



Knowledge and Awareness on Tendency of Disease in Different Blood Groups among General Population- A Survey

M. Vignesh ^a, Palati Sinduja ^{a*} and R. Priyadharshini ^a

^a Department of Pathology, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai-77, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: 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, antibody and cellular units together comprise the host response to the antigen or disease and enhance it. Our study is 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 by Chi-square test using SPSS VERSION 26. (p<0.005)

Results: 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.

Conclusion: From the results, we concluded that certain programs and initiatives are needed to overcome the disease caused by the blood groups and our study focuses mainly on improving the knowledge of the individual about the knowledge and awareness of disease in blood groups.

[≡] Assistant Professor;

*Corresponding author: E-mail: sindujap.sdc@saveetha.com;

Keywords: Blood groups; systemic disorders; ABO system; Rh grouping; innovative technique.

1. INTRODUCTION

Blood group systems are antigenic determinants usually comprising of the red blood cell antigens whose specificity is controlled by specific set of gene or group of genes.

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 A₁ and A₂. 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+ factor while those who lack this have Rh- 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 ICAM-1, vascular adhesion molecule 1 (VCAM-1), and E-selectin in the blood that lead to heart diseases occur in certain blood groups and the Rh system plays an important role in pathogenesis.

Usually Rh antigens are present on the Red blood cells and those who have this antigen they are Rh positive and those who don't have the antigen are Rh negative and it primarily it cause fatality in the pregnancy [5] 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.

2. 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 as a piechart and statistically analysed using spss version 26.

3. RESULTS

In our study, we made the questionnaire related to the disease that is efficient of occurring in the blood group we acquired the result and made the piechart.

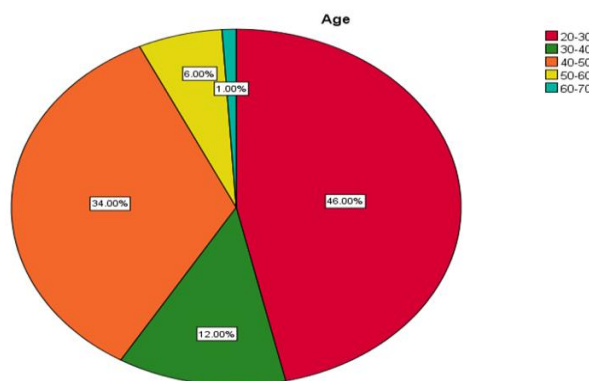


Fig.1. piechart showing the percentage distribution for the age

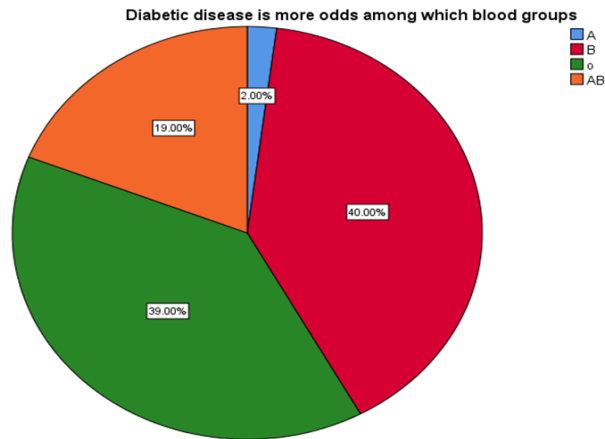


Fig. 2. Piechart showing the percentage for the questions Diabetic disease is more odds among which blood groups in which 2% of them had answered A,40% of them had answered B,39% of them had answered O,19% of them had answered AB

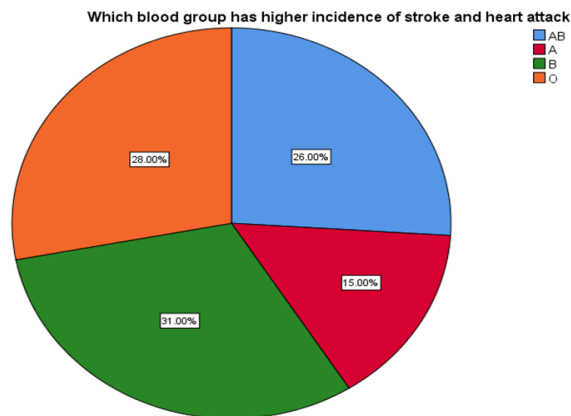


Fig. 3. pie chart showing the percentage distribution for the question which blood group has higher incidence of stroke and heart attack in which 26% of them had answered AB,15% of them had answered A,31% of them had answered B and 28% of them had answered O

