

## Maternal And Foetal Outcome in Rh Negative Pregnancy

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### ABSTRACT

**INTRODUCTION:** This study investigates maternal and foetal outcomes of Rh-negative pregnancies managed at a tertiary care centre through an observational study. It evaluates the effectiveness of current management strategies, the role of antenatal and postnatal anti-D prophylaxis, outcomes in sensitized pregnancies, and challenges faced by healthcare providers.

**METHOD:** The Study was conducted at Department of Obstetrics and Gynaecology, GMERS Medical College, Sola, Ahmedabad. This study includes Rh negative antenatal women attending labour room of sola civil hospital. The maternal and fetal outcomes have been collected and noted as per records.

**RESULTS:** In this study, Rh isoimmunization remains a major cause of perinatal morbidity, particularly anaemia and jaundice. With introduction of anti-D immunoglobulin and improved antenatal care, it still contributes to NICU admissions, phototherapy, and exchange transfusions.

**CONCLUSION:** Maternal sensitization strongly correlates with neonatal jaundice and anaemia. Preventing alloimmunization not only improves perinatal outcomes but also reduces complications in future pregnancies.

**Keywords:** Rh isoimmunization, HDFN, hydrops fetalis, anti-D immunoprophylaxis, oligohydramnios, polyhydramnios, neonatal jaundice and anemia

### INTRODUCTION

Pregnancy involves complex maternal-foetal interactions, with Rh incompatibility being a major concern. This occurs when an Rh-negative mother carries an Rh-positive foetus, potentially triggering maternal antibodies against foetal red blood cells—known as Rh alloimmunization. If untreated, this can lead to haemolytic disease of the foetus and newborn (HDFN) [1], causing anaemia, jaundice, hydrops fetalis, or even intrauterine death.

The introduction of anti-D immunoglobulin (RhIG) in the 1970s drastically reduced sensitization rates—from 13–16% to 0.5–1.8% postnatally, and further to 0.14–0.2% with antenatal use of RhIg [2][3]. However, Rh-negative pregnancies still present challenges, particularly in resource-limited settings like India, where access to prophylaxis and consistent care may be lacking.

This study investigates maternal and foetal outcomes of Rh-negative pregnancies managed at a tertiary care centre through an observational study. It evaluates the effectiveness of current management strategies, the role of antenatal and postnatal anti-D prophylaxis, outcomes in sensitized pregnancies, and challenges faced by healthcare providers.

### AIM AND OBJECTIVES

- To estimate foeto-maternal outcome of Rh-negative pregnancy at tertiary care centre.
- To study various maternal factors and neonatal factors in Rh-negative pregnancy.

### MATERIALS AND METHODS:

The Study was conducted at Department of Obstetrics and Gynecology, GMERS Medical College, Sola, Ahmedabad.

#### STUDY DESIGNS:

- It is a hospital based Observational study approved by ethical committee of hospital.

- The study was conducted for a period of 6 months.
- Labour room records, antenatal records, and other information of women delivered at sola civil hospital.
- Patients fulfilling inclusion criteria were included in the study.
- An informed consent was taken from all selected patients.
- All the maternal factors associated with Rh-negative pregnancy were assessed.
- Data was collected from labour room register as reference for comparison.

**SAMPLE SIZE:** 50

**STUDY DURATION:** From January 2024 to June 2024

**STUDY POPULATION:**

Rh negative antenatal women attending labour room of sola civil hospital.

**INCLUSION CRITERIA :**

- Rh Negative mothers visiting labour room in our institute.
- Singleton pregnancy

**EXCLUSION CRITERIA:**

- Multifetal pregnancy
- Mothers having severe anaemia
- Mothers who are not willing to give consent
- Mothers who are known case of haemolytic anaemia

**OBSERVATIONS AND RESULTS:**

**TABLE 1: Age distribution among Rh negative mothers.**

Age group	Number of patients	Percentage
≤20 years	4	8
21-25 years	25	50
26-30 years	17	34
31-35 years	3	6
≥35 years	1	2

Table 1 shows that 50% of patients are between 21-25 years of age, 34% of patients are between 26-30 years of age, 8% of patients are less than 20 years of age, 6% of patients are between 31-35 years of age. While only 2% of patients are more than 35 years of age.

**TABLE 2: Blood grp distribution among Rh negative mother.**

Blood group of mother	Number of patients	Percentage (%)
A negative	17	34
B negative	20	40
AB negative	3	6
O negative	10	20
Grand Total	50	100

Table 2 shows 40 % of patients are having blood group B negative, 34 % of patients are having blood group A negative, 20 % of patients are having blood group O negative and 6 % of patients are having blood group AB negative.

**TABLE 3: Anti- D immunoprophylaxis among Rh negative mothers in previous pregnancy.**

Anti- D immunoprophylaxis in previous pregnancy	Primipara	Multipara
Anti- D Taken	0	20
Anti- D Not Taken	22	8
Grand Total	22	28

Table 3 shows 40 % of patients had received Anti D immunoprophylaxis in past pregnancy while 60% didn't received Anti D immunoprophylaxis out of which 22 (73%) were primigravida while 8 (27%) were multigravida.

**TABLE 4: Anti- D immunoprophylaxis among Rh negative mothers in present pregnancy.**

Anti- D Immunoprophylaxis in previous pregnancy	Number of patients	Percentage (%)
Anti- D Taken	17	34
Anti- D Not Taken	33	66
Grand Total	50	100

Table 4 shows 34 % of patients had received Anti D immunoprophylaxis in present pregnancy during their antenatal period while 66% didn't received Anti D immunoprophylaxis out of which 2 patients were booked at our institute but due to irregular antenatal visit they didn't receive Anti D immunoprophylaxis.

