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Original Research Article

Evaluation of the Incidence and Common Causes of Maternal Near Miss among the Cases Admitted in Tertiary Health Care, Jharkhand, India

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Conflict of interest: Nil

Abstract

Background: Maternal Near Miss is defined (WHO) as a woman who survives life threatening conditions during pregnancy, abortion & childbirth or within 42 days of pregnancy termination, irrespective of receiving emergency medical/surgical interventions. Because different ways of definitions and identification criteria were used to measure maternal near-miss and no standard definition for maternal near-miss until 2009, there were heterogonous estimate of the prevalence of maternal near-miss across different countries.

Aim: This study was undertaken to evaluate incidence and common causes of Maternal Near Miss among the cases admitted in labour room emergency at RIMS, Ranchi.

Methods and Materials: This study facilitates determining of the overall incidence of maternal near miss cases who were admitted in labour room. In this study, all the maternal near miss cases were included which met the comprehensive criteria of WHO. Inclusion criteria opts all antenatal & post-natal women upto 42 days of post termination of pregnancy who were admitted in labour room, RIMS, Ranchi, to calculate the incidence and evaluate causes and their management of near miss cases. Informed consent, couselling, high risk and complications were explained to all the patients and to the attendants of the patients who were prepared for emergency lifesaving procedure or surgical interventions. Opinion of physician, Neurophysician, Surgeon, Cardiologist and Critical care Doctors and other department will also be taken where needed for management of the patients.

Results: Out of 200,maximum number of near miss cases belonged to age group 21- 30years followed by those of age group of less than 20 year were 58 (29%), only 5 cases were more than 30 year of age. Out of 200, 139 (69.5%) near miss cases were Hindu, 34(17%) were Muslim while 27(13.5%) were Christian. Out of 200 cases,183 (91.5%) belonged from rural area while 17(8.5%) were from urban area. Out of 200 cases, 89.5% cases came from low socioeconomic status lower middle (no-20, 10%). Out of the 200 cases 49 (24.5%) cases were uneducated, maximum number cases 125(62.5%) were taken primary education, while only 5 (2.5%) were taken graduation. Out of 200 cases 121 (65.5%) were unbooked, 79 (39.5%) were booked. Out of 200 cases, 60 (30%) were without ANC, 61(30.5%) cases had irregular or inadequate ANC, while 79(39.5%) cases had regular ANC. Out of 200 cases, 182 (91%) were married, 18(9%) cases were unmarried. Out of 200 cases 102 (51%) were pregnancy induced hypertension case while 55 (27.5%) were haemorrhage, 20 (10%) cases were septic abortion, 10 (5%) were rupture uterus 10 (5%) were

obstructed labour, only 3 (1.5%) cases were puerperal sepsis. Out of 200 cases 132 (71%) near miss case were due to very severe anaemia, 38 (18%) had Jaundice, 4 (2%) had Sickle cell disease. Out of 200 cases 55 (27.5%) cases were needed ICU admission. Out of 200 cases due to anaemia 18 (9%) cases had residual morbidity.

Conclusion: Maternal Near miss incidence ratio was 20.94 per 1000 live birth, RIMS is the highest referral centre there is increased number of admission here. Direct causes of near miss event were important cause, in which pregnancy induced hypertension was leading cause for the events which contributed 51% out of which antepartum eclampsia was 37.5%. Indirect cause were also major contributing factor in near miss events, Anaemia being the main cause (66%).

Keywords: Maternal Near Miss, Incidence, Causes, Emergency.

Introduction

Maternal mortality is a critical indicator to assess the quality of services providedby a health care system. The standard indicator for measuring it is the maternal mortality Ratio (MMR), defined as the ratio of the number of maternal deaths per 100,000 live births. globally there has been decline in MMR, in India too this is declining steadily due to the additional efforts and resources put under NHM for improving health care.[1-5]

It is well known that complications during pregnancy and childbirth can occure at any point of time, and it is important to ensure that readiness in terms of infrastructure, equipment etc for timely management of complications are available at all the basic and emergency obstetric care health facilities. If such complications are not managed on time they can become fatal.[6-10]

Maternal Near Miss is defined (WHO) as –A woman who survives life-threatening conditions during pregnancy, abortion & childbirth or within 42 days of pregnancy termination, irrespective of receiving emergency medical/surgical interventions[1].

In any setting, women who develop severe acute complication during pregnancy share many pathological and circumstantial factors. While some of these womendie; but, a proportion of them narrowly escape death. By evaluating these cases with severe maternal outcomes (both “near miss” cases & maternal death), much can be learnt about the facilities of management and process undertaken (or lack of them) for the care of pregnant women.[11-16]

The advantages of reviewing near miss events are, Near miss cases are more common than maternal death, they have same pathway which leads to death and provide information regarding care received & possible means of prevention.

Because different ways of definitions and identification criteria were used to measure maternal near-miss and no standard definition for maternal near-miss until 2009, there were heterogonous estimate of the prevalence of maternal near-miss across different countries.[17-23]

Socio-economic and demographic characteristics of the women like age, rural, socioeconomic condition, literacy all these can interfere the outcome of pregnancy. Factors like age parity, nutritional status, anaemia, PIH, multiple pregnancies, previous LSCS, dystocia, cardiac disease, renal disease, hepatic disease have a higher risk of complications.[24-26]

This study was undertaken to evaluate incidence and common causes of Maternal

Near Miss among the cases admitted in labour room emergency at RIMS, Ranchi.

Methods and Materials

The present study entitled "To study a case of maternal near miss" was conducted in Department of Obstetrics & Gynaecology of Rajendra Institute of Medical Science (RIMS), Ranchi (JHARKHAND).

The period of study was from April 2018 to September 2019.

This study facilitates determining of the overall incidence of maternal near miss cases who were admitted in labour room. In this study, all the maternal near miss cases were included which met the comprehensive criteria of WHO.

Inclusion criteria opts all antenatal & post-natal women upto 42 days of post termination of pregnancy who were admitted in labour room , RIMS, Ranchi, to calculate the incidence and evaluate causes and their management of near miss cases.

INCLUSION CRITERIA

All antenatal & postnatal women, 42 days post termination of pregnancy, visiting RIMS Ranchi & who qualified as being maternal near miss as per WHO maternal near miss criteria-2009 will be included in the study.

WHO maternal near miss criteria -2009 include-

A. Clinical Based Criteria

1. Acute cyanosis
2. Gasping
3. Severe tachypnoea (RR>40 breaths/minutes) or severe bradypnoea (RR< 6 breaths/minutes)
4. Shock(persistent severe hypotension, defined as systolic blood pressure <90 mmHg for 60 minutes with s pulse rate of 120/minutes despite aggressive fluid therapy, >2litres)
5. Oliguria unresponsive to fluids or diuretics (<30ml/hr for 4hrs or <400 ml/24hrs)
6. Failure to form clots (absence of clotting from the IV site after 7- 10minutes)
7. Cardiac arrest
8. Loss of consciousness or coma for >12hrs
9. Stroke (neurological deficit of cerebrovascular cause that persist >24Hrs)
10. Jaundice with preeclampsia.
11. Uncontrolled fits or total paralysis/ stastus epilepticus.

B. Laboratory Based Criteria

1. Oxygen saturation,90% for > 60minutes.
2. PaO2/FiO2<200mmHg
3. Severe Acute Azotemia (Creatinine >300micromol/ml or >3.5mg /dl)
4. Severe acute hyperbilirubinaemia (bilirubin > 100micromol/l or >6 mg/dl)
5. Severe Acidosis (PH< 7.1)
6. Severe Hypoperfusion (Lactate >5mEq/mL)
7. Severe acute thrombocytopenia (<50,000 platelets/ml)
8. Loss of consciousness and presence of ketoacids in urine.

C. Management Based Criteria.

1. Use of continous vasoactive drugs.
2. Uterine dysfunction- Hysterectomy following infection or haemorrhage.
3. Massive transfusion of blood or red cells (>5 unites)
4. Intubation & ventilation for >60 minutes not related to anaesthesia.
5. Dialysis for Acute renal failure
6. Cardio-pulmonary resuscitation.

Method

A Clinical examination was conducted in the following way: History.

1. Identification: Name, Age, Registration number, Religion, Socioeconomic status,

rural/ urban, Marital status, Literacy, Address, Date and time of admission.

2. Presenting complaint and their duration were noted in chronologicalorder.
3. History of presenting complaints and also history of previous treatment before coming to institute and also whether she was attended by untrained person.
4. History of present pregnancy, antenatal period regarding booking, investigations, immunisation, iron, calcium intake, weight gain, oedema, raised blood pressure and any complications during 1st, 2nd and 3rd trimester was taken in detail.
5. Menstrual history:

- 1st day of last menstrual period
- Cycle and duration or any abnormality.

