

[Research article]

THE DISTRIBUTION PATTERN OF ABO AND RHESUS D BLOOD GROUP AMONG FRESH STUDENTS OF OGUN STATE COLLEGE OF HEALTH TECHNOLOGY, ILESE-IJEBU

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Abstract

The distribution pattern of ABO and Rhesus D blood groups varies from race to race. This research work assessed the distribution pattern of ABO and Rhesus D blood grouping among fresh students of Ogun State College of Health, Ilese-Ijebu. The blood samples were collected from the study population into disposable sample bottles and then analyzed using forward grouping with the tile method. The Results showed that blood group O had the highest percentage of 47% followed by blood group A at 31%, blood group B had 16% and blood group AB with the lowest percentage of 6%. And, O Rh. D positive had the highest percentage 45%, which is followed by A Rh D positive with a percentage frequency of 31%, B Rh D positive has 16%, AB Rh D positive with 6% and O Rh D negative has 2%. The distribution of the ABO and Rhesus (D) blood groups is in agreement with the findings of previous studies; Blood group O is the most prevalent and AB the least prevalent, and there is high Rhesus (D) positivity in the population. These findings justify the further need for blood typing and proper documentation for patient management in the study area.

Keywords: Blood, Management, Patients , Population and Rhesus

1. Introduction

The human red blood cell (RBC) membrane is complex and contains a significant number of blood group antigens, the most clinically significant being the ABO and the Rhesus antigens¹. The blood group system of ABO is based on the identification of antigen A and antigen B and the four major groups are A, B, AB and O) which existed based on these antigens individually as A or B, and jointly as doubling AB or non-presence of both antigens A and B, being denoted as O. Individuals who have the antigens A and B on their red cells lack the group-specific agglutinins in the serum². The D antigen is the most important determinant of the Rhesus blood group classification. Individuals who have the D antigen on their red cells are known as Rhesus positive while those without antigen D in their RBCs are Rhesus negative³. The Antibodies to Rh D protein develop after an individual encounters Rh D antigens through transfusion, pregnancy and/or organ transplantation. The Anti-Rh D (or anti-D) antibodies usually antagonize Rh D-positive red cells and can lead to blood killing. The most common cause is rhesus incompatibility when antibodies from an Rh-negative mother target and destroy 'foreign' red blood cells from an Rh-positive fetus⁴. The distribution of ABO and Rhesus blood groups differs from race to race in a population. Certain types of blood groups are more related to a particular disease and environment. Hence, their knowledge can be used for establishing prevention strategies⁵. Therefore it becomes increasingly important to obtain knowledge and information about blood groups in any population⁶. Hence, the distribution pattern of ABO and Rhesus D blood group among fresh students of Ogun State College of Health Technology, Ilese-Ijebu, was investigated.

2. Methods

2.1 Research design

The research work is a cross-sectional experimental design that assessed the distribution of genotype and blood group among freshers in Ogun State College of Health Technology, Ilese-Ijebu. Study area

2.2 Study area

The study location is Ogun State College of Health Technology, Ilese-Ijebu. It is located in Ijebu North-East local government area in Ogun State.

2.3 Study population

The study population is made up of one hundred (100) fresh students of Ogun State College of Health Technology, Ilese-Ijebu.

2.4 Sample size /sampling technique

Sample size /sampling technique A total of one hundred fresher's from Ogun State College of Health, Ilese-Ijebu were randomly selected to constitute the sample size.

2.5 Sample collection

Sample collection Two to five milliliters of blood samples were collected aseptically via vein puncture using a disposable sterile syringe and needle.

2.6 Sample analysis / Principle of ABO and Rh blood grouping

It was based on the Antigen-antibody reaction, where antigens on the surface of RBCs react with the corresponding antibodies coated in the anti-sera which brings about agglutination. They were observed macroscopically for agglutination and results were recorded in comparison with the controls. 2. Results and discussion Blood samples were collected from one hundred (100) fresh students in Ogun State College of Health, Ilese-Ijebu, into EDTA bottles and then analyzed for the ABO blood group and Rhesus. Results from this present study showed that the mean age of the study participants is 20.7 ± 2.0 with the age range of 17 to 28years.