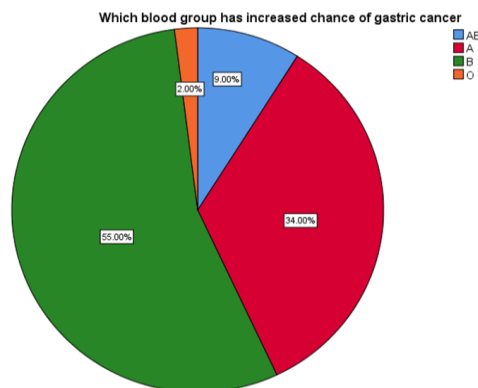


Fig. 4. Piechart showing percentage distribution for the question which blood group has increased chance of gastric cancer in which 9% of them had answered AB,34% of them had answered A,55% of them had answered B and 2% of them had answered O

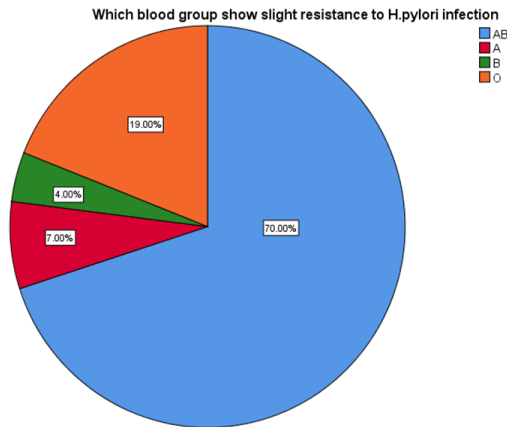


Fig. 5. Piechart showing percentage distribution for the question which blood group shows slight resistance to H.pylori infection in which 70% of them had answered AB,7% of them had answered A,4% of them had answered B and 19% of them had answered 19%

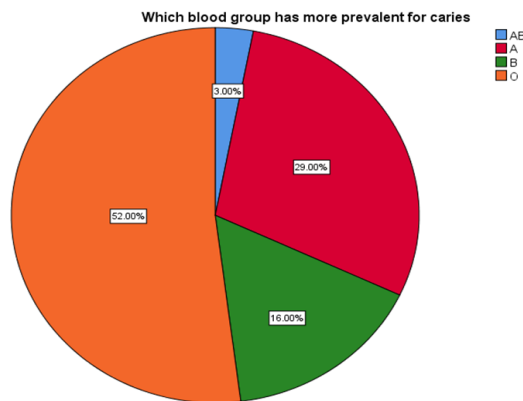


Fig. 6. Piechart showing percentage distribution for the question which blood groups has more prevalent for caries in which 3% of them had answered AB,28% of them had answered A,16% of them had answered B and 52% of them had answered O

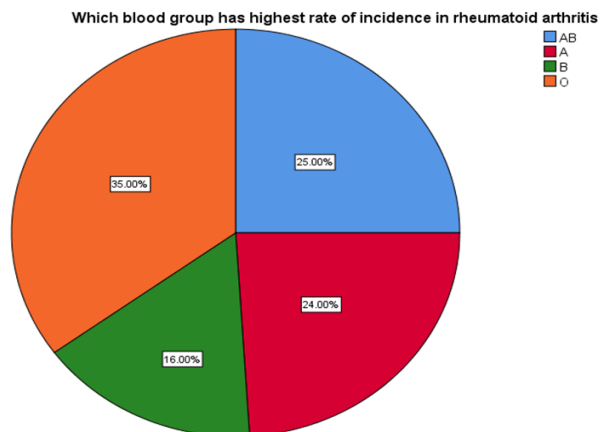


Fig. 7. Piechart showing percentage distribution for the question which blood group has highest incidence in rheumatoid arthritis in which 25% of them had answered AB,24% of them had answered A,16% of them had answered B and 35% of them had answered O