6. Obstetric history:

- Gravida
- Parity
- Numbers of abortion, numbers of living issue.
- Details of previous pregnancies- Regarding duration of pregnancy (term/ preterm), antenatal care, mode of delivery, complication during pregnancy, delivery and puerperium.
- History of Rh-negative pregnancy.
- History of gestational hypertension/ pre-eclampsia, eclampsia, PPH, manual removal of placenta, previous prolonged labour, instrumental assisted vaginal delivery, premature/ preterm labour, obstructed labour, rupture uterus, post-partum haemorrhage (PPH), Molar or ectopicpregnancy.
- History of Termination of pregnancy, spontaneous abortion, still births, small for dates/ large for date's baby, fetal abnormalities.
- Diagnosis of incompetent cervix in prior pregnancy/ cervical encirclage.
- Previous history of any morbidity in previous pregnancy.
- History of hospital stay.

7. Past History:

Medical- Regarding hypertension, diabetes mellitus, seizure disorders, heart diseases, endocrine disorder, renal diseases, jaundice, malaria, chronic illness. Surgical- any previous history of surgery.

Use of blood and blood product.

History of allergy

8. Family History: Hypertension, diabetes mellitus, TB, multi-fetal pregnancy, genetic disorders.
9. Personal history: Vegetarian or non-vegetarian, social status, occupation, addiction to drug/ alcohol/ smoking, sleep, appetite, bowel/ bladder habits.

General Examination:

- General condition (consciousness/ cooperation/ orientation)
- Height, weight, Nutrition, pallor, icterus, cyanosis, oedema, temperature, lymphadenopathy.
- Pulse, Blood Pressure, Respiration.

Systemic examination: Cardiovascular system(CVS):-

- Heart rate-Rate Rhythm, volume.
- Any cardiac abnormality.

Respiratory system (RS): Respiratory rate, breath sound, any additionalsounds.

Examination of breast & nipples. Central nervous system:

- Level of consciousness/ orientation
- Any visual problem
- To rule out any CNS disorder

Obstetric examination:

Per- abdominal (P/A) examination:

- Inspection: Condition of skin, Shape of abdomen, type of scar (if present) Parietal oedema (anaemia, PIH)
- Palpation: Height of fundus, girth of uterus, Fetal presentation, lie, position,

engagement & attitude, Amount of liquor, tenderness guarding, rigidity, scar tenderness (in case of previous caesarean section)
- Auscultation: Fetal heart sound- rate & rhythm.
- Bowel sound –present /absent

Pelvic examination:

- Inspection: Condition of vulva, vagina

Any bleeding, leaking, abnormal discharge, foul smelling discharge.

- Per- speculam examination: Vagina, cervix for any abnormality.
- Per – vagina/Bimanual examination:

Cervical status, dilatation and effacement, presentation, station of head, membrane status and adequacy of pelvis.

- Bleeding, tenderness & fullness in fornices, cervical excitation testin case of rupture ectopic.

- In PPH, bleeding, tear or laceration of vulva, vagina & cervix. Any retained placenta, any RPOC felt.

Investigations

Routine:

- Complete blood count, including Hb%, TLC, DLC, Platelet count, Hematocrite value, Peripheral blood smear (PBS) where indicated.
- ABO & Rh typing
- ELISA for immunodeficiency
- Australia antigen, VDRL - Husband & Wife
- Random blood sugar (RBS), Routine examination of urine.
- Ultrasonography for gestational age, feto-biophysical profile (including non-stress test), placental localization & maturity, scar thickness, amount of liquor, & to rule out retained product or intraperitoneal collection etc.

Special investigation:

- ABG, ECG
- Blood urea, serum creatinine, serum uric acid level.
- Liver function tests, platelet count, Bleeding time, clotting time, PT-INR, ap TT.
- Peripheral blood smear- for cellular morphology and material parasite
- Blood sugar estimation:

Routinely in patients with family history of diabetes mellitus Previous delivery of excessively large babies (>4kg)

Past history suggesting a pregnancy loss due to diabetes.

- Thyroid function test in case of hyperthyroidism or hypothyroidism.
- Ophthalmoscopic examination – in PIH, Severe pre-eclampsia, eclampsia, HELLP syndrome.
- High vaginal swab in case of puerperal sepsis or any other abnormaldischarge.
- Culture sensitivity of urine in case of urinary tract infection.

Informed consent, couselling, high risk and complications were explained to all the patients and to the attendants of the patients who were prepared for emergency lifesaving procedure or surgical interventions.

Opinion of physician, Neurophysician, Surgeon, Cardiologist and Critical care Doctors and other department will also be taken where needed for management of the patients.

Management of patient will depend on the diagnosis, investigations, general conditions, organopathy, systemic involvement or any organ involvement, need of intravenous fluid, antibiotis, blood and blood products.

X- Ray chest (P-A) view and X-Ray abdomen (AP) view, CT-scan, MRI when

indicated.

Management will be done according to need/requirement, antibiotics, blood and blood products, inotropic drugs, steroids, oxytocics drugs (syntocinon, methergin, prostaglandins), diuretics, anti-fibrinolytic drugs etc.

Management will be undertaken according to the indication like LSCS, caesarean hysterectomy, laparotomy, subtotal hysterectomy, Suction & Evacuation, Dilatation & Evacuation, MROP, cervical and vaginal repair.

Vigilant follow-up will be done in all cases like level of consciousness, Pulse, Blood pressure, pallor, respiration, temperature, urine output, control of convulsion, fever, abdominal examination and pelvic examination, lochia and bleeding.

Results

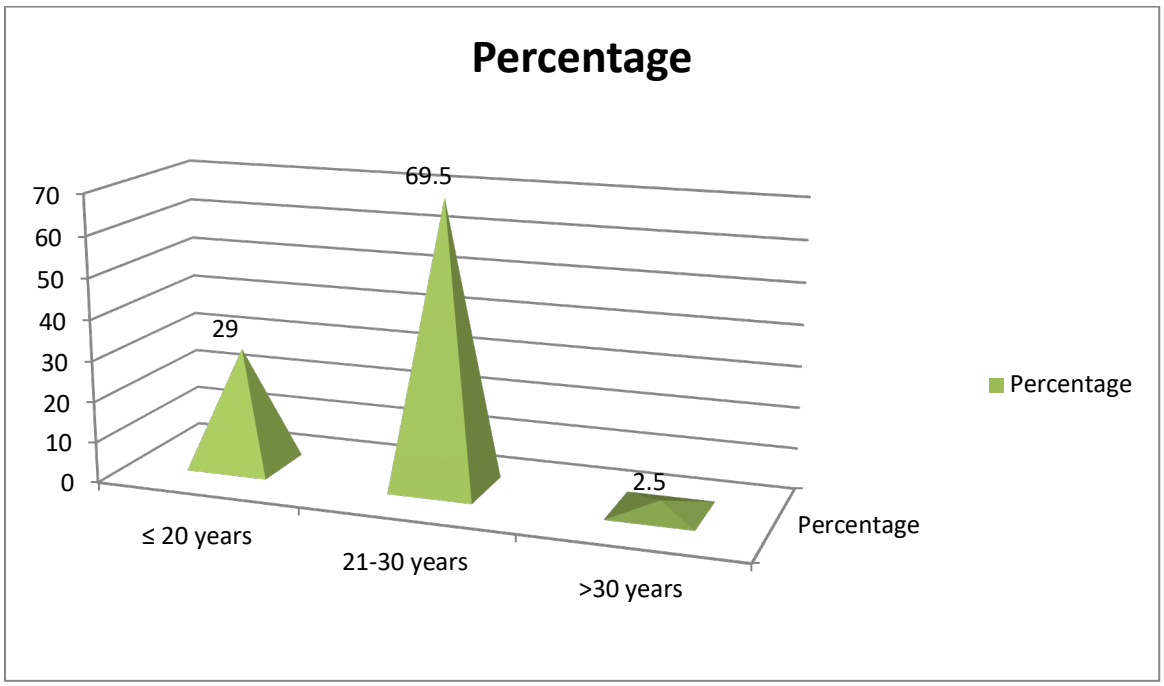
Out of 200, maximum number of near miss cases belonged to age group 21-30years followed by those of age group of less than 20 year were 58 (29%), only 5 cases were more than 30 year of age. Out of 200, 139 (69.5%) near miss cases were Hindu, 34(17%) were Muslim while 27(13.5%) were Christian. Out of 200 cases,183 (91.5%) belonged from rural area while 17(8.5%) were from urban area. Out of 200 cases, 89.5% cases came from low socioeconomic status lower middle (no-20, 10%). Out of the 200 cases 49 (24.5%) cases were uneducated, maximum number cases 125 (62.5%) were taken primary education, while only 5 (2.5%) were taken graduation. Out of 200 cases 121 (65.5%) were unbooked, 79 (39.5%) were booked. Out of 200 cases, 60 (30%) were without ANC, 61(30.5%) cases had irregular or inadequate ANC, while 79(39.5%) cases had regular ANC. Out of 200 cases, 182 (91%) were married, 18(9%) cases were unmarried. (table I, II,I II, IV, V, VI, VII, chart I, II, III, IV, V, VI, VII)

