www.ijbar.org

ISSN 2249-3352 (P) 2278-0505 (E)

Cosmos Impact Factor-5.86

Outcomes of Maternal and Perinatal Health in High-Risk Pregnancies: A Prospective Analysis

Dr. Jasmine K Mehta*

*Assistant Professor, Department of Obstetrics and Gynecology, Gujarat Adani Institute Medical Sciences, Bhuj, Kachchh, Gujarat, India

Corresponding author: Dr. Jasmine K Mehta, Department of Obstetrics and Gynecology, Gujarat Adani Institute Medical Sciences, Bhuj, Kachchh, Gujarat, India

Conflict of interest: No! Conflict of interest is found elsewhere considering this work.

Source of Funding: There was no financial support concerning this work

Abstract

Background and Aim: A high-risk pregnancy (HRP) has variables that harm maternal and perinatal outcomes. This pregnancy increases the risk of maternal and fetal morbidity and mortality. To improve outcomes, such situations require extensive antenatal care, sophisticated maternal and fetal monitoring, and complex management decisions. The study evaluated maternal and perinatal outcomes in high-risk pregnancy, identified key determinants, and investigated the causes of maternal and perinatal morbidity and mortality.

Materials and Methods: This one-year prospective study in obstetrics and gynaecology examined 100 pregnant women with high-risk characteristics and gestations above 28 weeks who attended OPD and IPD at a Gujarati tertiary care institute. Study participants' sociodemographic, obstetric, gynecological, medical, and surgical histories were obtained. Routine and particular investigations were done, and timely action was done.

Results: 71% (n=71) of births were emergency CS. Elective CSs were rare, 10% (n=10). Emergency CS accounted for 71% (n=71) of births. Elective CSs were rare, 10% (n=10). PPH affected 32% (n=32) of participants, the most common problem. The most prevalent maternal morbidity was surgical site infections, impacting 25% (n=25). In 21% (n=21), hospital stays were long. PPH occurred 50% of the time after term pregnancy. Pre-eclampsia and severe pre-eclampsia were associated with PPH (33%), followed by aberrant amniotic fluid volume (30%), which comprises oligohydraminos and polyhydramnios.

Conclusion: The study shows that risk variables promote preterm births, low birth weights, emergency CSs, and NICU admissions. Antenatal care should involve early registration, routine risk assessment, and tailored interventions for high-risk pregnancies, according to the findings.

Key Words: Elective Cesarean Section, high-risk pregnancy, maternal and perinatal outcome, Maternal mortality

www.ijbar.org

ISSN 2249-3352 (P) 2278-0505 (E)

Cosmos Impact Factor-5.86

Introduction

A high-risk pregnancy (HRP) refers to a situation where the maternal environment or previous reproductive history poses considerable risks to the health of the fetus. This can include complications such as premature birth, infants who are small for their gestational age, full-term pregnancies with low amniotic fluid levels, stillbirths, and early neonatal deaths. HRP refers to a situation in which pregnancy is complicated by various factors that negatively impact the health outcomes for both the mother and the newborn. Approximately 20-30% of pregnancies fall into this category.[1] Patients at high risk necessitate advanced monitoring of both maternal and fetal health, often leading to complex management choices aimed at enhancing their outcomes.[2]

The ratio of maternal mortality The World Health Organization defines maternal death as the death of a woman during pregnancy or within 42 days following the end of pregnancy, regardless of the duration and location of the pregnancy. This definition encompasses deaths resulting from any cause related to or exacerbated by pregnancy or its management, excluding those from unintentional or incidental causes. The metric can be characterized as the number of maternal deaths occurring within a specified timeframe per 100,000 live births during that same period, effectively quantifying the risk of maternal mortality in relation to the volume of births. The maternal mortality rate is determined by calculating the number of maternal deaths in relation to the total person-years lived by women of reproductive age within a given population. The maternal mortality rate reflects the likelihood of a mother dying during pregnancy or childbirth, encompassing both live and stillbirths, as well as the overall fertility rates within a population. Maternal morbidity refers to health complications that arise from various factors associated with pregnancy or its management throughout the antepartum, intrapartum, and postpartum periods, typically extending up to 42 days following childbirth.There are five primary causes of mortality among pregnant women: severe hemorrhage, maternal infections, unsafe abortion, hypertension-related disorders of pregnancy like preeclampsia and eclampsia, and medical complications such as cardiac conditions, HIV/AIDS, or diabetes that may complicate or be complicated by pregnancy.[3] The World Health Organization reports that approximately 830 women lose their lives each day due to complications related to pregnancy or childbirth worldwide. 4 Approximately 20-30% of pregnancies are classified as high-risk, contributing to 70-80% of perinatal mortality and morbidity rates.[4] Every pregnancy should undergo assessment for high-risk factors during routine antenatal care, which primarily focuses on identifying high-risk pregnancies as early as possible.[5]

