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Original Research Article

Maternal and perinatal morbidity and mortality in high-risk pregnancy: a prospective study

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ABSTRACT

Background: A high-risk pregnancy (HRP) is defined as one complicated by factors that negatively impact maternal and/or perinatal outcomes. These pregnancies have an increased likelihood of morbidity and mortality for both the mother and the fetus. Such cases require intensive antenatal care, sophisticated maternal and fetal monitoring, and often complex management decisions to optimize outcomes. Therefore, this study was conducted to evaluate maternal and perinatal outcomes in high-risk pregnancies. Objectives of the study were to evaluate maternal and perinatal outcomes in high-risk pregnancies, identify key factors contributing to these high-risk conditions.
Methods: This prospective study was conducted from July 2023-June 2024. The study included 94 pregnant women with high risk factors with gestational age more than 28 weeks attending OPD, IPD and labor room.
Results: The study included 94 pregnant women with high risk factors with gestational age ≥28 weeks. Majority of the participants were aged 20-24 years (42/44.68%). Most participants were Hindu (77/81.91%) and from lower socioeconomic classes (44/46.81%). Postpartum haemorrhage (PPH) was observed in (30/31.91%) of cases was the most common immediate complication. Surgical site infection (24/25.52%) was being other common maternal morbidities. The most common cause of perinatal morbidity was respiratory distress syndrome (13/13.83%). The perinatal mortality rate was (25/26.59%). Previous caesarean section (CS), anemia, Rh negative pregnancy was the common risk factors associated with more adverse pregnancy outcomes. Previous CS and multiple pregnancy were most commonly associated risk factors with increased risk of PPH. With vigilant and careful detection of high-risk pregnancies and timely intervention, there was no maternal mortality in our study.
Conclusions: In our study we emphasise on the importance of awareness of first trimester registration, early identification of risk factors, frequent hospital visits for regular antenatal check-up, and providing quality antenatal care

Keywords: High risk pregnancy, Maternal, Perinatal, Mortality

INTRODUCTION

A high-risk pregnancy (HRP) is one in which the maternal environment or past reproductive performance presents a significant risk to fetal well-being, such as premature birth, small for date infant, full term with low reservoir or still births and early neonatal death. HRP is defined as one where pregnancy is complicated by one or more factors that adversely affect the maternal and/or perinatal outcome. About 20-30% pregnancies belong to this category.[1] High risk patients require sophisticated maternal and fetal surveillance and, in many occasions, difficult management decisions in order to optimize their outcome.[2]

In ICD-11, maternal death is defined as: the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the

pregnancy or its management but not from unintentional or incidental causes.[3]

Maternal mortality ratio according to WHO, a maternal death is defined as the death of a woman, while pregnant, or within 42 days of termination of pregnancy, respective of the duration and site of pregnancy, from any cause related to or aggravated by pregnancy or its management, but not from unintentional or incidental cause. It can also be defined as number of maternal deaths during a given time period per one lakh live birth during the same time period thus it quantifies the risk of maternal death related to the amount of life.

Maternal mortality rate is defined and calculated as the number of maternal deaths divided by person year lived by women of reproductive age in a population. The maternal mortality rate captures both the risk of maternal death per pregnancy or per birth (whether live birth or still birth) and the level of fertility in population. Maternal morbidity originates from any cause related to pregnancy or its management during antepartum, intrapartum and postpartum period usually up to 42 days after confinement. Perinatal mortality is defined as deaths among fetuses weighing 1000 gm or more at birth (28 weeks of gestation) who die before during delivery or within first seven days of delivery. The perinatal mortality rate is expressed in term of such deaths per thousand total births.[4]

According to the 2018-2020 special bulletin on maternal mortality released by the registrar general of India (RGI), India's maternal mortality was 97 per 1,00,000 live births. this is a six-point degree from the 2017-2019, MMR of 103 per 1,00,000 live births. India is still far from meeting the sustainable development goal of reaching below 70 deaths per 100000 live births by 2030. Incidence is also high in tertiary care centres. Around 25% mothers and neonates are at risk.[5]

Incidence of high-risk pregnancy in India is 20-30% which is responsible for 75% of perinatal morbidity and mortality. This could be lowered to near 10% by adequate MCH care. Those cases with added risk factors are prone to develop morbidity and mortality both in the mother and her unborn child. Intensive antenatal care is provided for them by the obstetric specialist at the hospitals.[6]

High risk pregnancy is broadly defined as a pregnancy in which there is or will and increased risk of morbidity or mortality for mother, fetus and neonate. There are many maternal (mother) health conditions affecting pregnancy having profound effect on maternal, perinatal outcome like hypertension, anemia, heart diseases, diabetes, renal diseases, liver disease, lung diseases, thyroid diseases, autoimmune. disease, neurological problems and genetic disorders.[7-9]

High risk (pregnancy) patients require sophisticated maternal and fetal surveillance and, in many occasions, difficult management decisions in order to optimise their outcome. Hence, the present study was conducted to evaluate maternal and perinatal outcomes in high risk pregnancies.