Out of 200 cases, 180 (90%) were referred case, while 20(10%) cases became near miss at hospital. Out of 200 93 (46.5%) were primigravida mothers, 70 (38%) were multigravida (1-4) mothers, 24(12%) were grand multigravida mothers. Out of 200 case 140 (70%) of near miss cases were above 37 weeks of Gestation while 22(11%) were between gestation age of 32-37 weeks, 25 (12.5%) near miss occurred within 12 weeks of gestation. Out of 200 cases, 82 (41%) became near miss after CS, 62 (41%) became near miss after Vaginal Delivery, D&E were 6 (3%), Laparotomy done in 13 (6.5%) cases, 4 (2%) needed S&E. Out of 200 cases 20 (10%) had history of CS, 20 (10%) had D&E, 115 (57.5%) had history of normal delivery, Laparotomy was performed in 45 (22%) for Rupture Uterus, ectopic pregnancy and septic abortion. Out of 200 cases 102 (51%) were pregnancy induced hypertension case while 55 (27.5%) were haemorrhage, 20 (10%) cases were septic abortion, 10 (5%) were rupture uterus 10 (5%) were obstructed labour, only 3 (1.5%) cases were puerperal sepsis.(table VIII, IX,X,XI,XII and chart VIII, IX,X,XI,XII)).

Out of 200 cases 132 (71%) near miss case were due to very severe anaemia, 38 (18%) had Jaundice, 4 (2%) had Sickle cell disease. Out of 200 cases 55 (27.5%) cases were needed ICU admission. Out of 200 cases due to anaemia 18 (9%) cases had residual morbidity. Patient had longer stay due to indwelling catheter in case of obstructed labour, which was 19 (9.5%). 1% cases had VVF, while 18 (9%) had wound gape. Out of 200 cases maximum number were required intervention, blood and blood product 50 (25%) while 30 (15%) were required mechanical ventilation and 22.5% were required oxygen inhalation, 15 (7.5%) were required Nebulization only 10 (5%) were require doxytocics. (table XIII, chart XIII)

Table 1: Age distribution of maternal near miss cases

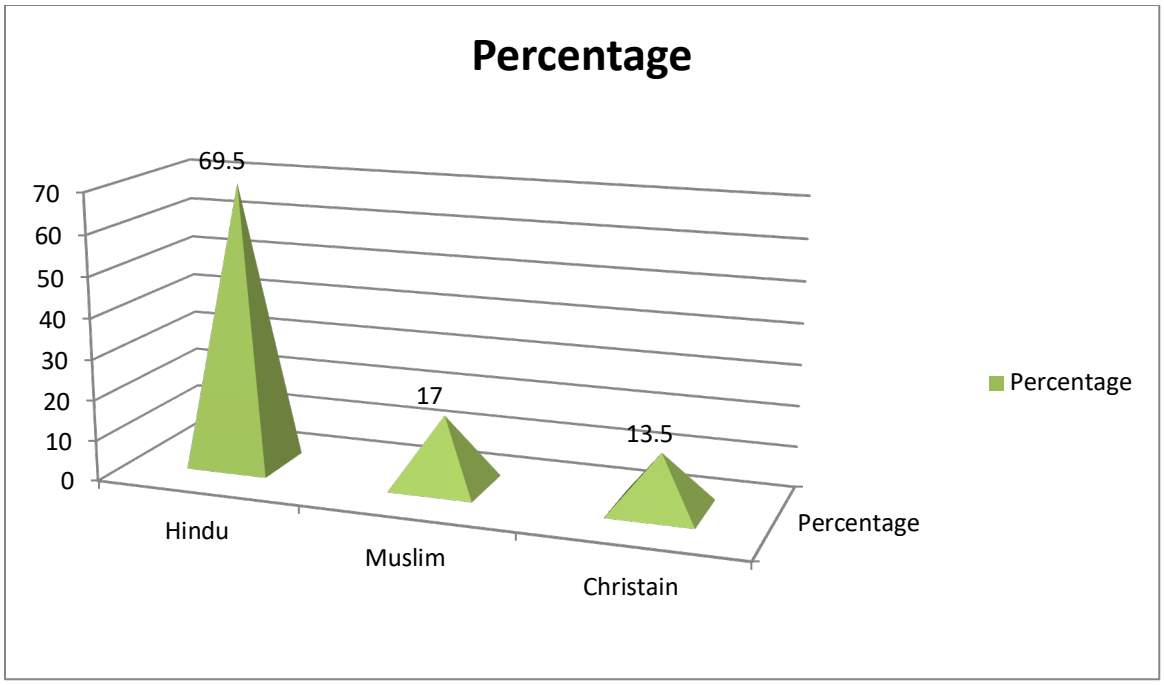
S.N.	Age in years	Number (N= 200)	Percentage (%)
1	≤ 20 years	58	29%
2	21-30 years	137	69.5%
3	>30 years	05	2.5%
	Total	200	100%



Graph 1: Age distribution of maternal near miss cases

Table 2: Distribution of maternal near miss cases according to Religion

S.N.	Religion	Number (N=200)	Percentage (%)
1	Hindu	139	69.5
2	Muslim	34	17
3	Christian	27	13.5
	Total	200	100



Graph 2: Distribution of maternal near miss cases according to Religion

Table 3: Distribution of maternal near miss cases according to locality

SN.	Living area	Number (N=200)	Percentage (%)
1	Rural	183	91.5
2	Urban	17	8.5
	Total	200	100

