

# **AWARENESS OF TENDENCY OF DISEASE AMONG DIFFERENT BLOOD GROUPS**

**Running title:** Tendency of disease among different blood groups

## **ABSTRACT**

### **INTRODUCTION:**

Blood groups are classified into two types ABO system and Rh system and ABO system have the antigen on the RBC and the antibody of the blood and whereas Rh blood system only contain the only antigen called D antigen that is present on the surface of RBC and the criteria to find the Rh+ or Rh- is by presence or absence of D antigen and this is the prime understanding of the blood groups where the antigen and antibody and cellular units together comprise the host response to the antigen or disease and enhance it and our study is about to create the awareness among the people for different blood groups disease-causing tendency

### **MATERIALS AND METHODS:**

The questionnaire was made comprising of 15 questions using google forms and it is circulated among 100 peoples and the data was collected and evaluated the correct and wrong answers using the table

### **RESULT AND CONCLUSION:**

The results showed that more than 75% of the study population are unaware of the blood groups associated with systemic illness and further survey is needed to analyze more population.

### **KEYWORD:**

Blood groups , systemic disorders, ABO system, Rh grouping, innovative technique

## **INTRODUCTION:**

Blood group systems are usually two types: 1) ABO system and 2) Rh system. ABO system was introduced by Karl Landsteiner in 1901(1). The phenotype of a person is determined by antigens on RBC and ABO has four phenotypes. There is a coat found on RBC. The coat is usually of oligosaccharide. A person having antigen A has A blood group. A person having B antigen has a B blood group. A person with both of these A and B antigens has an AB blood group while the person with neither A nor B has an O blood group. The role of antibodies is very important(2) for A group has two subgroups namely A<sub>1</sub> and A. Rh meaning Rhesus differentiated by negative and positive signs. D is considered to be the most important antigen of it. Other antigens are C and E. It has two genes D and d. Persons with the presence of this gene have a positive Rh<sup>+</sup> factor while those who lack this have Rh<sup>-</sup> factor. A person having Rh-negative does not have anti-Rh antibodies so Rh positive is not suitable for Rh-negative recipient. Incompatibility also occurs during transfusion.

Moreover, maternal-fetal Rh incompatibility also occurs when Rh-negative woman are married to Rh-positive man and their child is Rh-positive. The child is anemic in this case which leads to stillbirth and other complications as well. Certain diseases are more profound to certain blood groups and various diseases are more potent in certain blood groups, for instance, certain blood groups like O have an increased risk of rheumatoid arthritis, and A, B, AB blood group are more prone to ischemic heart disease(3,4). Patients with deep vein thrombosis along with certain types A, B, and AB blood have an increased risk of coronary heart disease, due to increased levels of inflammatory markers and certain proteins in the blood that lead to blood clotting. Certain diseases occur in certain blood groups and the Rh system plays an important role in pathogenesis.

During pregnancy, Rh incompatibility occurs when Rh-positive mother gives nourishment to Rh-negative baby at the time of second pregnancy the baby becomes fatal due to this Rh system so there is a need for knowledge and awareness about the Rh systems and treatment(5) accordingly and it is important to know the blood groups ABO typing and Rh system. Our team has extensive knowledge and research experience that has translate into high quality publications (6).(7–20) ,(5,21–24) In our study, the prime motto is to establish and create the awareness of blood group capable and tendency to develop a disease through the mean of the survey

### **MATERIALS AND METHODS:**

The questionnaire was a self-structured questionnaire administered through google forms and circulated among 100 participants. Each output variable was collected as data and the collected data were represented in a table.

