
Outside Delivered	41	19.90%
Total	206	100%

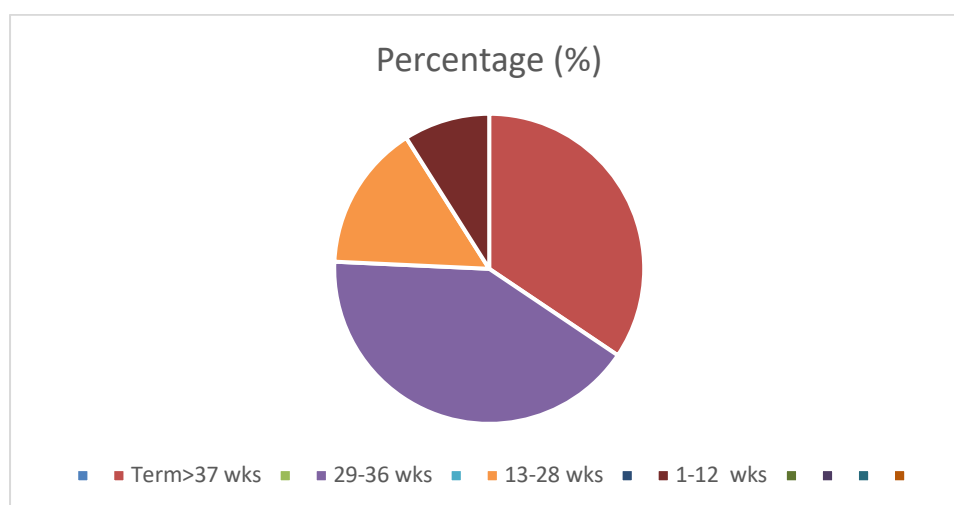


Among 206 delivered patients with Near Miss, 5 cases delivered in ambulance 2%, 20 cases delivered at home 9.7%, 140 cases institutional delivered 67.96%, 41 cases delivered outside in other institutions and referred 19.90%.

The value of z is 9.8274. The value of p is < 0.00001. The result is significant p < 0.05.

Table 8: Gestational age among delivered patients with Near Miss:

Gestational age	No. of deliveries	Percentage (%)
Term >37 wks	76	34.5%
29-36 wks	92	41.4%
13-28 wks	34	15.31%
1-12 wks	20	9.009%
Total no. of cases	222	100%



Out of 222 delivered cases of maternal morbidity and mortality 92 case between 29-36 weeks 41.1%, 34 cases between 13-28 cases had preterm delivery 15.31%, 20 cases between 1 -12 weeks 9.0% and

76 cases had term delivery [25.37%]. The value of z is 1.5657. The value of p is .11642. The result is not significant at p < 0.05.

Discussion

Despite the improvements in obstetric care over the few decades, maternal morbidity and mortality remains to be a challenge in the developing countries. Additionally, adverse pregnancy outcomes leading to perinatal mortality have attracted much public health attention globally. The high MMR is similarly accompanied by high rates of perinatal mortality. [11]

In the present study, there were 2928 deliveries conducted in the study hospital and referred 2098 cases of outside hospital, it was found that there were 280 cases of maternal near miss. Out of 280 cases of near miss, there were 18 cases were maternal mortality was there accounting for 6.4% cases and 262 cases of maternal morbidity accounting for 93.6% of cases. There were 130 cases of perinatal mortality [46.4%] and 144 cases of perinatal morbidity [51.4%]. In our study we found that out of 280 cases of Near miss 267 cases [95.35%] were referred from PHC and CHC, 247 cases [88.5%] were unbooked and 33 cases [11.5%] were booked at our institute. In 280 maternal Near miss cases, 18 (6.42%) mortality was that cannot save. The majority of cases were near miss on arrival this shows failure of recognition of seriousness of condition.

Majority of cases 48.7% belongs to low socioeconomic status which leads to delayed decision in seeking help. Being a tertiary care majority cases referred from level 1 and level 2 facilities. our study 120 cases take 2-3 hours 49% to reach to our hospital, thus delay lead to further deterioration of condition. However, MNMM on arrival also reflects the effectiveness of emergency referrals

Age and parity are the two important sociodemographic data analyzed in the study.

In our study we found that 37.4% of the cases of Near miss where both mother were Primi and 30.7% were G2, G3 and 7.3% were multi. So, there was no significant association of parity in cases of near miss.