Objectives

Objectives of the study were to evaluate maternal and perinatal outcome in high risk pregnancy, to identify the important factors in high risk pregnancy and to study the cause of maternal and perinatal, morbidity and mortality in high pregnancy.

METHODS

This prospective study was conducted in the department of obstetrics and gynaecology from June 2023-July 2024 on 94 pregnant women with period of gestation more than 28 weeks with high risk factors attending OPD, IPD, labor room of Navodaya medical college hospital and research centre, Raichur during the study period. The study participant's sociodemographic details, and their obstetric, gynecological, medical, and surgical histories were collected. Both routine and specific investigations were conducted and timely intervention were done when needed.

Inclusion criteria

Maternal criteria

All high-risk pregnant women with period of gestational age ≥28 weeks were included.

Perinatal criteria

Baby with birth asphyxia, history of birth trauma, intrapartum fetal distress, prematurity, low birth weight, respiratory distress syndrome, infection-septicemia, meningitis, pneumonia, congenital syphilis, congenital malformations, Apgar 0-3, intracranial infections, fever and meconium aspiration syndrome (MAS) were included.

Exclusion criteria

Maternal criteria

Singleton pregnancy with average size baby weight, adequate liquor, with vertex presentation, with adequate pelvis, with clear liquor, with normotensive, with all investigations within normal limit and no associated risk factor or medical illness/ history. No history of any complications during previous pregnancy. All pregnant women with period of gestation less than 28 weeks were excluded.

Neonatal criteria

Mature baby with birth weight more than 2.5-3 kg with APGAR 7-10 with no complications or anomalies were excluded.

RESULTS

The Table 1 provides a detailed overview of the demographic and socioeconomic characteristics of the study population, consisting of 94 individuals. The age distribution reveals that the majority are between 20-24 years (42/44.68%), with smaller proportions in other age groups. The participants predominantly identify as Hindu (77/81.91%), with the remaining (17/18.09%) identifying as Muslim. A significant majority were booked (61/64.89%), while the rest were unbooked. The socioeconomic status distribution shows that nearly half of the participants belong to class 5 (44/46.81%), followed by those in class 4 (31/32.98%). Parity data indicates that most participants are either first-time mothers or have had two pregnancies, with diminishing numbers in higher parity categories.

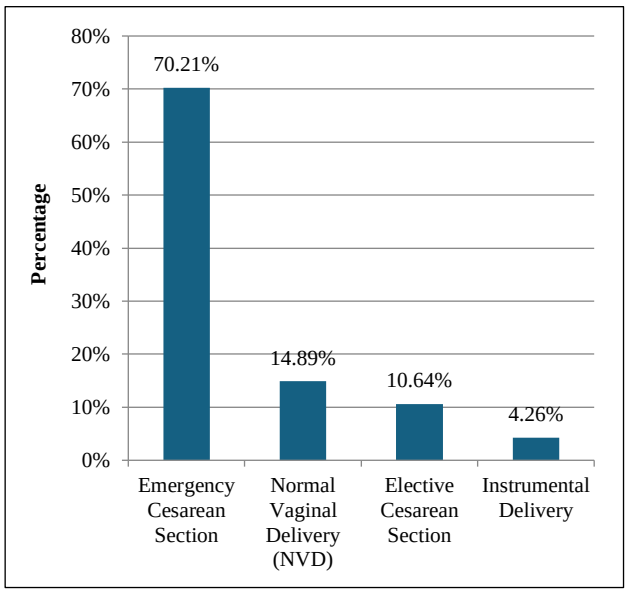

Figure 1: Mode of delivery.

