



FREQUENCY DISTRIBUTION OF ABO AND RH BLOOD GROUP AMONG THE MEDICAL STUDENTS OF ASSAM MEDICAL COLLEGE, DIBRUGARH, ASSAM

Physiology

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ABSTRACT

The whole human populations share the same blood group systems; although they differ in the frequencies of specific types. The incidence of ABO and Rh groups varies markedly in different races, ethnic groups and socioeconomic groups in different part of the world. The frequencies of ABO and Rh blood groups vary from one population to another and time to time in the same region, so this study was conducted to find out the frequency of different Blood Groups among the first year medical students of Assam Medical college. The study was conducted from 2006 to 2016. 1806 students participated in the study. In the present study it was seen that the predominated blood group was O followed by B, A and then AB in both the sexes. The result of this study which depicts the frequency distribution of the M.B.B.S students helps in preparing a database for the blood banks and also to create awareness as to which blood groups should be stored and given importance.

KEYWORDS

blood group system, ABO, Rh groups

Introduction:-

A blood type (also called a blood group) is defined as the classification of blood based on the presence or absence of inherited antigenic substances on the surface of red blood cells (RBCs). A series of related blood types constitutes a blood group system. Thirty-five major human blood group systems (including the ABO and Rh- systems) were recognised by the International Society of Blood Transfusion (ISBT) in October 2012. Whole of the human population possesses the same blood group systems, only their frequencies varies markedly in different races, ethnic groups and socioeconomic groups in different part of the world. The frequencies of these blood groups vary from one population to another and time to time even in the same region. The need for blood group prevalence studies is multipurpose, as besides their importance in evolution, their relation to disease and environment is being increasingly sought in modern medicine.^{2,3,4,5} The knowledge of distribution of ABO and Rhesus (Rh) blood groups at local and regional levels is helpful in the effective management of blood banks and safe blood transfusion services.⁶ Hence this study was undertaken to find the frequency of different Blood Groups among the first year medical students of Assam Medical college, Dibrugarh so as to prepare the database for the blood bank for this institution and to create awareness for who is exposed to which of the diseases.

Materials and Method:-

The present study has been undertaken in the 1st semester students in the Hematology Lab of Department of Physiology, Assam Medical College, Dibrugarh. The study was conducted from 2006 to 2016. Although each year 170 are admitted in the first year M.B.B.S, but only 1806 students participated in the study. Informed consent was taken prior to the procedure. The study was approved by the Ethical Committee of the College. Blood Grouping was carried out by using commercially prepared Antisera - Anti A & Anti B, and for ABO grouping and Anti Rh (Anti D) for Rh Grouping. For the test a drop of capillary blood was taken to determine blood groups. Blood was collected by a finger prick with a sterile needle with all aseptic precautions. Cell suspension was prepared by adding one drop of blood into 8 – 10 drops of Normal Saline in a watch glass. For the test a drop of each of the Anti sera, Anti A, Anti B, and Anti D were placed on separate glass slides. One drop is taken from each student's cell suspension and mixed with each Antisera (Anti A, Anti B, and Anti D) using separate glass rods. The blood groups were determined on the basis of agglutinations immediately or after 8 to 10 minutes. The agglutination in blood drop A was observed as group A, and agglutination in the blood drop B as group B. The agglutination in both drops was observed as group AB, and if both blood drops were not agglutinated, it was considered as group O. In case of doubt, the test was examined under a microscope. The data were analyzed by using Microsoft Excel and Statistical Package of Social Sciences (SPSS version 20.0). Categorical data analysis for comparison of percentages was performed with cross table analysis.