### **RESULT AND DISCUSSION:**

In our study, we made the questionnaire related to the disease that is capable of occurring in the blood group we acquired the result and tabulated it as given in table 1

**TABLE 1: Results of the study**

<b>S.NO</b>	<b>DISEASE</b>	<b>BLOOD GROUP</b>	<b>CORRECT RESPONSES</b>	<b>INCORRECT RESPONSES</b>
1.	Diabetes mellitus	B	40%	60%
2.	Cognitive impairment	AB	22%	78%
3.	Stroke and heart attack	AB	25%	75%

4.	Gastric cancer	A	34%	66%
5.	<i>H.pylori</i> infection	O	19%	81%
6.	Caries	O	53%	47%
7.	Rheumatic arthritis	A	24%	76%
8.	Systemic lupus erythematosus	O	23%	77%
9.	Sjogren's syndrome	O	19%	81%
10.	Systemic sclerosis	O	22%	78%
11.	Ankylosing spondylitis	O	19%	81%
12.	Pulmonary thromboembolis m	A	6%	94%
13.	Deep vein thrombosis	A B and AB	28%	72%
14.	Ischaemic heart disease	A B and AB	29%	71%
15.	Rh incompatibility	AB	31%	69%

Table 1 depicts the results and responses of our study. It showed that more than 75% are unaware of the blood groups and tendency of the occurring disease. In our study, 40% of the people are aware that the B blood group are prone to diabetes mellitus whereas 60% of the people are unaware(25) and the previous studies were conducted in which AB+ and B+ve blood groups are more vulnerable to diabetes mellitus(26) and for the cognitive impairment 22% have answered correctly AB is responsible for cognitive impairment(19) and 78% of people don't aware about that and in the previous studies 82% of the AB blood group are more likely to develop cognitive impairment(27).

We found that the awareness about stroke and heart attack tendency on blood groups 25% answered correctly as AB blood group has more tendency to cardiac diseases than other blood groups(28) and 75% of people aren't aware of it and in previous studies(7), 80% of AB blood groups develop heart attack and stroke(29) and when asked about blood group tendency on gastric cancer 34% of them have answered A(30) and 66% of them are unaware about it and in previous studies, 95% of the people are more prone to gastric cancer(2)

The participants of our study responded that the blood tendency on *H.pylori* infection 19% of the people have answered O(6) and 81% of people are unaware about it and in previous studies, 95% of them have answered non O blood groups capable of causing *H.pylori* infection(31) and when asked about caries 53% of people answered O blood group have more tendency in causing disease(32) and 47% of the people are unaware about it and in previous studies(33), 40% of people are affected due to O blood group in dental caries which is higher than the other blood groups(34)

The awareness of rheumatic arthritis showed that only 24% of people have answered A blood group is capable of getting the disease(17) and 76% of the people are unaware of it and in previous studies, 80% of patients with rheumatoid arthritis are found(35) and when asked about systemic lupus erythematosus tendency of disease-causing on blood group(33) 23% of the people have answered O blood group(36) and 77% of the people are unaware and in previous studies, 95.7% of the people answered O blood group(37–39).

When questioned about Sjogren's syndrome 19% of people have answered O blood group(16) and 81% of them are unaware and in previous studies, 60% of people have answered O blood group is more prevalent(40) and when asked about systemic sclerosis 22% of them

have answered O blood group(41) and 78% of people are unaware and in previous studies, O+ blood group is more prone to systemic sclerosis(42).

The participants' responses were recorded about Ankylosing Spondylitis 19% of the people have answered O blood group is more prone(43) and 81% of the people doesn't aware of it(44) and in a previous study, 70% of O blood group is more prone to ankylosing spondylitis(45) and when asked about pulmonary thromboembolism 6% of the people answered(23) A blood group(13) and 94% of the people are unaware and in previous studies, 46.1% of people have answered A blood group(46).

We obtained that 28% of the people have answered non O blood group was mostly associated with deep vein thrombosis than other blood groups(44) and 72% of the people are unaware and in previous studies, 80% of the people answered non O blood groups show deep vein thrombosis(47) and inquiry on blood group associated with Ischaemic heart disease showed that 29% of people have answered non-O blood groups correctly(48) and 71% of them are unaware and in previous studies, 85% of non-O blood groups have a higher risk of ischaemic heart disease(49) and when asked about Rh incompatibility 31% of them answered AB and 69% of them are unaware(15) and in previous studies 80% of the people of non-O blood groups mainly AB have a higher incidence of Rh incompatibility(50).

## **CONCLUSION:**

From the results, we concluded that more than 75% of the study population are unaware of the blood groups associated with systemic illness. It shows a need of awareness and teaching programmes to improve the knowledge on blood group association on systemic disorders.

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