



## PREVALENCE OF RH NEGATIVE PREGNANT FEMALE POPULATION IN REWA REGION, CENTRAL INDIA.

### Pathology

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### ABSTRACT

**Background & Aims :-**The Rh system is the second major blood group system after ABO system. Determination of Rh phenotype in pregnant female can play a major role in preventing alloimmunization and adverse events in multitransfused subject and reduce the risk of Hemolytic disease of Newborn.

**Method:-**Rh(D) Antigen detection was done by tube agglutination test as well as Gel matrix technology (Tulip diagnostic gel card) on total 1980 pregnant female attending Gandhi memorial hospital.

**Result:-**Out of 1980 pregnant female, majority 1886 (95.25%) were Rh positive while only 94 (4.75%) were Rh negative. Phenotypically 'O' group was the most common in ABO system.

**Conclusion:-** Determination of Rh Antigen in pregnant women help to prevent Alloimmunization and reduce the risk of Hemolytic disease of newborn.

### KEYWORDS

Rh blood group ,Pregnant female ,Rh Alloimmunization

### Introduction

During the world wars, it was discovered for the first time that frequency of ABO and Rh blood groups was different in persons native to different parts of the world. The discovery of ABO blood groups by Karl Landsteiner was an important achievement in the history of blood transfusion that was followed by discovery of Rh(D) Antigen<sup>(1,2)</sup>. The frequency of ABO and Rh phenotypes in different populations has been shown to be particularly associated with different diseases as well<sup>(3)</sup>. There are only two Rh phenotype such as Rh positive and Rh negative depending on whether Rh antigen is present on the red cell or not. The knowledge of distribution of ABO and Rh blood groups at local and Regional levels is helpful in effective management of blood banks and safe blood transfusion services. Rh system is important blood group system due to hemolytic disease of newborn and its importance in RhD Negative individuals in Subsequent transfusions once they develop Rh Antibodies.<sup>(4)</sup> Identification of Rh system is important to prevent the erythroblastosis fetalis, which commonly arises when an Rh negative mother carries an Rh positive fetus, Therefore the investigation of pregnant woman for Rh antigens is important to facilitate the prevention of Alloimmunization, reduce the Risk of HDN and transfusion reaction.

### Materials and Methods

The study was conducted in department of Pathology S.S. Medical college Rewa from 1 sept 2014 to 30 Ang 2017 (Duration 3 years). Blood samples from 1980 pregnant women were collected for the study. Samples were collected from patients who come to blood bank for routine blood grouping and indoor patients who were admitted in obstetrics department of Gandhi memorial hospital.

**Eligibility Criteria-** 1.Pregnant Ladies comes to hospital for routine check up.

**Exclusion Criteria-** 1. women who were not pregnant  
2. Pregnant women with recent history of blood transfusion.

ABO grouping was performed by conventional tube method and Rh typing was done by tube method as well as by gel Technology (Tulip diagnostics gel card)

### Result :-

Out of 1980 Pregnant female majority 1886 (95.25%) were Rh Positive (Table No 1) while only 94 (4.75%) were Rh Negative. Table No.2 Shows most of the subject were from the age group of 18 to 25 years (55.70%),the subject wetween 26-35 years was 35.85% while cases between 36-45 years were 8.43%.

**Table No 1- Incidence of Rh(D) Antigen Among Pregnant Ladies.**

Rh (D) Antigen	Total No.	Percentage (%)
Positive	1886	95.25%
Negative	94	4.75%
Total	1980	100%

Table No.3 shows amongst Rh positive pregnant female, blood group 'O'(35.94%) was found to be most prevalent group followed by group 'B' (27.99%) , A (21.95%) and AB (14.10%), among Rh-ve subject blood group 'O' (42.55%) was the commonest followed by group 'B' (35.10%), 'A' (15.95%) and AB (6.38%).

**Table No. 2- Age wise distribution of subject.**

Age group (years)	Total No.	Percentage (%)
18-25	1103	55.70%
26-35	710	35.85%
36-45	167	08.43%
Total	1980	100%

**Table No.3 Distribution of ABO and Rh blood group among pregnant population**

Blood group	Pregnant female	
	Rh+ve	Rh-ve
O	678 (35.94%)	40 (42.55%)
B	528 (27.99%)	33 (35.10%)
A	414 (21.95%)	15 (15.95%)
AB	266 (14.10%)	06 (06.38%)
Grand Total	1886 (95.25%)	94 (04.75%)

### Discussion:-

In our Study prevalence of Rh(D) positive subject was 95.25% while 4.75% was Rh(D) negative among pregnant female tested. These figures are similar to other studies carried out in India<sup>(5,6)</sup>. Rh genotype is used in paternity testing, in hemolytic disease of New born (HDN) and predictably HDN by testing the father's Rh genotype, this helps to predict likelihood of HDN due to RhD antigen when mother has Anti D. When RhD typing of RhD Negative women was done, it is important that women receive anti D prophylaxis if the baby has a weak form of Rh(D). Patients with a partial D type will produce Anti D Antibody when exposed to normal RhD positive donor blood. The partial D expression on a baby cell is poorly immunogenic and it is therefore not necessary to offer Anti D prophylaxis to RhD Negative mother of such infants. Our study showed that the blood group "O" was the most prevalent among both Rh positive and Rh Negative pregnant female followed by group B ,A and AB, Similar Result were also found in other studies<sup>(7,8)</sup>

**Table No. 4-Frequency of Rh phenotypes in different studies in India**

S.No	Place of study	Rhesus phenotypes	
		Rh+ve	Rh-ve
1.	Ahmedabad	95.05%	4.95%
2.	Bangalore	94.21%	5.79%
3.	Lakhnow	95.19%	4.81%
4.	Punjab	97.30%	2.70%
5.	Present study	95.25%	2.75%

**Conclusion**

Our study concluded that prevalence of Rh Negative phenotype was 4.75% among pregnant female population coming to G.M. Hospital Rewa and among ABO system 'O' Blood group is the commonest, followed by 'B', 'A' and 'AB' Blood group respectively. Knowledge of the blood group system help to take preventive measures against the disease which were associated with different blood groups and to prevent dangerous transfusion reactions.

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