

## **A study on ABO blood group incompatibility and intrauterine selection among the Hill Korwas of Chhattisgarh**

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### **ABSTRACT**

*Pregnancy loss is influenced by various factors, out of which blood group incompatibility of parents could be a significant cause of abortion or any intrauterine fetal loss. Various incompatible combinations of parents blood group have already been identified in such marriages, frequency of spontaneous abortions have been found more and certain combinations found less chance of abortions. The present investigation seems more significant. Standard methods and techniques were adopted for collection of data and blood samples. A total number of 202 couples selected randomly were approached to get information about the reproductive life. The main aim of the present study is to establish a relationship between ABO incompatibility and fetal wastage among the Hill Korwas of Jashpur district of Chhattisgarh. Total pregnancy wastage among the Hill Korwa women have been observed to be 20.02%. Among incompatible mating the percentage of fetal wastage is higher at 26.62, as compared to compatible 14.28%. The percentage and frequency of abortion, prenatal deaths and still births are also higher in incompatible mating.*

**Key Words:** ABO blood groups, Fetal Wastage, Hill Korwas, Chhattisgarh.

### **INTRODUCTION:**

The most different effects of selection on blood groups can be best discerned by analyzing the hemolytic diseases of newborns which result in still births, baby deaths shortly after birth or in some cases it results at least in abortions or jaundice. Cohen and Sayre's (1968) study in New York City shows that the risk of fetal death is greater in the ABO incompatibility than in the Rh. The

blood group incompatibility influences the fertility and mortality rates also the viability of certain blood group phenotypes in populations 1926; Levine,1943; Waterhouse and. Hog Ben, 1947; Cohen and Sayre, 1968). Levine (1943 and 1958) also showed that incompatible ABO mating, apart from Rh (D) discordance, led to abortion, miscarriage and hemolytic diseases. It has been observed that spontaneous abortions before sixth month of pregnancy occur more often among type O women married to men of type A or B than among. Chakravarty and Chakravarty (1977) observed that ABO incompatibility manifests its harmful effects in early pregnancies. Reddy and Reddy (1980) and Reddy and Sheshu (1986) also arrived at similar conclusion.

The main aim of the present study is to establish a relationship between ABO incompatibility and fetal wastage among the Hill Korwas of Jashpur District of Chhattisgarh. The Department of Health and Family Welfare has identified 90 poor performing Districts which are characterized by high birth rates, high infant mortality rates and very low levels of institutional deliveries. Jashpur District of newly formed Chhattisgarh state is one of them. The Hill Korwa is a primitive tribal group of Chhattisgarh. The tribe is found in the North-Eastern tribal zone of Chhattisgarh state in Jashpur, Surguja and Korba Districts. The Korwas belong to the Kolarian family. Korwas are divided into two groups; Pahari Korwa (Hill Korwa) and Dihariya Korwa (Plain Korwa). Total population of Hill Korwas according to 2011 census was 27107 in Chhattisgarh.

## **MATERIALS AND METHODS**

The present study was carried out in 84 village viz. Kamarima, Sulesa, Rauni ,Samarbar , Bhadiya, Dangari, Gidha Chhatori, etc., under Bagicha Tribal Development block of Jashpur district of Chhattisgarh. A total number of 202 couples selected randomly were approached to get information about the reproductive life. Detailed information about abortions, still births, prenatal deaths and postnatal deaths were gathered, as it was a retrospective study much care was taken to gather information as accurately as possible by interviewing, both the parents and was also verified by interviewing the elders or old aged people. The ABO typing of the couples were made following the standard techniques (Wiener et al. 1965).

## **RESULTS AND DISCUSSION**

The compatibility and incompatibility of couples on the basis of their blood group was based as per table 1, out of 16 incidence of couple combination with regard to ABO blood groups 9 couple combinations are of compatible and 7 are of incompatible types. Percentage of compatible and incompatible marriages among the Hill Korwas have been presented in table 2. Among Korwas the percentage of compatible mating (55.44%) was observed to be higher than in incompatible mating (44.56%). Fetal losses in different couple combinations among the Korwas have been presented in table 3. Reproductive performances in ABO compatible and incompatible mating have been presented in table 4. Total pregnancy wastage among the Hill Korwa women have been observed to be 20.02%, among incompatible mating the percentage of fetal wastage is

higher at 26.62%, as compared to compatible one at 14.28%. The percentage and frequency of abortion, prenatal deaths and stillbirths are also higher in incompatible mating. Table 3 reveals that the incidence of prenatal deaths is highest in case of A husband and O blood group wives and B husband and A blood group wives. The present study also shows a high percentage of abortions in B type husband and O type wives. Similar findings were reported by different scientists in different populations where high fetal wastage occurred in marriages between O type wives and A or B type husbands. In these cases, the fetus contains A or B antigen (inherited from father) that is not present in the mother herself. In other words, the mothers carry naturally occurring antibodies in her serum anti A or anti B. Any embryonic A or B blood cells which leak through the placental membrane of an O type mother may quickly be destroyed by already existent anti A or anti B antibodies. Erythroblastosis due to anti A or anti B may occur (Reddy and Sheshu, 1986, and Pandey et.al. 1997, Sharma and Chakravarty 2003).

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**Table- 1**

**List of ABO compatible and incompatible mating types**

Compatible mating	Incompatible mating
×	×
A×A	O×A
B×B	O×B
AB×AB	O×AB
O×O	B×A
B×O	A×AB
AB×O	B×AB
AB×A	
AB×B	

**Table-2**

**Percentage of compatible and incompatible marriages among the hill Korwas of Jashpur**

Marriage group	Percentage of Marriage
Incompatible	44.56
Compatible	55.44

**Table 3****Foetal losses in different couple combinations among the hill Korwas of Jaspur**

Mating types	Prenatal death	Abortions	Still Births Deaths	Post natal Children	Total no. of living compatible	Total no of pregnancies
Compatible						
O×A	3	3	3	-	71	80
O×A	2	-	3	-	53	58
O×AB	1	-	3	-	8	12
O×O	2	-	2	1	40	44
A×A	-	-	2	-	58	60
B×B	7	4	4	1	63	79
AB×AB	-	-		-	2	2
A×AB	2	-		-	7	9
B×AB	5	-	4	-	10	20
TOTAL	22	7	21	2	312	364
Incompatible						
A×B	2	4	8	-	21	35
A×O	4	2	-	-	17	23
B×O	15	7	11	4	98	135
AB×O	6	2	-	-	20	28
B×A	9	4	5	4	87	109
TOTAL	36	19	24	8	243	330

**Table 4. Reproductive performances in ABO compatible and incompatible matings**

Mating type	Prenatal deaths	Abortions	Still birds	Postnatal Deaths	Total no of living Children	total no of pregnancies
Compatible	22 (6.04)	7 (5.76)	21 (5.76)	2 (0.54)	312 (44.95)	364
Incompatible	36 (10.90)	19 (5.75)	24 (7.28)	8 (2.42)	243 (35.01)	330
Total	58 (8.35)	26 (3.74)	45 (6.48)	10 (1.45)	555 (79.97)	694