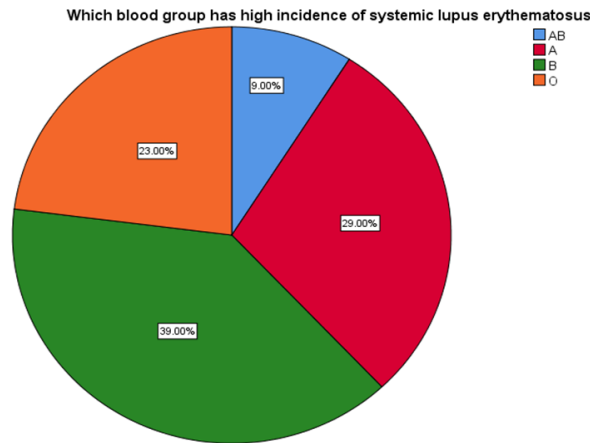


Fig. 8. Piechart showing the percentage distribution for the question which blood group has high incidence of systemic lupus erythematosus in which 9% of them had answered AB,29% of them had answered A,39% of them had answered B and 23% of them had answered O

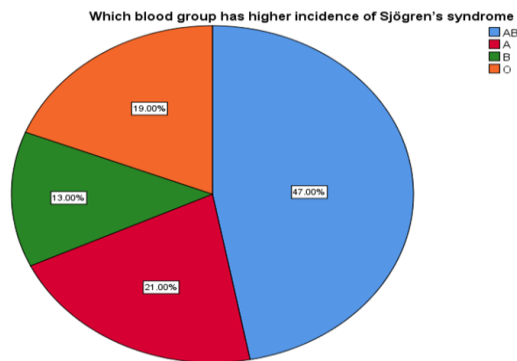


Fig. 9. piechart showing the percentage distribution for the question which blood group has higher incidence of sjogrens syndrome in which 47% of them had answered AB,21% of them had answered A,13% of them had answered B and 18% of them had answered O

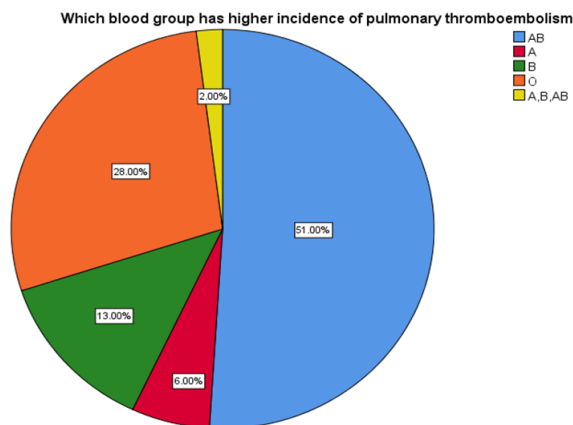


Fig. 10. Piechart showing the percentage distribution for the question which blood group has higher incidence of pulmonary thromboembolism in which 51% of them had answered AB blood group ,6% of them had answered A blood group ,13% of them had answered B blood group ,28% of them had answered O blood group and 2% of them had answered A,B,AB blood group

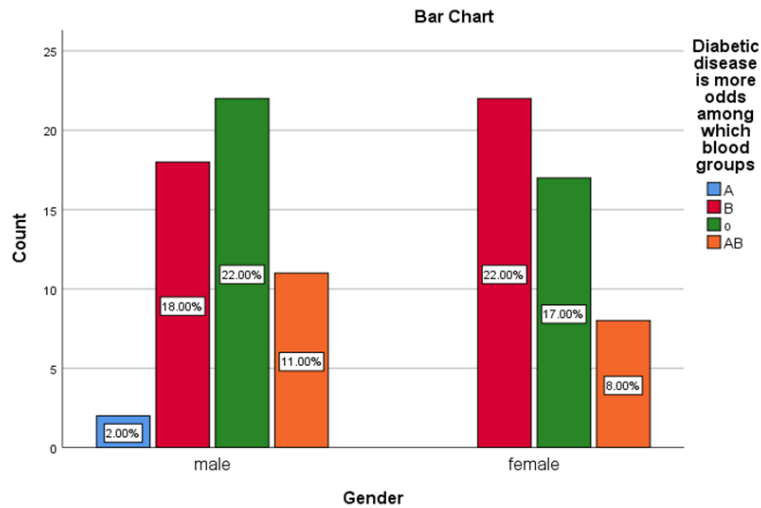


Fig. 11. Barchart showing the percentage distribution of gender and for the question Diabetic disease is more odds among which blood groups pvalue=0.367>0.05 which is statsitically significant