In the study conducted by Asheber Gaym M.D on maternal mortality trends states that regarding parity at the time of maternal death, 137 (20.9%) of the maternal deaths occurred in nullipara mothers mostly due to abortion and 133 (20.2%) were primipara. The majority 240 (36.5%) of maternal deaths were para two to four mothers; only 136 (20.7%) were para five and above. [12] In the study by Das A et al on maternal near miss cases primiparas were more in number. [13]

In our study, there were 104 cases of near miss with anemia as complicating factor and among those 38.33% cases were primigravida and 61.66% were multigravida. In a study by Peter Anlaaku et al it is found that anemia is common among

multigravida accounting for 43.4% of cases and 26.9% of the cases were primigravida. [14] Multigravida are at risk of anemia as there is depletion of iron stores with increased pregnancy rates. Even in our study among the cases of near miss with anemia multigravida is significantly more than primigravida.

In our study, among 280 cases of near miss 5% of cases were in the age group of less than or equal to 19yrs, 69% of cases were between 20-29yrs, 25% cases were between 29-30yrs and 25% cases were above 30-39 yrs. of age. Above 40 yrs. of age 1.07%. The mean age was 23.42. In our study maximum age was 37 yrs. and minimum age was 18yrs.

In our study as cases with both maternal morbidity and mortality are considered, hypertensive disorders eclampsia and placental abruption (anteartum hemorrhage) followed by anemia and rupture uterus are the important factors involved in cases of near miss Preexisting uncorrected anemia, aggravates during pregnancy, small amount of blood loss leads to shock; 53 referral case came to our institute in shock. In the study by Anuradha J et al on near miss cases hemorrhage was a major life-threatening cause identified among the referral cases (41%) followed by hypertensive disorders (39%). In late pregnancy abruptio and placenta previa and rupture uterus were observed. However more than one condition was observed among near miss cases. [15, 16]

In our study, of 280 cases of near miss, it was found that 222 cases were delivered [82.1] and there were 10 undelivered cases [3.57%], 48 cases were postnatal [14.2%]. Out of 222 delivered cases of maternal morbidity and mortality 146 cases had preterm delivery [65.4%] and 76 cases had term delivery [34.5%]. In our study among 280 cases of near miss, 66 cases [23.541%] required cardiovascular support, 20 cases [7.62%] required ventilatory support, 2 cases [0.7%] required dialysis, 104 cases [38%] needed intensive care, 87 cases [31.07%] needed surgical intervention and 155 cases [55.7%] required broad intervention in the form of transfusion of blood and blood products.

Summary and Conclusion

'Let's stop child and maternal Deaths'. Even though there are many national programs initiated by the government for improving mother and child health, there are considerable number of cases where both maternal and fetal health is compromised indicating that there is still a need for improvement at the grass route level to promote maternal and perinatal wellbeing. But in our study, it is evident that cases of maternal mortality are less indicating the effective management of the cases at tertiary level so that the mortality could be prevented but there was maternal morbidity which

required cardiorespiratory support, ICU care, transfusion of blood and blood products and surgical intervention.

In our study conducted on the cases of maternal near miss it was found that:

1. Maternal mortality was seen in 6.74% of cases and maternal morbidity was seen in 93.21% of cases.
2. Maternal near miss index is 105 per 1000 live birth, total number of near miss 262, total number of live births 2481.
3. Maternal near miss mortality ratio is 14.5, which is higher shows better facility care
4. Majority of the cases i.e., 95.42 % were referred from primary and secondary health centers and 88.2 % of the cases were unbooked.
5. There was association of parity more 37% cases seen in near miss in Primi para, though the cases of near miss with abortion and anemia were found to be more common in multigravida.

The causes of Near Miss reflect the causes of maternal death. Near miss analysis is worth presenting in national indices as a surrogate for maternal death.

Training of multipurpose health worker, ASHA, ANM working at sub-centre of PHC and rural hospital regarding warning signs and symptoms of pregnant women and diagnosis of condition, identification of high-risk cases, and timely and fast referral of high-risk patient, institutional delivery can prevent near-miss event and reduce maternal mortality.

We can conclude by stating that through better antenatal care, early detection and proper management of risk factors like pre-eclampsia, anaemia and active management of third stage of labor with careful fetomaternal monitoring, multidisciplinary approach for near miss cases i.e cardiovascular support, ventilatory support, surgical intervention, dialysis, transfusion of blood and blood products and better NICU facilities the absolute goal of Obstetrics of reducing maternal morbidity and mortality, and having a healthy mother and healthy.

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