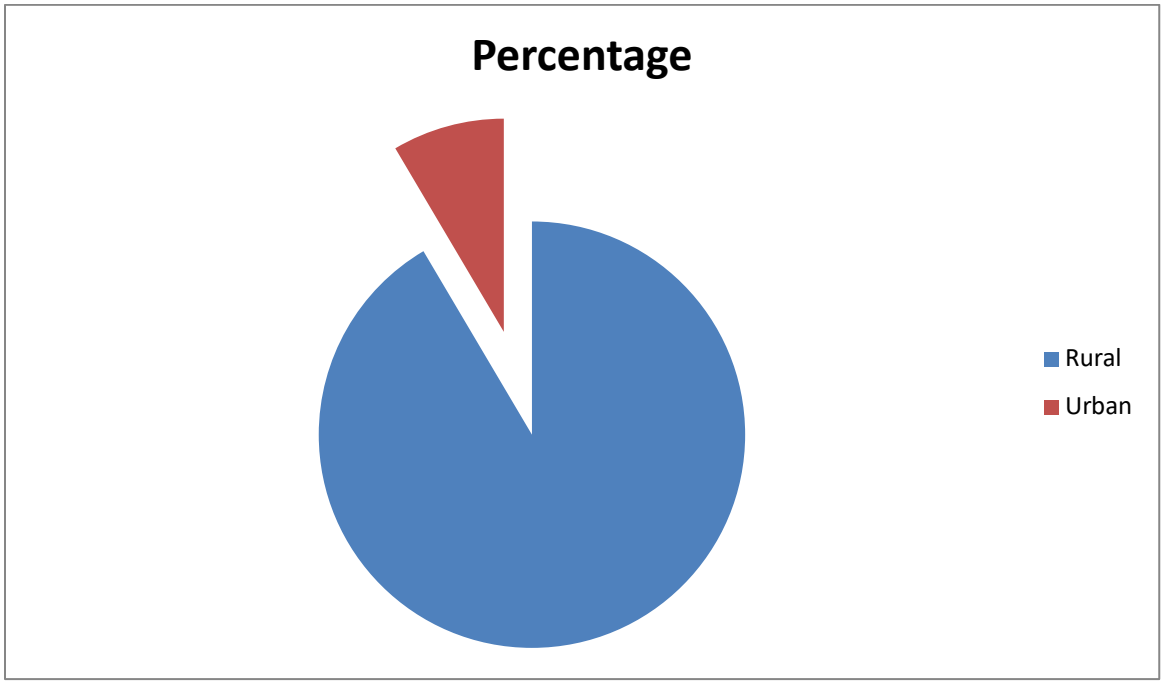
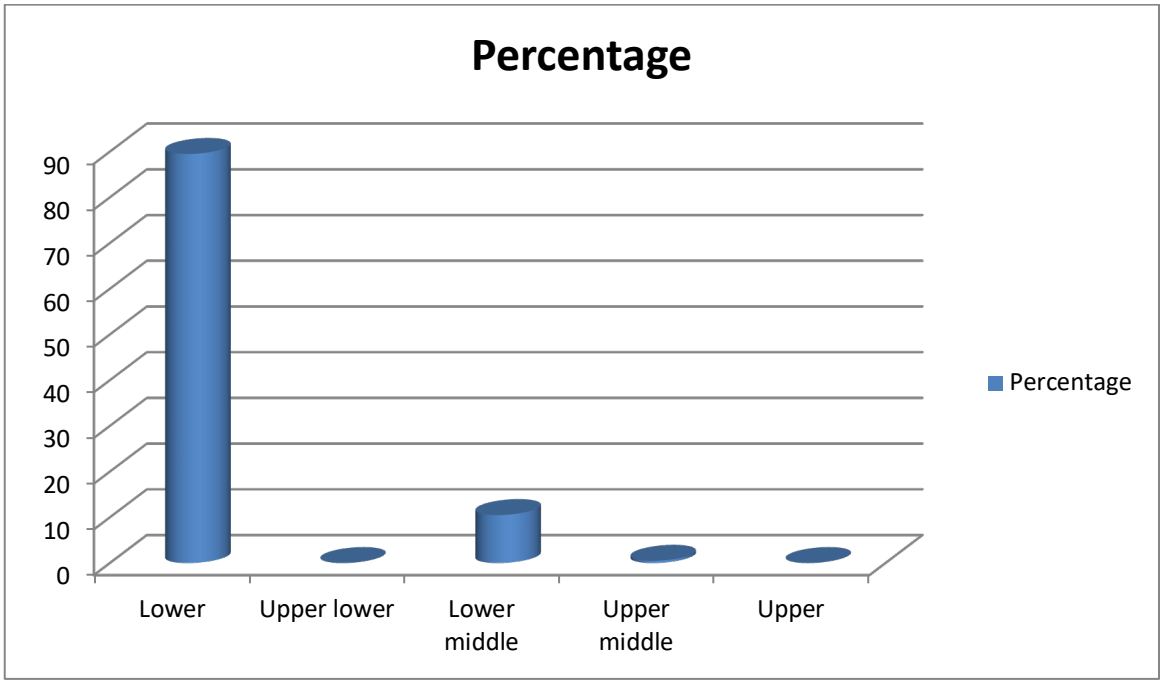


Chart 3: Distribution of maternal near miss cases according to locality

Table 4: Socioeconomic status of maternal near miss cases according to modified Kuppuswamy scale

Socioeconomic status		Number(N=200)	Percentage (%)
1	Lower	179	89.5
2	Upper Lower	0	0
3	Lower middle	20	10
4	Upper middle	1	0.5
5	Upper	0	0
	Total	200	100



Graph 4: Socioeconomic status of maternal near miss cases according to modified Kuppuswamy scale

Table 5: Distribution of maternal near miss cases according to literacy

S. N.	Education Status	Number (N= 200)	Percentage (%)
1	Uneducated	49	24.5
2	Primary	125	62.5
3	High school	21	10.5
4	Graduate and above	5	2.5
	Total	200	100

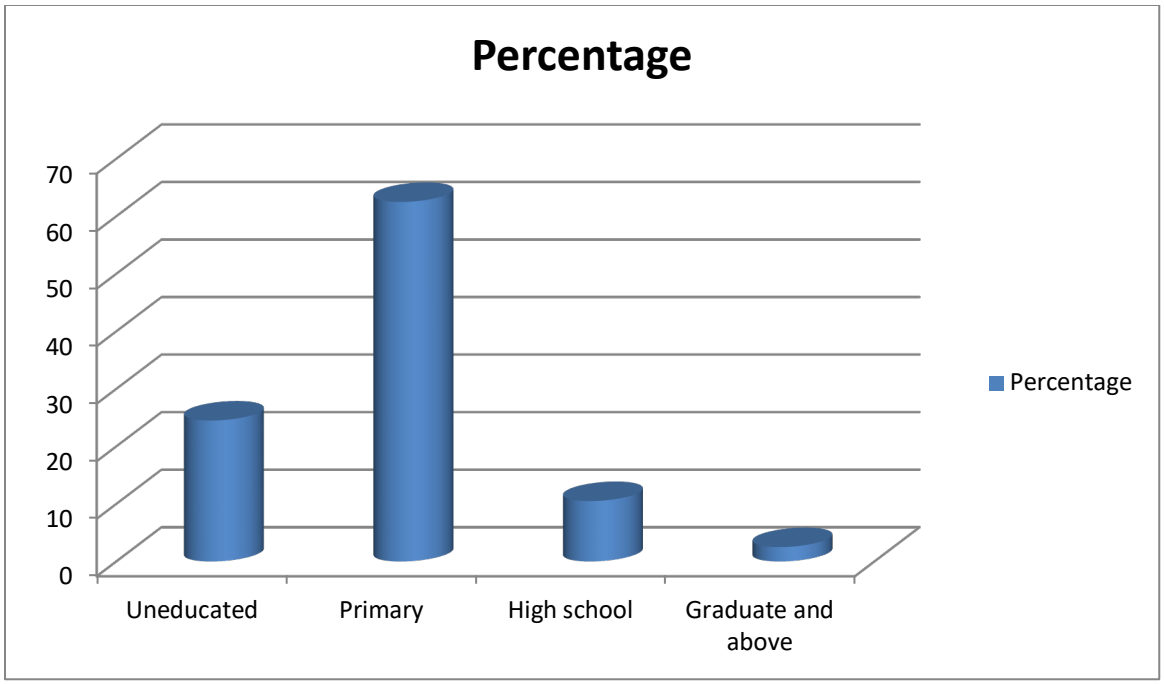


Chart 5: Distribution of maternal near miss cases according to literacy

Table 6(a): Distribution of maternal near miss cases according to Booked/unbooked history

S.N.	Booked/unbooked history	Number(N=200)	Percentage (%)
1	Booked	79	39.5
2	Unbooked	121	65.5
	Total	200	100

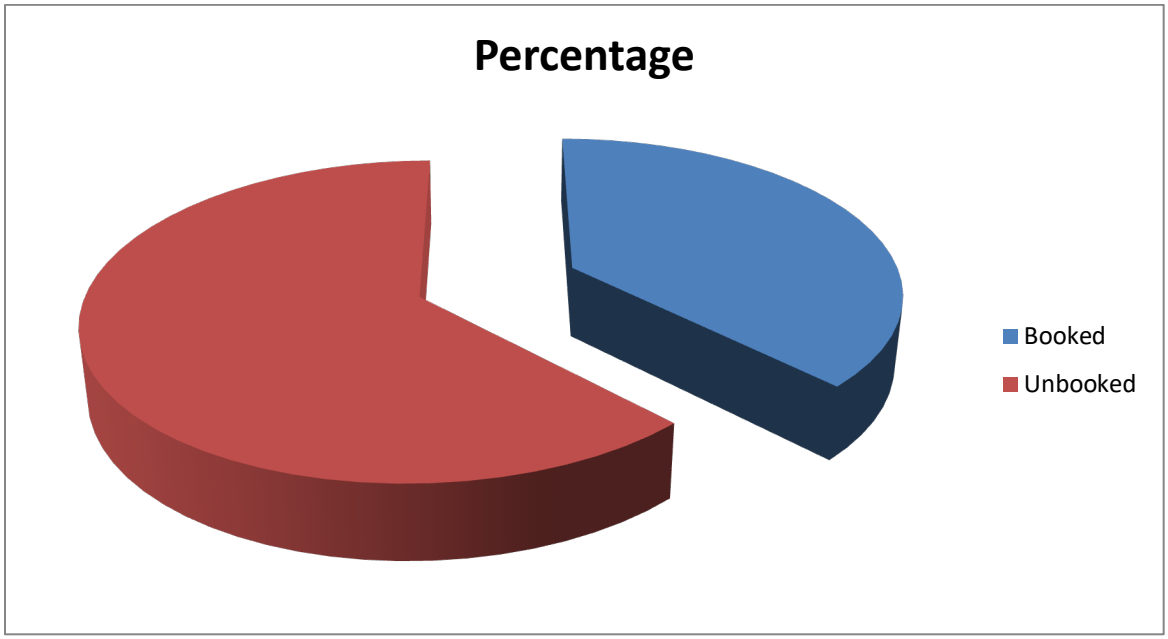


Chart 6(a): Distribution of maternal near miss cases according to Booked/unbooked history