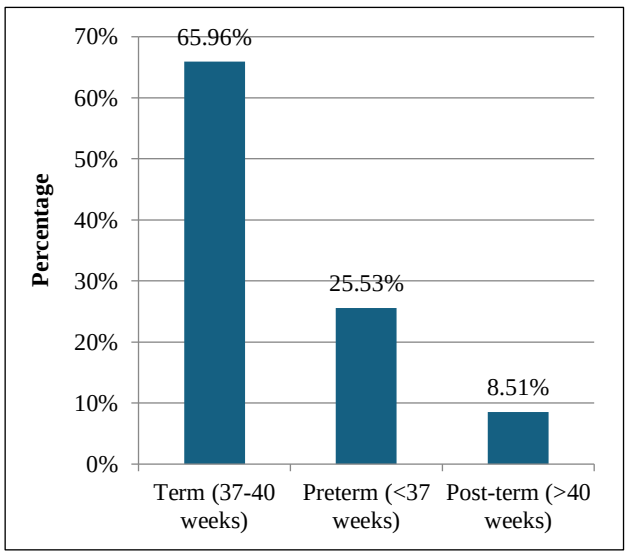

Figure 2: Gestational age at delivery.

The Figure 1 illustrates the distribution of delivery modes among 94 individuals. The majority of deliveries were conducted via emergency CS, accounting for 70.21% (n=66) of the total. Elective CSs were significantly less common, comprising 10.64% (n=10). Vaginal deliveries (VD) accounted for 14.89% (n=14) of the cases, while instrumental deliveries were the least common, occurring in 4.26% (n=4) of the participants

The Figure 2 shows that the majority of deliveries occurred at term n=62 (65.96%), a significant proportion were preterm n=24 (25.53%), which is associated with increased neonatal morbidity and mortality. Post-term pregnancies accounted for n=8 (8.51%) of cases, also carrying increased risks.

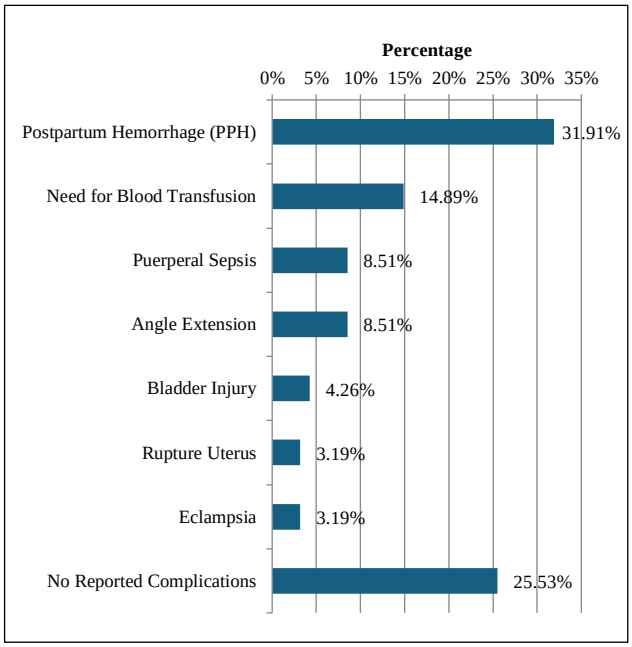

Figure 3: Immediate postpartum complications.

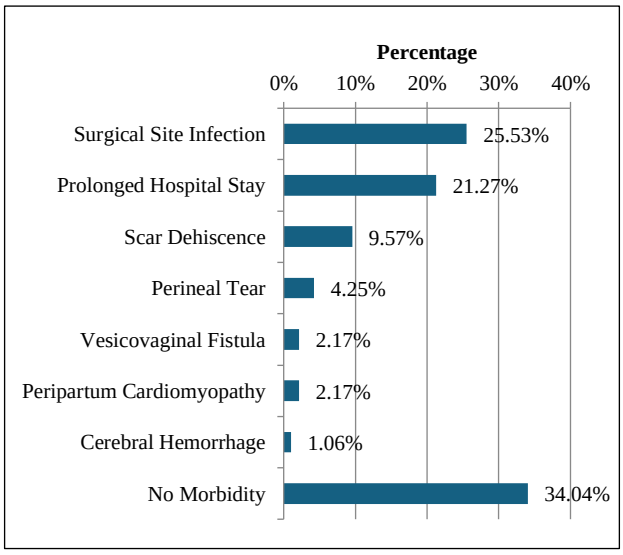

Figure 4: Maternal morbidity.

The Figure 3 presents the distribution of complications experienced by the study population of 94 individuals. PPH was the most frequently reported complication, affecting 31.91% (n=30) of the participants. Other complications included puerperal sepsis observed in 8.51% (n=8) of cases, and the need for blood transfusion, reported by 14.89% (n=14). Angle extension occurred in 8.51% (n=8) of cases, while bladder injury and uterine rupture, eclampsia were less common, affecting 4.26% (n=4) and 3.19% (n=3), 3.19% (n=3) of the participants, respectively. Notably, 25.53% (n=24) of individuals reported no complications. This data underscores the prevalence of PPH as the leading complication, with a significant proportion of individuals experiencing no complications.