Patients classified as high-risk during pregnancy necessitate advanced monitoring of both maternal and fetal health. Often, this involves navigating complex management decisions to enhance their overall outcomes. This study aims to assess the maternal and perinatal outcomes associated with high-risk pregnancies.

ISSN 2249-3352 (P) 2278-0505 (E)

Cosmos Impact Factor-5.86

The objective of this study was to assess maternal and perinatal outcomes in high-risk pregnancies, identify key factors associated with these pregnancies, and investigate the causes of maternal and perinatal morbidity and mortality in such cases.

Material and Methods

This prospective study was carried out in the department of obstetrics and gynecology, involving 100 pregnant women who were beyond 28 weeks of gestation and presented with high-risk factors. The participants attended both outpatient and inpatient departments at a tertiary care institute in Gujarat over the course of one year. The sociodemographic information of the study participants, along with their obstetric, gynecological, medical, and surgical histories, was gathered for analysis. Routine and specific investigations were carried out, with timely interventions implemented as necessary.

Inclusion criteria

Maternal criteria

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

Perinatal criteria

Infants presenting with birth asphyxia, a background of birth trauma, intrapartum fetal distress, prematurity, and low birth weight were examined. Additionally, cases of respiratory distress syndrome, infection-septicemia, meningitis, pneumonia, congenital syphilis, congenital malformations, and those with an Apgar score of 0-3 were considered. The study also included instances of intracranial infections, fever, and meconium aspiration syndrome (MAS).

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

Statistical analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2019) and then exported to data editor page of SPSS version 19 (SPSS Inc., Chicago, Illinois, USA). Quantitative variables were described as means and standard deviations or median and interquartile range based on their distribution. Qualitative variables were presented as count and percentages. For all tests, confidence level and level of significance were set at 95% and 5% respectively.

Results

ISSN 2249-3352 (P) 2278-0505 (E)

Cosmos Impact Factor-5.86

Table 1 details the demographic and socioeconomic characteristics of the 100-person research population. The majority are 20-24 years old (44%), with lesser proportions in other age categories. The socioeconomic status breakdown suggests that 49% of participants are class 5 and 32% class 4. Most participants are first-time mothers or have had two pregnancies, with fewer in higher parity categories.

Emergency CS accounted for 71% (n=71) of births. Elective CSs were rare, 10% (n=10). Vaginal deliveries (VD) were 15% (n=15) of the cases, while instrumental deliveries were the least common, occurring in 4% (n=4). Most deliveries were term n=66 (66%), but 25% were preterm, which increases neonatal morbidity and mortality. Pregnancies after term were n=9 (9%) and riskier.

PPH affected 32% (n=32) of participants, the most common problem. Puerperal sepsis (n=9) and blood transfusion (n=15) were further problems. Bladder damage, uterine rupture, and eclampsia were less common, affecting 4% (n=4), 3% (n=3), and 3% (n=3) of patients, respectively. Angle extension occurred in 8% (n=8) Notably, 25% (n=25) reported no issues. This shows that PPH is the most common complication, with a large percentage of people having no issues.

The most prevalent maternal morbidity was surgical site infections, impacting 25% (n=25). In 21% (n=21), hospital stays were long. Scar dehiscence occurred in 10% (n=10) of instances and perineal tears in 4% (n=4). Vesicovaginal fistula, peripartum cardiomyopathy, and cerebral hemorrhage were less common at 2% (n=2) each. Morbidity was absent in 34% (n=34) of subjects. Over half of the neonates (58%) needed NICU hospitalization, demonstrating the high-risk pregnancies and neonatal problems in this cohort.