Table 6(b): Distribution of maternal near miss cases according to antenatal carestatus

S.N.	ANC visit	Number(N=200)	Percentage (%)
1	No Antenatal visits	60	30
2	Irregular check-up	61	30.5
3	Regular antenatal check-up	79	39.5
	Total	**200**	**100**

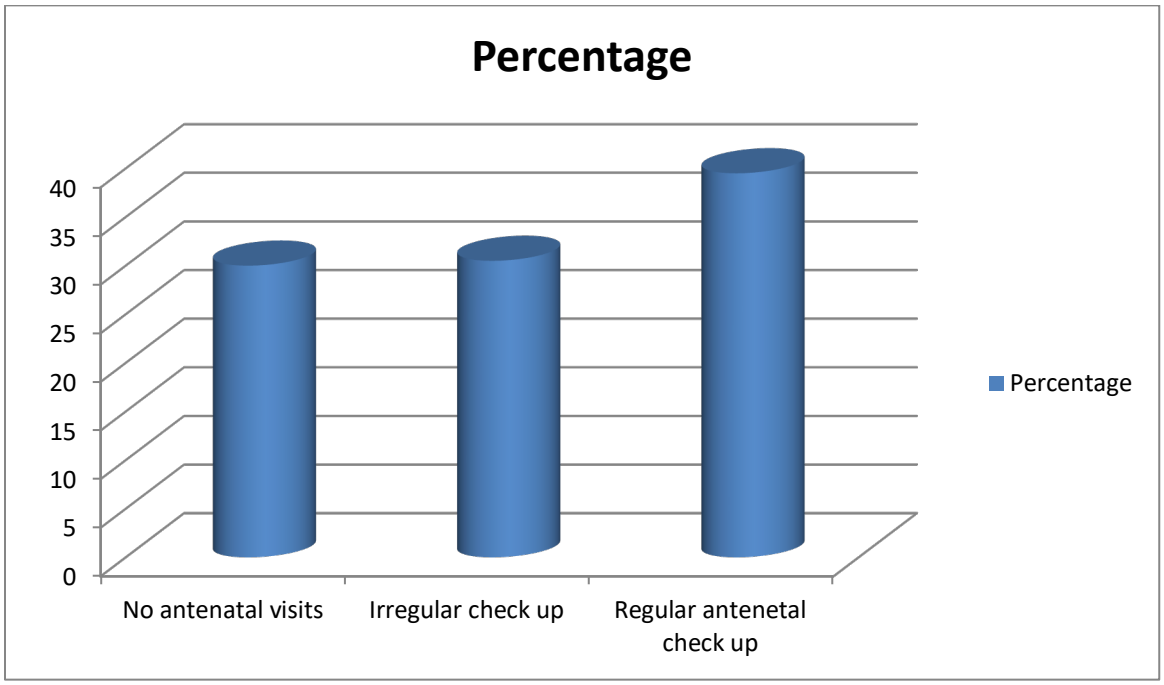


Chart 6 (b): Distribution of maternal near miss cases according to antenatal carestatus

Table 7: Distribution of maternal near miss cases according to marital status

S.N.	Marital status	Number (N=200)	Percentage (%)
1	Married	182	91
2	Unmarried	18	9
	Total	200	100

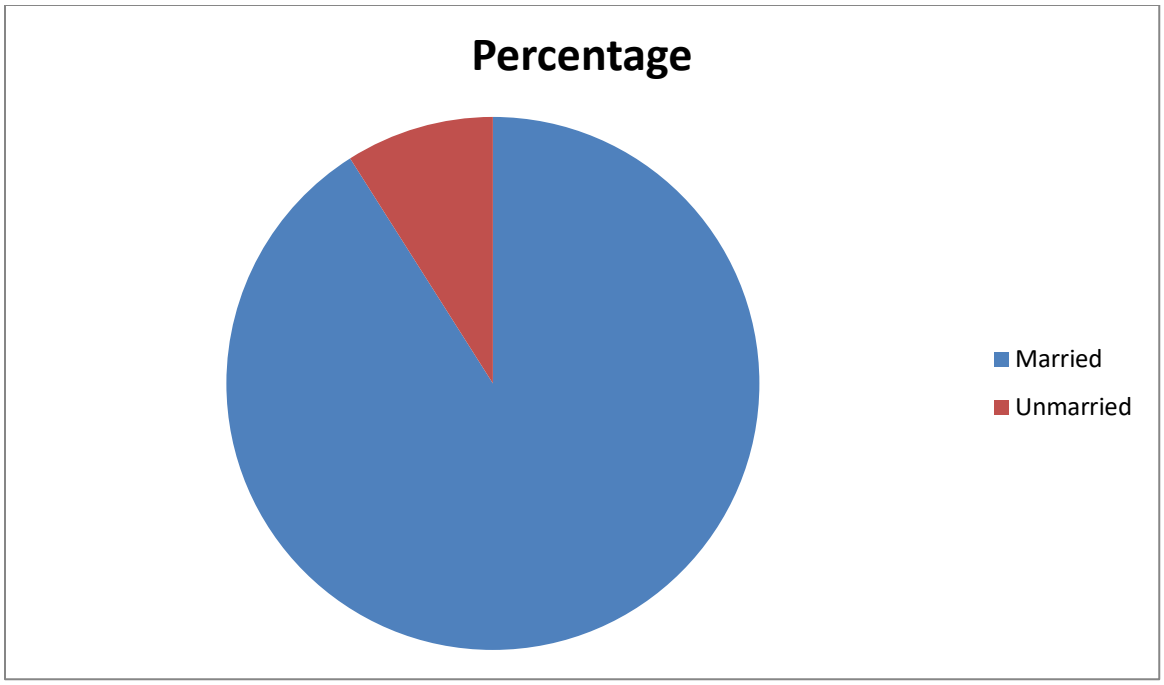


Chart 7: Distribution of maternal near miss cases according to marital status

Table 8: Distribution of maternal near miss cases according to referral status

S.N.	Referred case	Number (N=200)	Percentage (%)
1	Referred	180	90
2	No referral (near miss at our hospital)	20	10
	Total	200	100

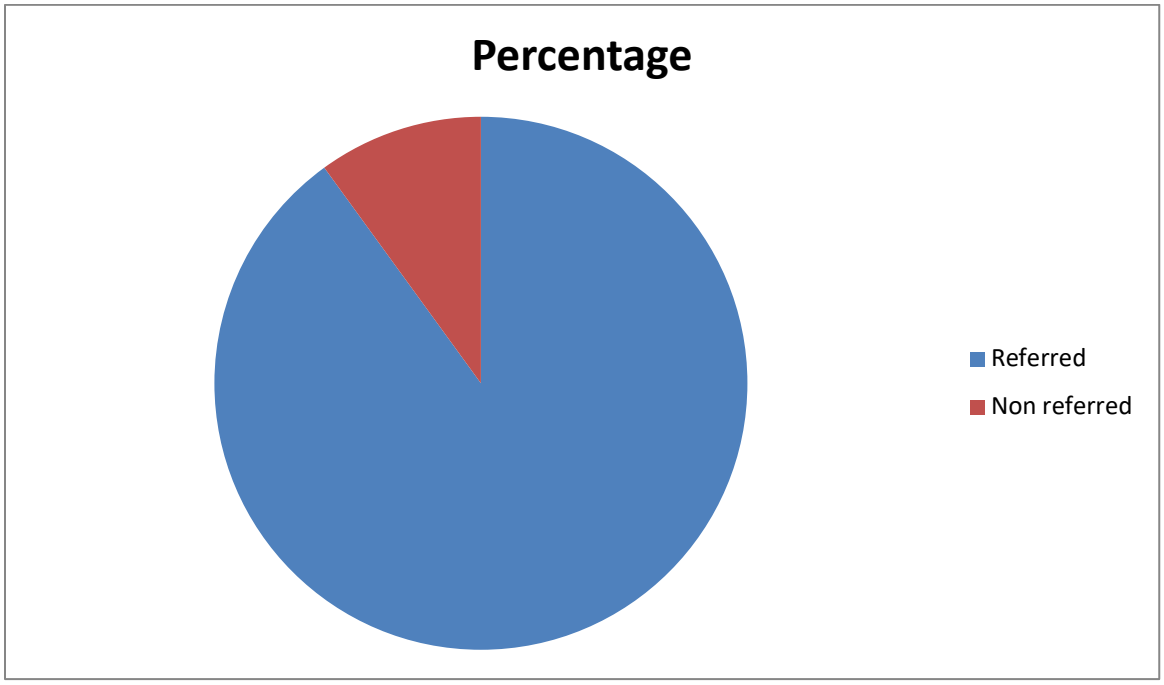


Chart 8: Distribution of maternal near miss cases according to referral status

Table 9: Gravida and Parity wise distribution of maternal near miss cases

S.N.	Gravida	Number (N=200)	Percentage (%)
1	Primigravida	93	46.5
2	G2	27	13.5
3	G3	27	13.5
4	G4	16	8
5	G5	24	12
6.	Puerperium	13	6.5
	Total	200	100