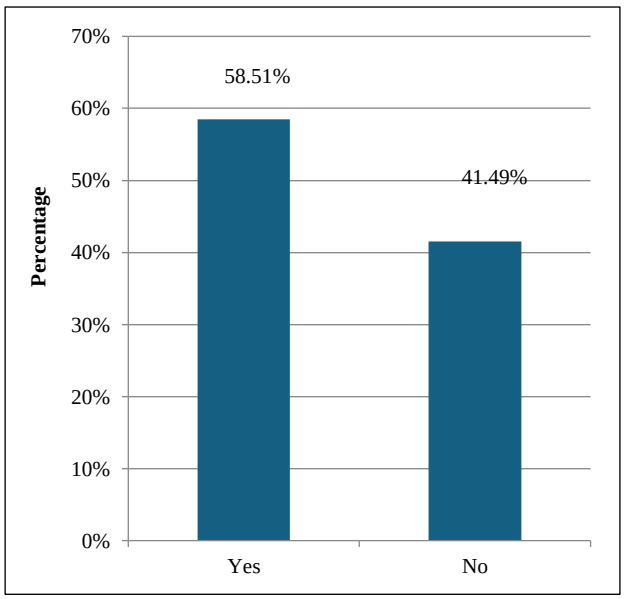

Figure 5: NICU admissions.

The Figure 4 details the morbidity outcomes among 94 individuals. The most common maternal morbidity reported was surgical site infections, affecting 25.53% (n=24) of the participants. Prolonged hospitals stay was observed in 21.27% (n=20). Scar dehiscence was observed in 9.57% (n=9) of the cases, while perineal tears occurred in 4.25% (n=4) of the individuals. Less frequent morbidities were vesicovaginal fistula, peripartum cardiomyopathy each recorded in 2.17% (n=2) of the cases and cerebral hemorrhage 1.06%. Notably, 34.04% (n=32) of the participants did not experience any morbidity.

Figure 5 shows that over half of the newborns n=55 (58.51%) required NICU admission, reflecting the high-risk nature of the pregnancies and the potential for neonatal complications in this population.

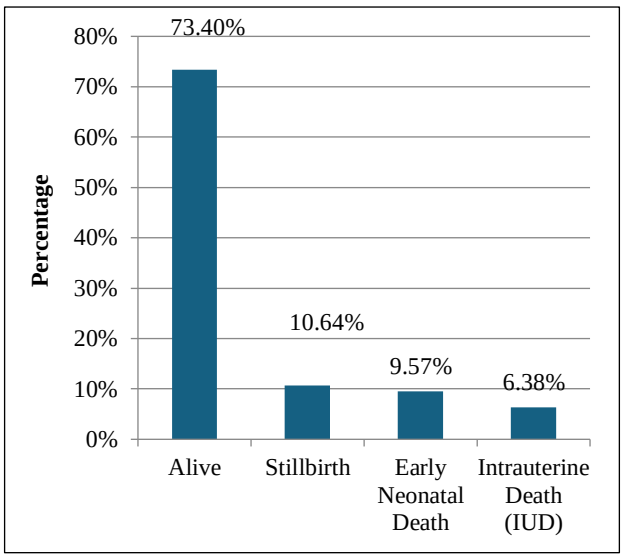

Figure 6: Perinatal outcome.

Table 1: Socio-demographic data.

Characteristics	Category	N	Percentage (%)
Age (in years)	<20	11	11.70
	20-24	42	44.68
	25-29	20	21.28
	30-34	17	18.09
	≥35	4	4.26
	Total	94	100
Religion	Hindu	77	81.91
	Muslim	17	18.09
	Total	94	100
Booking status	Booked	61	64.89
	Unbooked	33	35.11
	Total	94	100
Socioeconomic status	Class 2	5	5.32
	Class 3	14	14.89
	Class 4	31	32.98
	Class 5	44	46.81
	Total	94	100
Parity	G1	22	23.40

Continued.

Characteristics	Category	N	Percentage (%)
	G2	42	44.70
	G3	15	16.00
	G4	7	7.40
	G5	7	7.40
	G6	1	1.10
	Total	94	100

Table 2: Causes of perinatal mortality.