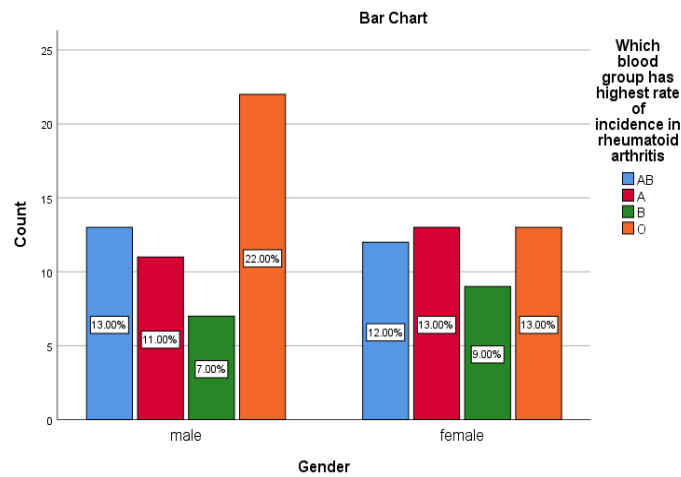


Fig. 12. Barchart showing the percentage for the gender and for the question which blood group has highest rate of incidence in rheumatoid arthritis where p value=0.490>0.05 which is statistically insignificant

From fig 1 it shows the percentage distribution for the age and from fig 2 for the question Diabetic disease is more odds among which blood groups in which 2% of them had answered A,40% of them had answered B,39% of them had answered O,19% of them had answered AB and from fig 3 For the question which blood group has higher incidence of stroke and heart attack in which 26% of them had answered AB,15% of them had answered A,31% of them had answered B and 28% of them had answered O and from fig 4 for the question which blood group has increased chance of gastric cancer in

which 9% of them had answered AB,34% of them had answered A,55% of them had answered B and 2% of them had answered O and From fig 5 for the question which blood group shows slight resistance to H.pylori infection in which 70% of them had answered AB,7% of them had answered A,4% of them had answered B and 19% of them had answered 19% and From fig 6 for the question which blood groups has more prevalent for caries in which 3% of them had answered AB,28% of them had answered A,16% of them had answered B and 52% of them had answered O.

Table 1. Results of The Study

S.no	Disease	Blood group that Are more prevalent Among blood groups got by analysing the studies	Correct responses Obtained from the individuals	Incorrect responses obtained from the individuals
1.	Diabetes mellitus	B	40%	60%
2.	Cognitive impairment	AB	23%	77%
3.	Stroke and heart attack	AB	26%	74%
4.	Gastric cancer	A	34%	66%
5.	<i>H.pylori infection</i>	O	19%	81%
6.	Caries	O	52%	48%
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 thromboembolism	A	6%	94%
13.	Deep vein thrombosis	A B and AB	27%	73%
14.	Ischaemic heart disease	A B and AB	28%	72%
15.	Rh incompatibility	AB	32%	68 %

From fig 7 for the question which blood group has highest incidence in rheumatoid arthritis in which 25% of them had answered AB,24% of them had answered A,16% of them had answered B and 35% of them had answered O and From fig 8 for the question which blood group has high incidence of systemic lupus erythematosus in which 9% of them had answered AB,29% of them had answered A,39% of them had answered B and 23% of them had answered O and From fig 9 for the question which blood group has higher incidence of sjogrens syndrome in which 47% of them had answered AB,21% of them had answered A,13% of them had answered B and 18% of them had answered and From fig 10 for the question which blood group has higher incidence of pulmonary thromboembolism in which 51% of them had answered AB blood group ,6% of them had answered A blood group ,13% of them had answered B blood group ,28% of them had answered O blood group and 2% of them had answered A,B,AB blood group and From fig 11 Barchart showing the percentage distribution of gender and for the question Diabetic disease is more odds among which blood groups and From fig 12 Barchart showing the percentage for the gender and for the question which blood group

has highest rate of incidence in rheumatoid arthritis.