The most prevalent consequence was respiratory distress syndrome, involving 14% (n=14) of infants. Other problems included NNHB (9%, n=9), MAS (5%, n=5), newborn asphyxia, and HIE (3%, n=3). Neonatal sepsis (2%, n=2), congenital abnormalities, intraventricular hemorrhage, hypoglycaemia, and necrotising enterocolitis (1%, n=1) were less common. Interestingly, 60% of neonates (n=60) had no complications.

Most neonates survived, 73% (n=73). Stillbirths occurred 11% (n=11) and intrauterine deaths (IUD) 6% (n=6). 10% (n=10) of participants died early. Table 2 shows the association between antenatal risk variables and maternal and perinatal outcomes. Previous CS, anemia, and pregnancy-induced hypertension are major risk factors for poor maternal and perinatal outcomes. Previous CS cases had a high risk of emergency CS (76.92%) and maternal morbidity (51.28%). Previous CS caused 38.46% and 7.69% perinatal morbidity and death. Anemia was connected to a significant emergency CS rate (17.85%), maternal morbidity 42.85%, and perinatal morbidity and mortality 28.20% and 2.56%. Pregnancy-related hypertension caused 72.72% emergency CS. Perinatal morbidity was 80% and maternal morbidity 47.36%. RH negative pregnancy, malpresentation, and PPROM also affected maternal and perinatal outcomes.

www.ijbar.org

ISSN 2249-3352 (P) 2278-0505 (E)

Cosmos Impact Factor-5.86

Multiple pregnancy was the biggest risk factor for PPH, with all cases (100%) culminating in PPH, despite a small sample size of two cases. PPH occurred 50% of the time after term pregnancy. Pre-eclampsia and severe pre-eclampsia were associated with PPH (33%), followed by aberrant amniotic fluid volume (30%), which comprises oligohydraminos and polyhydraminos. Anaemia and prior CS were risk factors for PPH in 29% and 26% of patients, respectively. IUGR was associated to PPH in 25% of patients. These findings highlight the multifaceted nature of PPH risk and the need for careful monitoring and management of pregnancies with these risk factors, especially numerous and post-term pregnancies.

Table 1: Socio-demographic data

Variables	Number	Percentage (%)
Age (Year)		
<20	12	12
21-24	43	43
25-29	22	22
30-34	18	18
>35	5	5
Booking status		
Booked	64	64
Unbooked	36	36
Socioeconomic status		
Class 2	5	5
Class 3	14	14
Class 4	32	32
Class 5	49	49
Parity		
G1	23	23
G2	45	45
G3	16	16
G4	7	7
G5	7	7
G6	2	2

Table 2: Relationship between risk factors and pregnancy outcome

Risk factors	Total cases, N (%)	Maternal outcomes	Perinatal outcomes
Previous CS	39 (39)	Emergency CS: 76.92% (30/39) Elective CS: 23.07% (9/39)	Neonatal morbidity: 38.46% (15/39) Neonatal mortality: 7.69% (3/39)

ISSN 2249-3352 (P) 2278-0505 (E)
Cosmos Impact Factor 5.86

		Maternal morbidity: 51.28% (20/39)	
Anemia	28 (28)	Emergency CS: 17.85% (8/28) VD: 7.14% (2/28) Maternal morbidity: 42.85% (12/28)	Perinatal morbidity: 28.20% (11/39) Perinatal mortality: 2.56%. (1/39)
Hypertensive disorder of pregnancy	11 (11)	Emergency CS: 72.72% (8/11) Elective CS: 27.27% (3/11) VD: 27.27% (3/11) Maternal morbidity:45.45% (5/11)	Perinatal morbidity: 47.36% (9/19) Perinatal mortality: 0
Oligohydramnios	22 (22)	Emergency CS: 31.81% (7/22) Elective CS: 9.09% (2/22) VD: 9.09% (2/21)	Perinatal morbidity: 14 Perinatal mortality:2
Hypothyroidism	13 (13)	Elective CS: 7.69% (1/13) Maternal morbidity- 7.69% (1/13)	Perinatal mortality: 7.69% (1/9)
IUGR	9 (9)	Emergency CS: 2.2% (2/9)	Perinatal morbidity: 44.44% (4/9) Perinatal mortality: 11.11% (1/9)
Post dated pregnancy	2 (2)	VD: 100% (2/2) Maternal morbidity: 50% (1/2)	Perinatal morbidity: 0 Perinatal mortality:0