**TABLE 5: Outcome of Rh negative pregnancy in terms of gestational age of delivery.**

Gestational age of delivery	Number of Patients	Percentage (%)
<37 weeks	5	10
37 – 42 weeks	44	88
>42 weeks	1	2
Grand Total	50	100

Table 5 shows 10% of patients had preterm delivery at less than 37 weeks of gestation, 88% had term delivery between 37-42 weeks of gestation while only 2% had post term delivery beyond 42 weeks of gestation.

**TABLE 06: Mode of delivery among Rh negative mothers.**

Mode of Delivery	Number of patients	Percentage (%)
Vaginal Delivery	32	64
LSCS	18	36
Grand total	50	100

Table 6 shows 64% of patients had vaginal delivery while only 36% had caesarean delivery out of which 44% were patients with previous caesarean delivery.

**TABLE 7: Distribution of obstetric risk factors in Rh negative pregnancy.**

Obstetric risk factor	Number of patients	Percentage (%)
PIH/Pre-eclampsia	9	45
Oligohydramnios	8	40
Polyhydramnios	1	5
Abruption	2	10
Grand Total	20	100

Table 7 shows that out of 50 Rh negative mothers only 20 have some form of associated risk factors out of which 9 mothers have PIH/pre-eclampsia, 8 mothers have oligohydramnios, 1 mother have polyhydramnios and 2 mothers developed abruption.

**TABLE 8: Neonatal outcomes among Rh negative mothers.**

Neonatal Outcomes	Number of Neonates	Percentage (%)
Healthy mother side	31	62
Neonatal Jaundice	8	16
Neonatal Anaemia	2	4
Hydrops Fetalis	0	0
IUFD	1	2
Others (LBW/MSL/Respiratory distress)	8	16
Grand total	50	100

Table 8 shows that majority 62% of the neonates were handed over to mother side by paediatrician, 16% of neonates developed neonatal jaundice, 4% had neonatal anaemia, 0 hydrops fetalis, 2% was declared IUFD and 16% were admitted to NICU for following reasons like LBW ,MSL ,respiratory distress.

**TABLE 9: Total serum bilirubin of newborn born to Rh negative mother.**

Total serum bilirubin	Number of Neonates	Percentage (%)
<15 mg/dl	47	94
16-20 mg/dl	3	6
>20 mg/dl	0	0
Grand Total	50	100

Table 13 shows out of 99 neonates, 93 neonates have TSB <15 mg/dl, 3 has TSB between 16-20 mg/dl, 0 has TSB >20 mg/dl.

## DISCUSSION AND RESULT

- The present study “A Prospective study to determine maternal and fetal outcome in Rh negative pregnancy at tertiary health care centre in Ahmedabad” an observational study was performed on 100 patients in GMERS Medical College and Hospital, Sola, Ahmedabad.
- In this study of 50 mothers, maximum cases were in age group 21-25 years (50%) followed by age group between 26-30 years (34%).
- In our study 34 % of patients had received Anti D immunoprophylaxis in current pregnancy during their antenatal period while 66% didn't received Anti D immunoprophylaxis out of which 2 patients were booked at our institute. A significant association was found between booking status of patient and antenatal Anti-D immunoprophylaxis.
- In our study 10% of patients had preterm delivery at less than 37 weeks of gestation, 88% had term delivery between 37-42 weeks of gestation while only 2% had post term delivery beyond 42 weeks of gestation.
- Out of 50 mothers, 64% had vaginal deliveries, while 36% had caesarean deliveries. Of the caesarean deliveries, 44% were performed on patients with a history of previous caesarean sections, which was the most common indication. However, there is no significant association between booking status of mother with mode of delivery.
- In our study of 50 Rh negative mothers only 20 have some form of associated risk factors out of which 9(45%) mothers have PIH/Pre-Eclampsia, 8(40%) mothers have oligohydramnios, 1(5%) mother have polyhydramnios and 2(10%) mothers developed abruption. However, no association has been found between Rh negative pregnancy and occurrence of risk factors.
- In our study majority 62% of the neonates were handed over to mother side by paediatrician, 16% of neonates developed neonatal jaundice, 5% had neonatal anaemia, 0 had hydrops fetalis, 2% was declared IUFD and 16% were admitted to NICU for following reasons like LBW, MSL, respiratory distress.
- Out of 99 live newborns, 94% neonates have TSB <15 mg/dl, 6% has TSB between 16-20 mg/dl, 0 has TSB >20 md/dl. There is significant association between maternal status of sensitization with occurrence of jaundice in newborn.

## CONCLUSION

Rh isoimmunization, though less than 5% in prevalence, remains a major cause of perinatal morbidity, particularly anaemia and jaundice. With introduction of anti-D immunoglobulin and improved antenatal care, it still contributes to NICU admissions, phototherapy, and exchange transfusions.

Routine antenatal anti-D prophylaxis at 28 weeks, postpartum immunoprophylaxis, and administration after sensitizing events (abortions, ectopic pregnancy, medical termination) are essential to prevent maternal sensitization. Rh-negative pregnancies should be managed as high-risk, with deliveries at tertiary care centres equipped with experienced specialists and NICU facilities.

Maternal sensitization strongly correlates with neonatal jaundice and anaemia. Preventing alloimmunization not only improves perinatal outcomes but also reduces complications in future pregnancies. Family planning is crucial for sensitized mothers, as risk increases with parity.

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