Causes	N	Percentage (%)
Respiratory distress syndrome	13	13.83
NNHB	8	8.51
MAS	5	5.32
Birth asphyxia	3	3.19
Hypoxic ischemic encephalopathy	3	3.19
Neonatal sepsis	2	2.13
Congenital malformations	1	1.06
Intraventricular haemorrhage	1	1.06
Hypoglycemia	1	1.06
Necrotizing enterocolitis	1	1.06
No complications	56	59.57
Total	94	100

Table 3: Relationship between risk factors and pregnancy outcome.

Risk factors	Total cases, N (%)	Maternal outcomes	Perinatal outcomes
Previous CS	37 (39.36)	Emergency CS: 78.37% (29/37)	Neonatal morbidity: 37.83% (14/37)
		Elective CS: 21.6% (8/37)	Neonatal mortality: 5.4% (2/37)
		Maternal morbidity: 51.35% (16/37)	
Anemia	27 (28.72)	Emergency CS: 18.51% (5/27)	Perinatal morbidity: 29.62% (8/37)
		VD: 7.40% (2/27)	Perinatal mortality: 2.7%. (1/37)
		Maternal morbidity: 44.44% (12/27)	
Hypertensive disorder of pregnancy	10 (10.63)	Emergency CS: 70% (7/10)	Perinatal morbidity: 80% (8/18)
		Elective CS: 30% (3/10)	Perinatal mortality: 0
		VD: 20% (2/10)	
		Maternal morbidity:50% (5/10)	
Oligohydramnios	21 (22.34)	Emergency CS: 28.57% (6/21)	Perinatal morbidity: 13
		Elective CS: 9.52% (2/21)	Perinatal mortality: 2
		VD: 9.52% (2/21)	
		Maternal morbidity:2	
Rh negative pregnancy	13 (13.82)	Emergency CS: 61.53% (8/13)	Perinatal morbidity: 53.84% (7/13)
		VD: 15.38% (2/13)	Perinatal mortality: 15.38% (2/13)
		Maternal morbidity- 23.80%. (5/13)	
Polyhydramnios	7 (7.44)	Emergency CS: 28.57% (2/7)	Perinatal morbidity: 71.4 % (5/7)
		Elective CS: 14.28% (1/7)	
		VD: 28.57% (2/7)	
		Maternal morbidity-28.57% (2/7)	
Hypothyroidism	12 (12.76)	Emergency CS: 41.66% (5/12)	Perinatal morbidity: 33.33% (4/12)
		Elective CS: 8.33% (1/12)	Perinatal mortality: 8.33% (1/12)
		Maternal morbidity-8.33% (1/12)	
IUGR	8 (8.51)	Emergency CS: 25% (2/8)	Perinatal morbidity- 50% (4/8)
			Perinatal mortality: 12.5% (1/8)
Twin gestation	2 (2.13)	Emergency CS: 100% (2/2)	Perinatal morbidity: 100% (2/2)
		Maternal morbidity: 50% (1/2)	Perinatal mortality: Nil
Malpresentation	9 (9.57)	Emergency CS: 55.55% (5/9)	Perinatal morbidity: 88.88% (8/9)
		Elective CS: 44.44% (4/9)	Perinatal mortality: 11.11% (1/9)

Continued.

Risk factors	Total cases, N (%)	Maternal outcomes	Perinatal outcomes
		Maternal morbidity: 66.66% (6/9)	
Post dated pregnancy	2 (2.12)	VD: 100% (2/2)	Perinatal morbidity: 0
		Maternal morbidity: 50% (1/2)	Perinatal mortality: 0
Asthma	1 (1.06)	VD: 50% (1/2)	Perinatal morbidity: 0
		Maternal morbidity: 50% (1/2)	Perinatal mortality: 0
Heart disease	2 (2.12)	Emergency CS: 50% (1/2)	Perinatal morbidity: 0
		Maternal morbidity: 50% (1/2)	Perinatal mortality: 50% (1/2)
Thalasemia	1 (1.06)	Emergency CS: 100% (1/1)	Perinatal morbidity: 100% (1/1)
		Maternal morbidity: 100% (1/1)	Perinatal mortality: 0
PPROM	5 (5.32)	Emergency CS: 40% (2/5)	Perinatal morbidity: 60% (3/5)
		Elective: 20% (1/5)	Perinatal mortality: 0
		VD: 40% (2/5)	
		Maternal morbidity: 60% (3/5)	

Table 4: Risk factors for PPH.