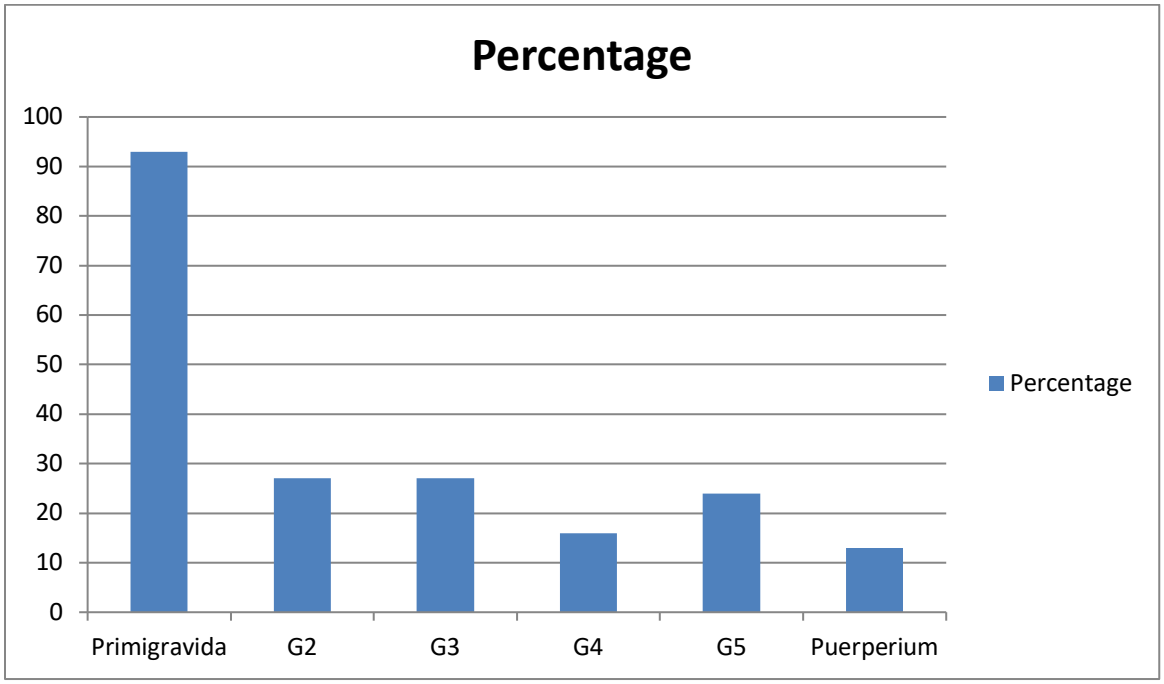


Chart 9: Gravida and Parity wise distribution of maternal near miss cases

Table 10: Gestational age of maternal near miss cases

Gestational age		Number (N=200)	Percentage (%)
Term pregnancy (>37 weeks)		140	70
32-37 weeks		22	11
29-31 weeks		2	1
13-28 weeks		14	7
Upto12 weeks	Ectopic	25	12.5
	Molar		
	Abortion		
Total		200	100%

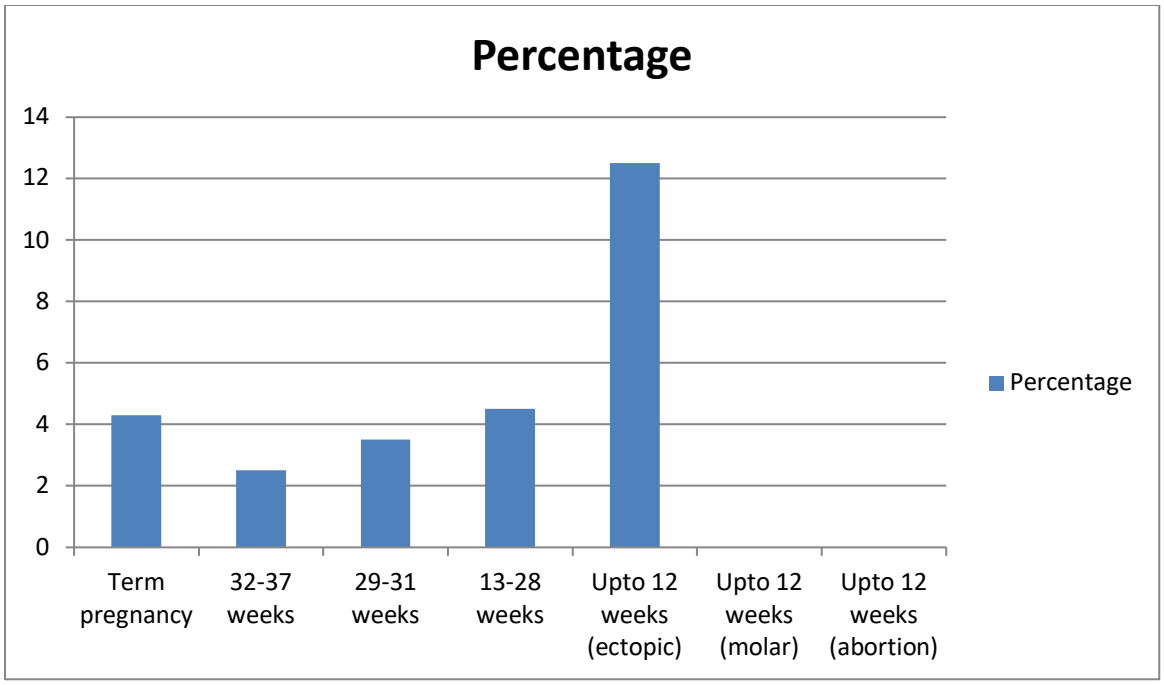


Chart 10: Gestational age of maternal near miss cases

Table 11: Mode of termination of pregnancy in maternal near miss cases

S.N.	Mode of delivery		Number (N=200)	Percentage (%)
1	Caesarean section		82	41
2	Vaginal delivery 62(31%)	Normal delivery	30	48
		Assisted breech delivery	16	25.8
		Forceps delivery	12	19.35
		Craniotomy	4	6.45
3	Dilatation & Evacuation		6	3
4	Laparotomy (Ectopic pregnancy, Septic abortion)		13	6.5
5	Suction & Evacuation		4	2.0
6	Undelivered		4	2.0
7	Admitted with post-partum complication		29	14.5
	Total		200	100

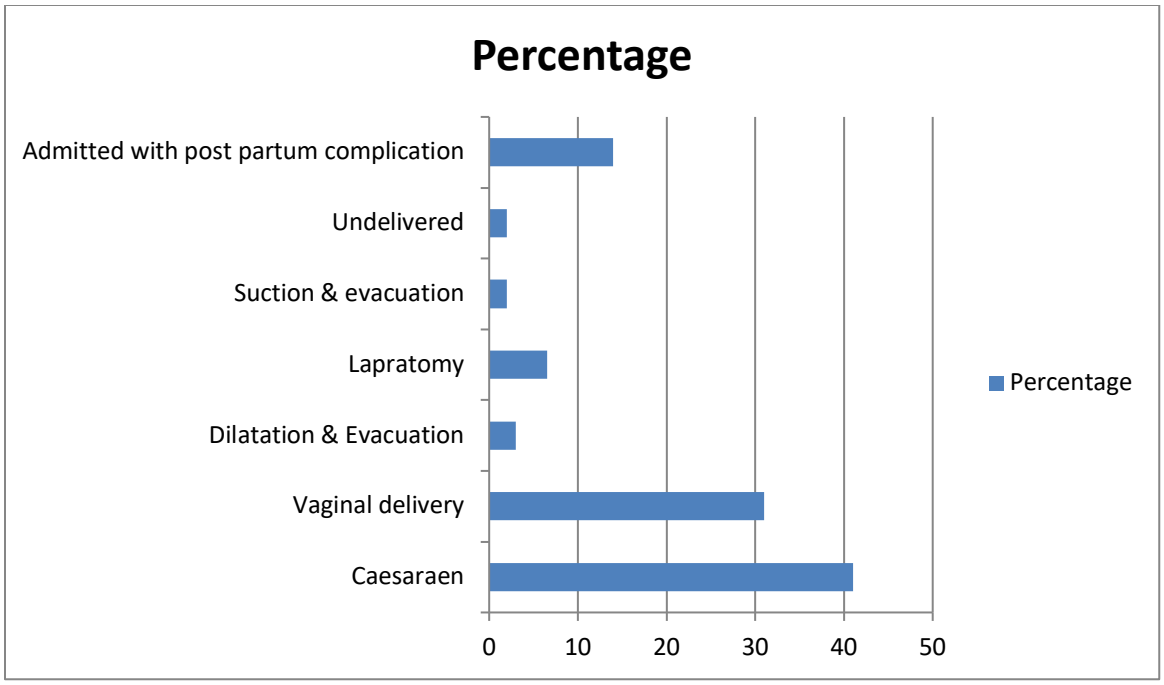


Chart 11: Mode of termination of pregnancy in maternal near miss cases

Table 12: Distribution of maternal near miss cases according to previous obstetric history