Results:-

A total 1806 students participated in the study in which 1052 (58.2%) were males and 754 (41.7%) were female students as shown in figure 1. Table 1 shows the distribution of various blood groups in numbers as well as in percentage form in males. It is seen that in males blood group O+ve showed the highest prevalence and blood groups A-ve, B-ve and AB-ve showed a similar pattern of prevalence with lowest prevalence rate. The distribution of various blood group in number and percentage in females is shown in table 2. The table shows that blood group O+ve has the highest prevalence and blood group AB-ve has the lowest prevalence. As shown in table 3 and figure 2 the blood group prevalence in the study population is O>B>A>AB

Figure 1:- Showing the distribution of sex among the study population

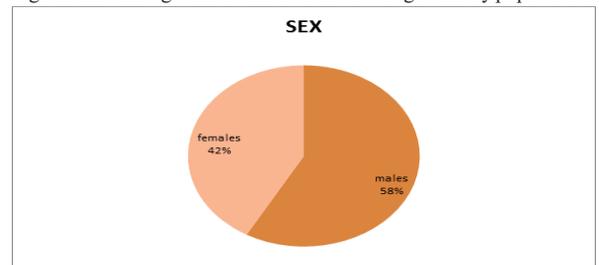


Table 1: Table showing the distribution of blood groups in males

BLOOD GROUPS	MALE (number)	percentage
A+	232	12.84%
A-	4	0.22%
B+	338	18.7%
B-	4	0.22%
AB+	74	4.09%
AB-	4	0.22%
O+	376	20.82%
O-	20	1.10%

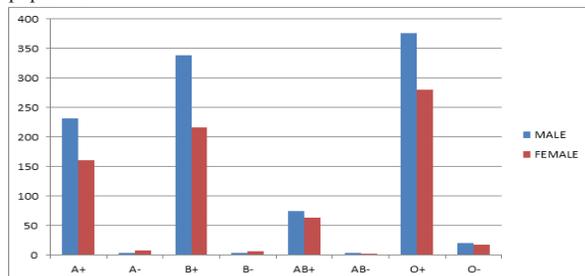
Table 2:- Table showing the distribution of blood groups in females

BLOOD GROUPS	FEMALE (number)	percentage
A+	160	8.86%
A-	8	0.44%
B+	216	11.96%
B-	6	0.33%
AB+	64	3.54%
AB-	2	0.11%
O+	280	15.5%
O-	18	0.99%

Table 3:- showing the distribution of blood groups in the study population

BLOOD GROUPS	Study population
A+	392
A-	12
B+	552
B-	12
AB+	138
AB-	6
O+	658
O-	36

Figure 2:- showing the distribution of blood groups in the study population



Discussion:-

In the present study it was seen that the predominated blood group was O followed by B, A and then AB. Similar findings were reported by Ranjana Tiwari et al⁷, Sidhu S et al⁸, Periyavan S et al⁹ and Reddy KSN et al¹⁰. Previous studies showed that in countries like Australia¹¹, Britain¹³ and USA¹² blood group 'O' is the commonest blood group. In studies carried out by Warghat et al¹⁴ and Rai et al¹⁵ and Purushottam A. Giri et al¹⁶ in different parts of India blood group B was found to be most prevalent. Thus, the gene segregation for ABO systems always followed a particular pattern for its distribution in different ethnic groups with exceptional cases. However, in the studies conducted on Nepalese medical students by Pramanik and Pramanik¹⁷ and on a report by Tomilin and Gurtovaia¹⁸ on a population of the Russian Federation, blood group A was the most prevalent blood group. Contradictions are probably due to immensely different sample sizes. In our study 96.35% were Rh positive and only 3.55% were Rh negative. In the male subjects 97.15% were Rh+ve and 2.85% were Rh -ve and in females 95.23% were Rh+ve and 4.77% were Rh -ve. These figures are similar to the other studies carried out in different part of India^{14,15,19,20}. Internationally, the distribution and frequency of the Rh-positive group in the Guinea population is 95.9%²¹. In the Nigeria and Nepal, 95.2% and 96.7% belong to the Rh-positive respectively^{12,17}, while in Pakistan and Saudi Arabia, 93% of blood donors were found to be Rh-positive^{23,24}, which were also similar to our present study.

Conclusion:-

The result of this study which depicts the frequency distribution of the M.B.B.S students helps in preparing a database for the blood banks and also to create awareness as to which blood groups should be stored and given importance. Knowledge of blood group distribution is also important for various clinical studies, reliable geographical information and for forensic studies. The information of blood group is useful for medical diagnosis, genetic information, genetic counseling and also for the general well-being of individuals. The blood group database, not only provides data about the availability of human blood in case of regional calamities, but also serves to give insight into possibilities of future burden of diseases

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