Risk factors	PPH cases	Total cases	Percentage (%)
Previous CS	9	34	26.47
Anemia	8	28	28.57
Hypertensive disorders of pregnancy	4	12	33.33
Abnormal amniotic fluid volume	7	23	30.43
Multiple pregnancy	2	2	100
Rh negative pregnancy	3	10	30
IUGR	2	8	25
Post-term pregnancy	2	4	50

The Table 2 summarizes the causes of neonatal complications observed among the study population of 94 individuals. Respiratory distress syndrome was the most common complication, affecting 13.83% (n=13) of the neonates. Other notable complications included neonatal hyperbilirubinemia (NNHB) at 8.51% (n=8), MAS at 5.32% (n=5), birth asphyxia and hypoxic- ischemic encephalopathy (HIE), each at 3.19% (n=3). Less frequent complications were neonatal sepsis (2.13%, n=2), congenital malformations, intraventricular hemorrhage, hypoglycaemia, and necrotising enterocolitis, each reported in 1.06% (n=1) of cases. Remarkably, a majority of the neonates (59.57%, n=56) did not experience any complication.

The Figure 6 provides an overview of the outcomes for a cohort of 94 individuals. A majority of the cases resulted in the neonates being alive, accounting for 73.40% (n=69) of the total. The incidence of stillbirths was 10.64% (n=10), while intrauterine deaths (IUD) were reported in 6.38% (n=6) of cases. Early neonatal deaths occurred in 9.57% (n=9) of the participants.

The Table 3 illustrates the relationship between various antenatal risk factors and their associated maternal and perinatal outcomes. It reveals that conditions such as previous CS, anemia, and pregnancy-induced hypertension are significant contributors to adverse maternal and perinatal outcomes. For instance, previous CS cases had a high incidence of emergency CS (78.37%) and were also associated with elevated rates of maternal morbidity (51.35%). Perinatal morbidity and mortality associated with previous CS was 37.83% and 5.4%, respectively. Similarly, anemia was linked to a high emergency CS rate (18.51%%) and maternal morbidity was 44. 44% and perinatal morbidity and mortality was 29.62% and 2.77% respectively. Hypertensive disorder of pregnancy was associated with 70% emergency CS And 50% maternal morbidity, and 80% perinatal morbidity. Other factors which were associated with poor maternal and perinatal outcomes were RH negative pregnancy, malpresentation, PPROM.

This Table 4 presents an analysis of risk factors associated with PPH in the study population. Multiple pregnancy emerged as the most significant risk factor, with all cases (100%) resulting in PPH, although this is based on a small sample size of only two cases. Post-term pregnancy was associated with PPH in half (50%) of the cases. Hypertensive disorders, including pre-eclampsia and severe pre-eclampsia, showed a high association with PPH (33.33%), closely followed by abnormal amniotic fluid volume (30.43%), which includes both oligohydraminos and polyhydraminos. Rh negative pregnancy also demonstrated a notable association with PPH (30%). Anaemia and previous CS were associated with PPH in 28.57% and 26.47% of cases respectively, highlighting their importance as risk factors. Intrauterine growth restriction (IUGR) was linked to PPH in 25% of cases. These findings underscore the multifactorial nature of PPH risk emphasise the importance of careful monitoring and

management for pregnancies with these identified risk factors, particularly in cases of multiple pregnancy and post-term pregnancy.

DISCUSSION

Our study highlights the importance of awareness of first trimester registration, early identification of risk factors, more frequent hospital visits for regular antenatal check-up, and providing quality antenatal care and additional antenatal care over and above that is provided routinely for specific high-risk factors and aggressively treat those factors and prevent future complication directing appropriate timely intervention. With vigilant and careful detection of high-risk pregnancy there was no maternal mortality in our study. This study aimed to evaluate maternal and perinatal outcomes in high-risk pregnancies. Data was collected from 94 pregnant women with high-risk factors with period of gestation more than 28 weeks attending the OPD, IPD, and labor room at Navodaya medical college hospital and research centre, Raichur. The study employed a prospective design to analyse outcomes and identify trends in this population.