S.N.	Past obstetric history		Number (N=200)	Percentage (%)
1	Caesarean section		20	10
2	D & E		20	10
3	Normal Delivery		115	57.5
4	Laparotomy 45(22.5)	- Rupture uterus	18	45
		-Ectopic	7	15
		-Septic abortion	20	44.44
5	**Total**		**200**	**100**

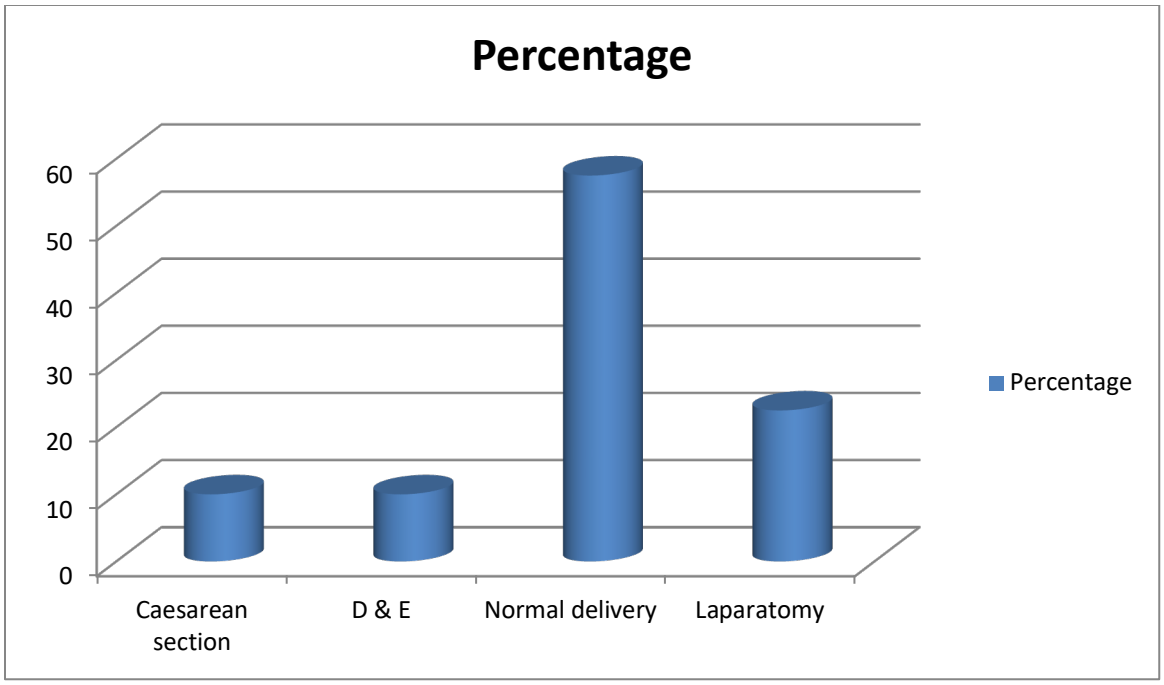


Chart 12: Distribution of maternal near miss cases according to previous obstetric history

Table 13-A: Direct causes of maternal near miss cases

		Direct causes	Number (N=200)	Percentage (%)
A.	**Haemorrhage**		**25+30 = 55**	**27.5**
	1.	Early pregnancy	25	12.5
		Ectopic	07	3.5
		Molar	05	2.5
		Abortion	13	6.5
	2.	Late pregnancy	30	15.0
		Placenta-previa	14	7.0
		Abruptio-placenta	9	4.5
		Post-partum haemorrhage(PPH)	7	3.5
B.	**Pregnancy induced Hypertension (PIH)**		102	51.0
	1.	Antepartum eclampsia(APE)	75	37.5
	2.	Severe preeclampsia(SPE)	08	4.0
	3.	Post –partum eclampsia(PPE)	19	9.5
C	**Septic abortion**		20	10.0
D	**Puerperal sepsis**		03	1.5
E	**Obstructed labour**		10	5
F	**Rupture uterus**		10	5

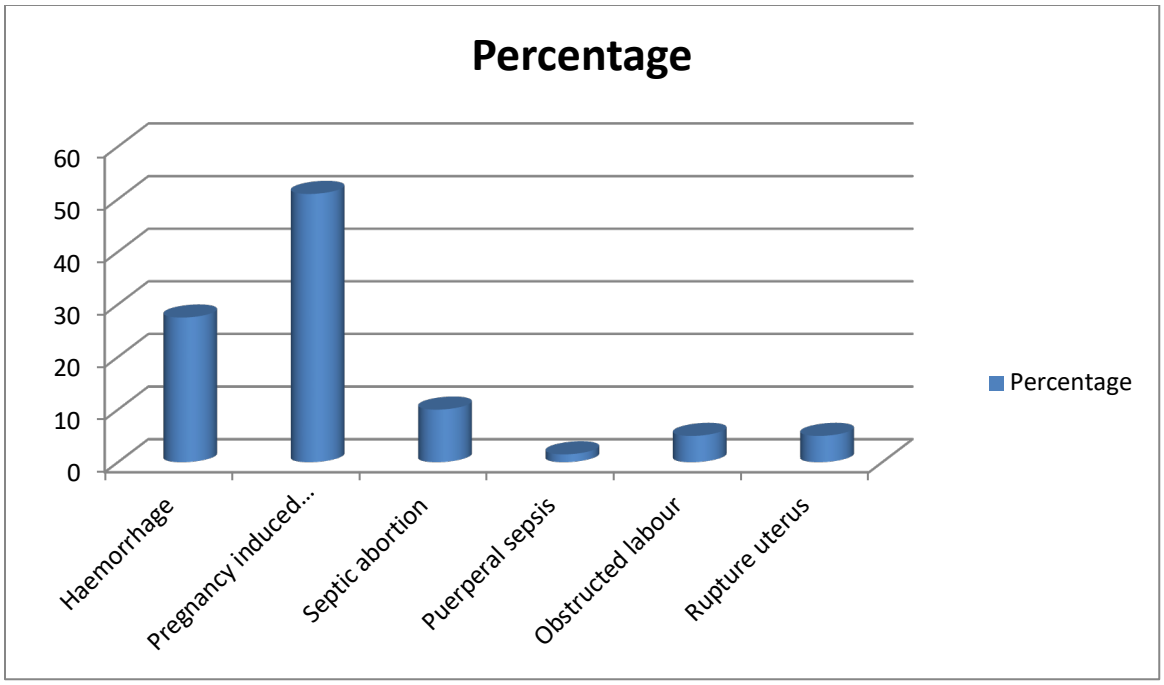


Chart 13-A: Direct causes of maternal near miss cases

Table 13-B: Indirect causes of maternal near miss cases

S.N.	Indirect causes	Number (N=200)	Percentage (%)
1	Anaemia	142	71
2	Jaundice	38	18
3	Sickle cell disease	4	2
4	Heart disease	6	3
5	Diabetes mellitus	4	2
6	Asthma	2	1
7	Malaria	2	1
8	Non-specific	30	15
	Total	200	100