Table 1 depicts the results and responses of our study. Our study result showed that average of 73% Peoples are unaware of the blood groups and tendency of the occurring disease.

4. DISCUSSION

In our study among the responded people 40% of the people are aware that the B blood group are prone to diabetes mellitus whereas 60% of the people are unaware;Ramesh Anita and Arumugam paramasivam has done a study on m6A readers YTHDF1 and YTHDF3 aberrations associated with metastasis and predict poor prognosis in breast cancer patients [6,13,14,12] and In previous studies were conducted in which AB+ve and B+ve blood groups are more vulnerable to diabetes mellitus [25] and In our study for the question cognitive impairment 23% have answered correctly AB is responsible for cognitive impairment and 77% 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 [26] and We found that the awareness about stroke and heart attack tendency on blood groups 26% answered

correctly as AB blood group has more tendency to cardiac diseases than other blood group and our people jayaseelan vp and paramasivam worked extensively on emerging role of NET inhibitors in cardiovascular disease [7] and our people even worked extensively on A.baumannii [9,10,15,19,20] and 74% of people were not aware of it and In previous studies, 80% of AB blood groups develop heart attack and stroke [27] and when asked about blood group tendency on gastric cancer 34% of them have answered blood group A [28] 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 groups that are susceptible for *H.pylori* infection 19% of the people have answered O, 81% of people are unaware about as we can say that *H.pylori* infection is not caused by blood groups but the O blood group has an expression of secretor phenotype that increases the number of receptor for the *H.pylori* infection; In previous studies, 95% of them have answered A,B,AB blood groups capable of causing *H.pylori* infection [29] and our peoples done extensive research on viruses [11,16,17,18] and when asked about caries 52% of people answered O blood group have more tendency in causing disease and 48% of the people are unaware about it and In previous studies [30], 40% of people are as were due to O blood group in dental caries which is higher than the other blood groups [31].

The awareness of rheumatic arthritis showed that only 24% of people have answered A blood group is capable of getting the disease; 76% of the people are unaware of it.

In previous studies, 80% of patients with rheumatoid arthritis are found on A blood group [32].

When asked about systemic lupus erythematosus tendency of disease-causing on blood group [30] 23% of the people have answered O blood group; 77% of the people are unaware and In previous studies, 95.7% of the people answered O blood group [33–35].

When questioned about Sjogren's syndrome 19% of people have answered O blood group; 81% of them are unaware and our peoples found skeletally anchored forsus fatigue resistant

device for correction of class 2 malocclusions [21,22].

In previous studies, 60% of people have answered O blood group is more prevalent.

When asked about systemic sclerosis 22% of them have answered O blood group; 78% of people are unaware.

In previous studies, O+ blood group is more prone to systemic sclerosis.

The participants' responses were recorded about Ankylosing Spondylitis 19% of the people have answered O blood group is more prone and 81% of the people doesn't aware of it and our peoples have done extensive research on local anaesthetic agent and about blended module based teaching in biostatistics and research methodology and evaluation of adhesion of *S.mutans* plaque accumulation on zirconia ad stainless steel crowns [23,24,5] and In a previous study, 70% of O blood group is more prone to ankylosing spondylitis [36] 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. We obtained that 27% of the people have answered A,B,AB blood groups was mostly associated with deep vein thrombosis and 72% of the people are unaware about it and In previous studies, 80% of the people answered non O blood groups show deep vein thrombosis and Inquiry on blood group associated with Ischemic heart disease showed that 28% of people have answered non-O blood groups correctly, 72% of them are unaware; In previous studies, 85% of non-O blood groups have a higher risk of ischaemic heart disease and when asked about Rh incompatibility 32% of them answered AB; 68% of them are unaware and In previous studies 80% of the people of non-O blood groups mainly AB have a higher incidence of Rh incompatibility.

The limitation of my study is that large demographic population is not included in our study and in future we are trying this type of study to large demographic group of peoples to build a good conscious knowledge about blood group

5. CONCLUSION

From the results, we concluded that certain programs and initiatives are needed to overcome

the disease caused by the blood groups and our study focuses mainly on improving the knowledge of the individual about the knowledge and awareness of disease in blood groups.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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