In the present study, the age distribution reveals that the majority are between 20-24 years (44.68%), with smaller proportions in other age groups. The majority of the participants were aged between 20-29 years, making up 65.96% of the study group. Most of the participants identified as Hindu, comprising 81.91% of the total, with the remaining 18.09% identifying as Muslim. A significant portion, 79.79%, belonged to lower socioeconomic classes. The socioeconomic status distribution shows that nearly half of the participants belong to class 5 (46.81%), followed by those in class 4 (32.98%). Parity data indicates that most participants are either first-time mothers or have had two pregnancies, with diminishing numbers in higher parity categories. Additionally, 76.60% of the women were multiparous, indicating they had previously given birth. Younger women, particularly those in lower socioeconomic classes, are more likely to have high-risk pregnancies. A significant majority were booked (64.89%), while the rest were unbooked indicates limited access to or utilization of antenatal care. Lower socioeconomic status is associated with a higher rate of unbooked pregnancies, which can lead to complications. Younger age groups (20-29 years) are at a higher risk, potentially due to limited healthcare access and education. In a study by Kulshreshtha et al majority of the patients (94%) were in the age group 20-30 years followed by 4% in the age group >30 years and 2% in the age group <20 years.[10] In a study by Chate SU et al, majority of the pregnant women 132 (89.8%) belonged to the Hindu religion, and 15 (10.2%) followed the Muslim religion. Majority of 49 (33.4%) of the study participant belonged to lower middle class.[11]

In the present study, 80.85% of deliveries were by CS, with 70.21% being emergency procedures. Sharma et al found that in high-risk pregnancies, 88% of deliveries were by CS, while 9.9% were full-term VD.[12] The high rate of CS especially emergency ones, indicates a high-risk population. The predominance of emergency CS suggests late detection or management of complications. Krishnaveni et al reported that the CS rate was significantly higher than the total vaginal birth rate, with 81.6% of deliveries being caesarean as opposed to 18.4% vaginal deliveries.[13]

Majority of deliveries were at term (65.96%), but 25.53% were preterm, indicating high risk of neonatal complications. High rate of preterm deliveries highlights the need for improved prenatal monitoring and care. Preterm deliveries are closely correlated with higher rates of neonatal complications, including need for NICU care.

In the present study, PPH was the most frequently reported complication, affecting 31.91% (n=30) of the participants. Vaghela et al reported that in high-risk pregnancies, maternal mortality is largely attributed to severe bleeding/haemorrhage (25%).[14] PPH is a significant risk factor for maternal morbidity and mortality. PPH has a strong correlation with multiple gestation, previous CSs and other obstetric risk factors.

In our study the maternal morbidity outcomes among 94 individuals was the most common morbidity reported was surgical site infections, affecting 25.53% (n=24) of the participants. Prolonged hospitals stay was observed in 21.27% (n=20). Scar dehiscence was observed in 9.57% (n=9) of the cases, while perineal tears occurred in 4.25% (n=4) of the individuals.

In the present study, 58.51% of newborns required NICU care. Chate et al similarly found that NICU admissions were more prevalent in severe high-risk pregnancies, with 60% of these cases requiring NICU care.[11] The high rate of NICU admissions reflects the severity of conditions faced by newborns in high-risk pregnancies.

Respiratory distress syndrome and other morbidities are correlated with preterm birth and low birth weight. Respiratory distress was the most common cause (13.83%) followed by NNHB (8.51%). Respiratory distress and NNHB are critical areas requiring specialized neonatal care. The presence of respiratory distress and NNHB is strongly associated with the need for NICU admission.

Mortality is correlated with high-risk pregnancies, especially in unbooked cases. The majority of newborns (73.40%) were born alive, while 10.64% were stillbirths, 6.38% were IUD, and 9.57% were early neonatal deaths. A study by Chate et al reported 59 perinatal deaths in the high-risk group, resulting in a significantly elevated perinatal mortality rate of 614 per 1000 live births. These statistics emphasize the substantial proportion of adverse perinatal outcomes within the studied population, underlining the critical importance of managing high-risk pregnancies effectively to reduce perinatal mortality.

High-risk pregnancies are associated with increased perinatal mortality.

Previous CS cases had a high incidence of emergency CS (78.37%) and were also associated with elevated rates of maternal morbidity (51.35%). Perinatal morbidity and mortality associated with previous CS was 37.83% and 5.4%, respectively. Similarly, anaemia was linked to a high emergency CS rate (18.51%) and maternal morbidity was 44. 44% and perinatal morbidity and mortality was 29.62% and 2.77% respectively. Hypertensive disorder of pregnancy was associated with 70% emergency CS And 50% maternal morbidity, and 80% perinatal morbidity. Other factors which were associated with poor maternal and perinatal outcomes were RH negative pregnancy, malpresentation, PPROM. In the study conducted by Shrestha et al a significant prevalence of obstetric risk factors was observed among pregnant women. Notably, 20.6% had a history of previous CS and 22% had experienced a first-trimester abortion. Common obstetric risk factors identified in the current pregnancies included hypertensive disorders (15.4%), oligohydraminos (9.7%), preterm labor and preterm prelabor rupture of membranes (8.1%), anemia (5.7%), malpresentation a term (4.9%), and intrauterine growth restriction (2.5%).[15]