3. Results and discussion

Table 1. Age group distribution of the participants

Age (Years)	Frequency	Percentage (%)	Valid Percentage (%)	Cumulative Percentage (%)
17-20	58	58	58	58
21-24	24	24	24	82
25-28	18	18	18	100
Total	100	100	100	

Table 1 shows that 58% of the study participants are between the ages of 17-20yrs, 24% are between the ages of 21-24yrs, and 18% are between the ages of 25-28yrs. From the table above, the majority of the study participants are within the age group of 17-20yrs representing 58%.

Table 2: Sex distribution of the participants

Sex	Frequency	Percentage (%)	Valid Percentage (%)	Cumulative Percentage (%)
Male	22	22	22	22
Female	78	78	78	100
Total	100	100	100	

Table 2 showed that 22% of the study participants are male while 78% are female, majority of the study participant are female representing.

Table 3: The distribution of ABO blood group in relation to the age group of the study population (n=100)

Age (Years)	Frequency examined	Blood group ABO				Total
		A	B	AB	O	
17-20	58	17(17%)	7(7%)	2(2%)	32(32%)	58(58%)
21-24	24	12(12%)	4(4%)	-	8(8%)	24(24%)
25-28	18	2 (2%)	5(5%)	4(4%)	7(7%)	18(18%)
Total	100	31 (31%)	16(16%)	6(6%)	47(47%)	100 (100%)

Table 3 showed the distribution of the ABO blood group in relation to the age group of the study population. Within the age group, 17-20yrs; 17% had blood group A, 7% had blood group B, 2% had blood group AB, and 32% had blood group O. Among the age group 21-24years; 12% had blood group A, 4% had blood group B, (none) had blood group AB, 8% had blood group O. Among

age group 25-28years; 2% had blood group A, 5% had blood group B, 4% had blood group AB and 7% had blood group O.

Table 4: Rhesus (Rh) groups distribution among the study population (N=100)

ABO	Rh⁺	Rh⁻	Total
A	31(31%)	-	31(31%)
B	16(16%)	-	16 (16%)
AB	6(6%)	-	6(6%)
O	45(45%)	2(2%)	47 (47%)
Total	98(98%)	2(2%)	100(100%)

Table 4 showed the Rhesus factor among the fresh in Ogun State College of Health Technology, Ilese-Ijebu, 31% of the students have A Rhesus D positive, 16% have B Rhesus D positive, 6% have AB Rhesus D positive, 45% have O Rhesus D positive and 2% O Rhesus D negative. From the table above, the majority of the study participants (98%) have Rhesus D positive. In other studies, blood group O has been found to be the most predominant blood group. This present study is in agreement with the finding of 2 and among the Caucasians in the United States, the distribution was, group O, 47%, group A, 41%, group B, 9% and group AB, 3%). In Lagos, Nigeria, blood group O is 55.3%, blood group A, is 25.3%, blood group B is 16.7% and blood group AB is 2.7%⁷. In this study, blood group AB has the least percentage; which is similar to other previous studies. Rhesus D distribution also varies within any group of the human population. In this study, it was observed that blood group O Rh D positive had the highest percentage 45%, which is followed by A Rh D positive with a percentage frequency of 31%. B Rh D positive has 16%, AB Rh D positive 6% and O Rh D negative has 2%. This study showed a total percentage of Rh D positive distribution of 98(98%), this is similar to the study of Adeyemi and Soboyejo (2016) which was 97.7%.

Conclusion

The distribution of the ABO, and the Rhesus (D) blood groups are in concurrence with the findings of previous studies; Blood group O is the most prevalent and AB the least prevalent, and there is high Rhesus (D) positivity in the population. It is recommended that medical professionals should be augmented by the knowledge of the distribution of ABO and Rh blood groups at local and regional levels for effective management of blood banks and safe blood transfusion services.

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