Discussion

To achieve a reduction in maternal mortality rates to an acceptable level, it is essential to identify high-risk mothers as early as possible and ensure they receive appropriate care to mitigate complications during pregnancy and childbirth.[4-6] The findings of our study underscore the critical need for heightened awareness regarding first trimester registration. It emphasizes the early identification of risk factors, the necessity for more frequent hospital

ISSN 2249-3352 (P) 2278-0505 (E)

Cosmos Impact Factor-5.86

visits for regular antenatal checkups, and the provision of quality antenatal care. Additionally, it advocates for enhanced antenatal services tailored to specific high-risk factors, alongside proactive treatment strategies aimed at preventing future complications through timely interventions.

The current analysis indicates that the predominant age group is 20-24 years, while other age categories represent smaller fractions of the population. A significant portion of the participants, specifically 67%, fell within the age range of 20 to 29 years, highlighting a youthful demographic in the study group. Data on parity reveals that the majority of participants are either experiencing motherhood for the first time or have undergone two pregnancies, with a noticeable decline in those within the higher parity groups. Furthermore, a significant 77% of the women in the study were multiparous, suggesting that they had experienced childbirth before.

A significant majority were booked, while the remainder were unbooked, suggesting restricted access to or use of antenatal care services. Individuals from lower socioeconomic backgrounds experience a greater incidence of unplanned pregnancies, which may result in various complications. Individuals in younger age groups face an increased risk, likely stemming from restricted access to healthcare and a lack of education. A study conducted by Kulshreshtha et al revealed that the majority of participants fell within the 20-30 age range, with 4% of patients being over 30 years old and 2% in other age categories.[7]

The current research indicates that a significant 80.85% of deliveries were conducted via cesarean section, with 71% classified as emergency procedures. In a study conducted by Sharma and colleagues, it was revealed that among high-risk pregnancies, a significant 88% of deliveries were performed via cesarean section, whereas only 9.9% resulted in full-term vaginal deliveries.[8]

The majority of deliveries occurred at term, suggesting a significant risk of neonatal complications. The elevated incidence of preterm deliveries underscores the urgent necessity for enhanced prenatal monitoring and care practices. Preterm deliveries are significantly linked to increased rates of neonatal complications, which often necessitate specialized care in the NICU. The current research indicates that postpartum hemorrhage emerged as the most commonly reported complication, impacting 32% of the participants involved in the study. Seema et al. conducted an analysis revealing that anaemia was the most prevalent medical condition identified.[9]

Our study examined maternal morbidity outcomes in a cohort of 94 individuals, revealing that the most prevalent complication reported was surgical site infections, which impacted 26% of the participants. A prolonged hospital stay was noted in 21% of cases. In this study, it was found that 58% of newborns necessitated care in the Neonatal Intensive Care Unit (NICU). Ganchimeg T et al. similarly reported that admissions to the NICU were more common in severe high-risk pregnancies, with 60% of these cases necessitating NICU care.[10]

ISSN 2249-3352 (P) 2278-0505 (E)

Cosmos Impact Factor-5.86

High-risk pregnancies, particularly those that are unbooked, show a significant correlation with increased mortality rates. A significant proportion of newborns entered the world alive; however, the data reveals that 11% were stillbirths, 6% were classified as intrauterine deaths, and 7.69% experienced early neonatal mortality. A comparable study conducted by Kumar et al. revealed that 5.04% of cases involved intra-uterine dead fetuses, while 0.7% experienced intrapartum stillbirths. Additionally, 22.4% of the newborns required admission to the neonatal intensive care unit, and 5.6% were intubated.