In the present study, multiple pregnancy (50.00%) and prolonged labor (25.00%) were associated with higher rates of PPH. Women with no identified risk factors still had a 72.13% incidence of PPH. In a study by Tondge et al they showed that PPH in maximum patients with one or more risk factors like anemia, preeclampsia, eclampsia, antepartum hemorrhage and twins. The main cause of PPH in their study was uterine atony with a frequency of 69%.[16] PPH is a common complication in high-risk pregnancies, with certain factors significantly increasing the risk. Certain risk factors like multiple pregnancies and prolonged labor are strongly associated with the occurrence of PPH, highlighting the need for vigilant management in these cases.

CONCLUSION

The study demonstrates a clear link between socio-demographic factors, medical conditions, and obstetric history with adverse maternal and neonatal outcomes. Young women from low socioeconomic backgrounds, particularly those without adequate antenatal care, are at heightened risk for complications such as anemia, hypertensive disorders, and previous CSs. These risk factors are closely associated with higher rates of preterm births, low birth weights, emergency CSs, and increased NICU admissions. The findings highlight the need for comprehensive antenatal care that includes early registration, routine risk assessment, and targeted interventions for high-risk pregnancies. Educating women about the safety of VD when appropriate could reduce unnecessary CSs and related complications. By emphasizing early detection, regular monitoring, and timely interventions, it is possible to mitigate risks and improve outcomes for both mothers and newborns. The absence of maternal mortality in this study underscores the effectiveness of vigilant care and the potential to improve maternal and neonatal health outcomes in high-risk populations.

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Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Dutta DC, Text book of Obstetrics. New Central book Agency (P) Ltd, Calcutta, India. 2015.
2. Arias F, Bhide AG, Arulkumaran S, Damania K, Daftary SN, editors. Practical Guide to High Risk Pregnancy and Delivery-E-Book: A South Asian Perspective. Elsevier health sciences. 2012.
3. Standards and reporting requirements related for maternal mortality. In: ICD-11 Reference guide, Part 2. Geneva: World Health Organization; 2022. Available at: https://icd.who.int/en. Accessed on 20 June 2024.
4. Park K. Park's textbook of Preventive and Social Medicine. 23rd ed. Jabalpur: M/s Banarsidas Bhanot Publishers. 2015.
5. Sample registration system (SRS) report of registrar general of India (RGI) Available at: https://censusindia.gov.in/. Accessed on 20 June 2024.
6. National Health Portal. High risk pregnancy. Available at: https://www.nhp.gov.in/disease/gynaecology-and-obstetrics/high-risk-pregnancy. Accessed on 24 July 2024.
7. Chaterjee A, Mukhopadhyaya G. From safe motherhood to reproductive child health. In: Principles and practice of obstetrics and gynaecology for post graduates. New Delhi. 2003; 7.
8. Banerjee B, Hazra S. Sociodemographic determinants of pregnancy wastage. J Obstet Gynaecol. 2004;54:355-60.
9. Signore C, Freeman RK, Spong CY. Antenatal testing-a re-evaluation: Executive summary of a eunicekennedy shriver national institute of child health and human development workshop. Obstetr Gynecol. 2009;113:687.
10. Kulshreshtha S, Babel M. A prospective study of causes and outcome of high risk pregnancies inreferred patients in a tertiary health care centre of southern Rajasthan. Obs Rev J Obstet Gynecol. 2019;5(3):141-6.
11. Chate SU, Metgud CS. Pregnancy outcome among high risk pregnant women in rural area of Belagavi. J Family Med Prim Care. 2022;11:4440-6.
12. Sharma S, Sharma R, Gautam A. Prevalence of high risk pregnancy and study of maternal and perinatal outcome. Int J Clin Trials. 2023;10(4):291-3.

13. Krishnaveni R, Saraswathi K. Study of Maternal and Neonatal Outcome in High Risk Pregnancy. J Res Med Dent Sci. 2021;9(6):392-402.
14. Vaghela N. Study of pregnancy outcome in various high-risk pregnancies in tertiary care hospital. Int J Med Biomed Studies. 2019;3(12):38-42.
15. Shrestha J, Gurung SD, Subedi A, Pandey C. Identifying High Risk Pregnancy and Its Effectiveness in determining Maternal and Perinatal Outcome. BJHS. 2021;6(2):15.
16. Tondge G, Burande A. A retrospective study of cases of postpartum hemorrhage at tertiary health care center Indian J Obstetr Gynecol Res. 2018;5(3):322-6.

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