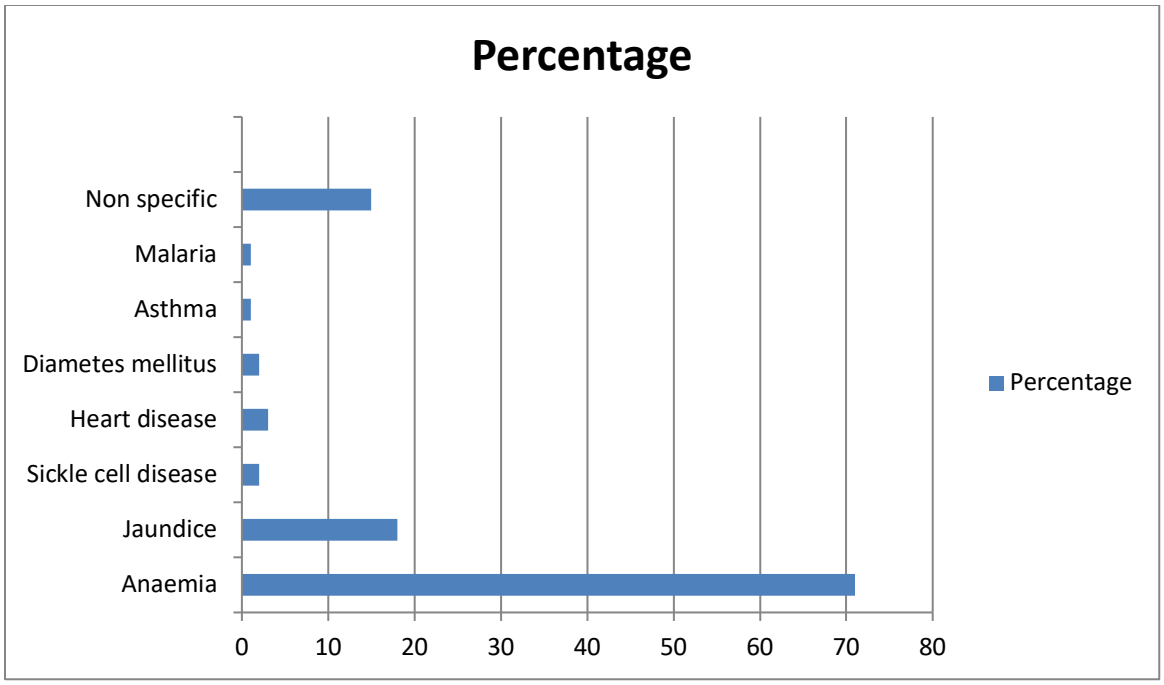


Chart 13-B: Indirect causes of maternal near miss cases

Discussion

Age is important determinant of maternal near miss.29% women in thepresent study were married before age 20. The maximum number of patient (69.5%) were in the age group of 21-30years. More than 30 years of age were only 2.5%. In young mothers it was hypertensive disorders of pregnancy and labour complication like CPD causing obstructed labour causing morbidity and maternal near miss. With increasing age, hypertensive disorder, diabetes and heart disease were main cause.

Chhabra et al (2008) Observed maximum number of patient withnear misses of the mean age of patient's 26.3+/-5years [19]. Sarma HKD et al (2014) Observed maximum near miss (37.8%) inthe mean age of 15-20 years. Abha S et al (2015) studied near miss case, maximum in the age-group of 21-30years [10]. Patankar A et al (2016) reported in his study the mean +_ standard deviation of age was 27.84+_3.43 years [26]. Niviti S et al(2018) performed study where the mean age was27.63years24.Behera AA et al(2018) reported most of the patients in the near miss cases (67.8%) were in the age-group 20-30 years[13]. which is similar to Present study, 137 near miss cases (69.5%) wereage-group of 21-30years.

In Present study, there were 58 cases (29%) below of agebelow 20 years, which signifies that still we are fighting with early marriage and childbirth. while incidence is less in older age-group (>30year), and it was 5(2.5%). The reason being that the patients of higher age-groups were usually multiparous with previous home deliveries and many such patients come to hospital only after complications, or referred and are mainly related to severe anaemia, pregnancy induced hypertension, obstructed labour, rupture uterus and multiple pregnancy or severe chronic medical disorders. There is decrease in percent of near miss in the age 30 and above by 2.5% which shows the improvement in family planning and antenatal care services but still it needs improvement.

Locality of patient is a major determinant of

health access, literacy, socio-economic status. In study of Patankar A et al (2016) in which 63.26% of the cases were fromrural areas [26]. In Behera AA et al (2018) study, mostly (81.2%) cases were belonged from rural area and among rural areas was just double to urban area[13].

In Present study 183 (91.5%) patients from rural area, 17(8.5%)patients came from urban area. It is evident from above results that women coming from rural areas had very high incidence of near miss cases as they are uneducated, unware, poor, malnourished with poor hygiene. They are not getting and not aware of the basic medical facilities available to them. Maximum near miss occurred in women belonging to rural area. By improving the health care services we are able to improve maternal health and decrease maternal mortality but still we will be able to break the barrier of locality leading to difficult health care accessibility. Many health programmes facilities eg skill birth attendants (SBA), Sahiya, Peripheral health centre (PHC) are utilized mainly by rural and semi-urban population. It is probably not available to very interior rural areas due to poor access and transport availability.

Each pregnancy causes major changes in body of mother which has tremendous demand of rest and energy. If mother do not have good nutrition and health care during their pregnancy, they get deprived of energy to fight against pregnancy complication. Savita Rani Singhal et al (2008) in her study also found that the incidence of antepartum haemorrhage was more in multigravida (63.1%) than in primigravida. Sarma HKD et al (2014) planned a study among near miss cases, 59% cases were primipara.

Present study represents there was near miss of 106(53%) primigravidae mothers, 70(35%) multigravida (1-4) mother and 24(12%) were grand multigravida (para 5& above) mothers. 13 (6.5%) cases were puerperium. By this study we can see that primigravida have more number of near misses than that in multigravida. Decrease in number of grand multigravidas near miss may be due to increased effectiveness of contraception programmes, free distribution of different type of contraceptive measure and incentive for permanent sterilization.

ln present study it was observed that the near miss is high in primigravida. The risk increases again with after fifth pregnancy. It was found that primigravidae were more likely to develop hypertensive disorders of pregnancy and in labour they may suffer from prolonged labour and obstructed labour. Multigravidas have a tendency to have unstable lie malpresentation, antepartum -haemorrhage, CPD, large babies and ruptured uterus responsible for high cases of near miss. Daftary & Metha (1993) noted that there was greater risk to first pregnancy and this risk increased further after fourth pregnancy. This study was similar to present study.

As stated by the WHO in its 2005 world health report “Make Every Motherand Child Count”, the major causes of maternal near miss and morbidity are severe haemorrhage, infections, unsafe abortions, eclampsia, obstructed labour, other indirect (20%) causes like anaemia, malaria, jaundice, cardiovascular and respiratory disease, all of which may complicate pregnancy. Mbachu II et al, Kalra P et al, Nacharaju M et al, Pandey et al. Patil Vet al, Behera et al, Rajumari et al, Patankar et al, Chandran JR et al, Rathod AD et al their studies showed that Pregnancy induced hypertension was the leading cause of maternal near miss.

Present study was similar to these studies in which pregnancy induced hypertension was leading cause of near miss cases, 102(51%), in which ante- partum eclampsia (37.5%) was leading cause. This could be due to lack of antenatal care and delayed referral by

detecting high risk pregnancy we can reduce near miss cases which needs effective healthcare system providing good antenatal care.

There were 8 cases of preeclampsia and incidence comes 4%, of which 2% of them had HELLP syndrome. Bansal M et al and Roopa PS et al found Haemorrhage was the leading cause of near miss cases 43.5%, 44.2% respectively [12].

In Present study Haemorrhage was the second leading cause of severe maternal outcome, 55(27.5%). We are able to manage antepartum haemorrhage by early diagnosis and proper treatment. By active management of stages of labour we can control morbidity from postpartum haemorrhage. Basic health care systems like PHC/CHC are still unable to manage all PPH cases, needing intensive care, surgery, and blood transfusion etc. Sharma HKD et al (2014) study done in which Septicaemia was a major cause of near miss which included 47.1% cases.

In Present study septicaemia included 23(11.5%) cases, of which 20(10%) cases were of septic abortion and 3(1.5%) cases of puerperal sepsis. This patient was admitted in a very critical condition and had uterine perforation following unsafe abortion.

Result was similar to study done by Rathod AD et al (2016) in which sepsis cause near miss upto18.18% cases. Puerperal infections, often the consequence of poor hygiene during delivery, or untreated reproductive tract infections.

Septicaemia can be reduced by improving antiseptic precaution during delivery and preventing septic abortion, effective use of antibiotics like proper management of PROM, obstructed labour, rupture uterus, induced abortion etc but still we need to decrease the causes of septicaemia.

Conclusion

Maternal Near miss incidence ratio was 20.94per 1000 live birth, RIMS is the highest referral centre there is increased number of admission here. Direct causes of near miss event were important cause, in which pregnancy induced hypertension was leading cause for the events which contributed 51% out of which antepartum eclampsia was 37.5%. Indirect cause was also major contributing factor in near miss events, Anaemia being the main cause (66%).

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