The rates of perinatal morbidity and mortality linked to prior cesarean sections were recorded at 38% and 5%, respectively. In a similar vein, anaemia was associated with an elevated rate of emergency cesarean sections, with maternal morbidity recorded at 45.45%. Additionally, perinatal morbidity and mortality rates stood at 28.20% and 2.56%, respectively. A study conducted by Kolluru et al. revealed that the likelihood of requiring operative intervention escalated alongside higher risk scores. Notably, 82.5% of high-risk pregnant women underwent operative procedures, which included either cesarean sections or instrumental vaginal deliveries.[11] A recent study revealed a notable prevalence of obstetric risk factors among pregnant women. The current pregnancies have revealed several common obstetric risk factors, such as hypertensive disorders, oligohydramnios, preterm labor, preterm prelabor rupture of membranes, anemia, malpresentation at term, and intrauterine growth restriction.[12]

The current research indicates that multiple pregnancies and extended labor are linked to increased occurrences of postpartum hemorrhage (PPH). A study revealed that postpartum hemorrhage (PPH) occurs in the majority of patients who present with one or more risk factors, including anemia, preeclampsia, eclampsia, antepartum hemorrhage, and multiple gestations. The study identified uterine atony as the primary cause of postpartum hemorrhage, occurring in 69% of cases.[13]

Conclusion

The study demonstrates a clear link between risk factors and 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.

References

1. Mehta B, Vijay K, Amamdeep K , Sumit C, Manisha M. Prevalence and correlates of high risk pregnancy in rural Haryana: A community based study. Int J Basic Appl Med Sci.2013;3(2):212-7.

ISSN 2249-3352 (P) 2278-0505 (E)

Cosmos Impact Factor-5.86

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. A Misra, P Chowbey, BM Makkar, NK Vikram, JS Wasir, and D Chadha. Consensus statement for diagnosis of obesity, abdominal obesity and the metabolic syndrome for Asian Indians and recommendations for physical activity, medical and surgical management. J Assoc Physicians India. 2009;57:163-70.
4. James, D. K., Steer, P. J., Weiner, C. P., & Gonik, B. (2010). High risk pregnancy e-book: Management options-expert consult. Elsevier Health Sciences.
5. Kost K, Maddow-Zimet I: US teenage pregnancies, births and abortions, 2011: national trends by age, race and ethnicity. Available online. http://www.guttmacher.org/report/us-teen-pregnancy-state-trends-2011.
6. World Health Organization. Adolescent pregnancy, Issues in Adolescent Health and Development, Department of Reproductive Health and Research. 2004..
7. 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. 2009;5(3):141-6.
8. Sharma S, Sharma R, Gautam A. Prevalence of high risk pregnancy and study of maternal and perinatal outcome. Int J Clin Trials. 2013;10(4):291-3.
9. Signore C, Freeman RK, Spong CY. Antenatal testinga re-evaluation: Executive summary of a eunicekennedy shriver national institute of child health and human development workshop. Obstetr Gynecol. 2009;113:687.
10. Ganchimeg T, Mori R, Ota E, Koyanagi A, Gilmour S, Shibuya K, Torloni M, Betran A, Seuc A, Vogel J, Souza J. Maternal and perinatal outcomes among nulliparous adolescents in low- and middle-income countries: a multi-country study. *BJOG* 2013 ; DOI: 10.1111/1471-0528.12391..
11. Kolluru V, Reddy A. Study of high risk scoring in pregnancy and perinatal outcome. Indian J Obstet Gynecol Res. 2006;3(4):407-9.
12. Nathalie Fleming, Natalia Ng, Christine Osborne, Shawna Biederman, Abdool Shafaaz Yasseen, Jessica Dy, et al. Adolescent Pregnancy Outcomes in the Province of Ontario: A Cohort Study. Journal of Obstetrics and Gynaecology Canada.2013 ;35 (3):234-245.
13. A. Karabulut, S. Ozkan, A.I. Bozkurt, et al. Perinatal outcomes and risk factors in adolescent and advanced age pregnancies: comparison with normal reproductive age women. J Obstet Gynaecol. 2013;33 (4): 346-350.