



Distribution Pattern Of ABO And Rh Blood Group Among Women Students Of NKR Government College, Namakkal, Tamil Nadu

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Abstract: Study was taken up to document the distribution of the ABO and rhesus (Rh) blood groups in a random sample of College students from Namakkal Kavignar Ramalingam Government Arts College for Women, Namakkal to understand the basic concept of the ABO blood group system of around 600 students through a survey. Among the 600 samples, 222 (37%) samples were showed O^{+ve} .which showed highest rate of available blood group . The next highest available rate is B^{+ve} 216 samples (36.5%). But in controversy B^{-ve} and AB^{-ve} showed only 2 samples each (0.33 %). Interestingly only one sample showed A₁B^{+ve} (0.16%) and another one A₂B^{+ve} (0.16%) result. This is rare blood group. This result mentioned that in case of emergency, the availability chance is very less for B^{-ve}, A₁B^{+ve} and A₂B^{+ve} blood groups. We can easily get the O^{+ve} and B^{+ve} blood group. A^{+ve} gives the Moderate result like 92 samples (15.33%). Apart from the above mentioned blood groups , remains blood group also showed very rare and less availability like A₁^{-ve} (05%), A₁^{+ve} (1.16%), O^{-ve} (1%) and A^{-ve} (1.33%). But there is no specific changes in their immunity as well as biological significance.

Index Terms – ABO blood group, Rh typing, distribution pattern.

I. INTRODUCTION

We all well aware with our blood groups. It plays a very important role when it comes to having a blood transfusion. Knowing our blood group helps us to select appropriate blood for transfusion either during any emergencies or accidents. A human blood cell includes red blood cells, white blood cells, and platelets. All these blood cells play a significant role in transportation, protection and regulation. Blood groups are mainly determined by the presence or absence of antigens and antibodies on the surface of our red blood cells or erythrocytes. The blood transfusion from the wrong blood group can be life-threatening. The four major blood groups are: A, B, AB and O. The blood grouping system was discovered in the year 1901 by Karl Landsteiner- an Austrian biologist and immunologist. Study was taken up to document consist the distribution of the ABO and rhesus (Rh) blood groups in a random sample of College students from Namakkal Kavignar Ramalingam Government Arts College for Women, Namakkal to understand the basic concept of the ABO blood group system of around 600 students through a survey

About study aim

The ABO blood grouping is one among the oldest and most important health parameter, especially in relation to blood transfusion. It is also important in genetics and other heredity determination. In Nigeria Motor vehicle driving license and national passport are issued on the basis of one's blood group determination (Mannir, 2014). It is also one of the identification of the national identification programme. Despite all these, many people are ignorant of this important health parameter. For instance, at one time in a class of over 80 students, only 15 of them knew their blood groups. It is not only among students, even some of the faculty do not know their blood groups. It is this ignorance that motivates this study and will hoped that at the end of this study, the blood groups among the students will be determined and the predominant blood group will be notified.

About the College (Study Area)

Namakkal Kavignar Ramalingam Government Arts College is a Women's college located in Namakkal District of Tamil Nadu. It was established in the year 1969 by the name of our famous Tamil Royal Poet of Thiru. V. Ramalingam Pillai. The college is affiliated with Periyar University and around 3100 students are studying in this college. The college campus is housed on a spacious land, spread over 20 acres has more than 1,000 trees. The college offers 13 Undergraduate and 11 post graduate courses to the women candidate all over Tamil Nadu. College is located at latitude 11.22126 and longitude 78.16524. It is part of Asia and the northern hemisphere.



II. MATERIALS AND METHODS

Survey & Documenting

The study was conducted June 2025 to September 2025 through a survey among 600 students of our college randomly. The students those who had doubt about their blood group were screened their blood group in Microbiology laboratory using ABO & Rh Blood grouping kit.

III. RESULT AND DISCUSSION

Sex or age has no relationship with blood group. The Rh+ blood is the dominant blood in this survey and account for 97%. Blood group O+ is the predominant blood group (37%) followed by B+ (36.5%), A+ (15.33%), AB+ (6.16%), A- (1.33%) and A₁+ (0.88%). A- and AB- were least encountered in the survey. Plus or minus attached to blood groups indicate Rhesus positive and Rhesus negative respectively. People having the rhesus negative blood are very few in this survey. These categories of people should be advised to lead a very cautious life as their type of blood is very difficult to come by.

Table 1: Distribution of various blood group of our study

S No	Blood Group	No of students	Percentage of result (%)
1	A ^{+ve}	92	15.33
2	B ^{+ve}	219	36.5
3	O ^{+ve}	222	37
4	AB ^{+ve}	37	6.16
5	A ^{-ve}	8	1.33
6	B ^{-ve}	2	0.33
7	A ₁ ^{+ve}	7	1.16
8	A ₁ ^{-ve}	3	0.5
9	O ^{-ve}	6	1
10	A ₁ B ^{+ve}	1	0.16
11	A ₂ B ^{+ve}	1	0.16
12	AB ^{-ve}	2	0.33
Total		600	99.99%

The present study was carried out to determine the frequency and distribution of ABO and Rh blood groups among UG and PG Students. The Phenotype and Genotype frequencies of ABO and Rh blood group varies widely across different study population (Raja KA *et al.*,2016). ABO and Rh blood group distributional studies are very important in the field of blood transfusion, transplantation of organs, human evolution and forensic studies. Some blood groups are susceptible to certain diseases like Ulcers UTI, diabetes mellitus etc (Chandrika Rao *et al.*, 2014) therefore blood groups are known to be in genetic association with some diseases.

Various studies have stated that individuals with A blood group were prone to heart diseases like venous thrombosis, Ischemic heart disease and atherosclerosis but O blood group individuals were protective to such diseases. Some scientists identified that ovarian cancers are more common in B blood groups. Also gastric ulcers are least noticed in O groups than other blood groups (Swamy CM *et al.*, 2012).

The genetic history of an individual can be known by studying the blood group (Sokolov,1993) In my study O blood group were more common ,followed by B blood group with the frequency 38.29% and 36.17% respectively, Which was similar to the studies of (Krishnan *et al.*, 2014; Periyavan *et al.*, 2010; Roa and Shetty ,2014; Hemalatha and Bhagya, 2015). Similar to this study, (Das PK Nair *et al.*,; Girish *et al.*, 2011; Nag *et al.*, 2012; Mallikarjuna *et al.* ,2012) found that the commonly observed blood group ws O followed by B, A, AB. Vinutha *et al.*, (2018) observed that B blood group was most common followed by O blood group.

Figure 1: Frequency of ABO blood group of Rh positive phenotypes in our study

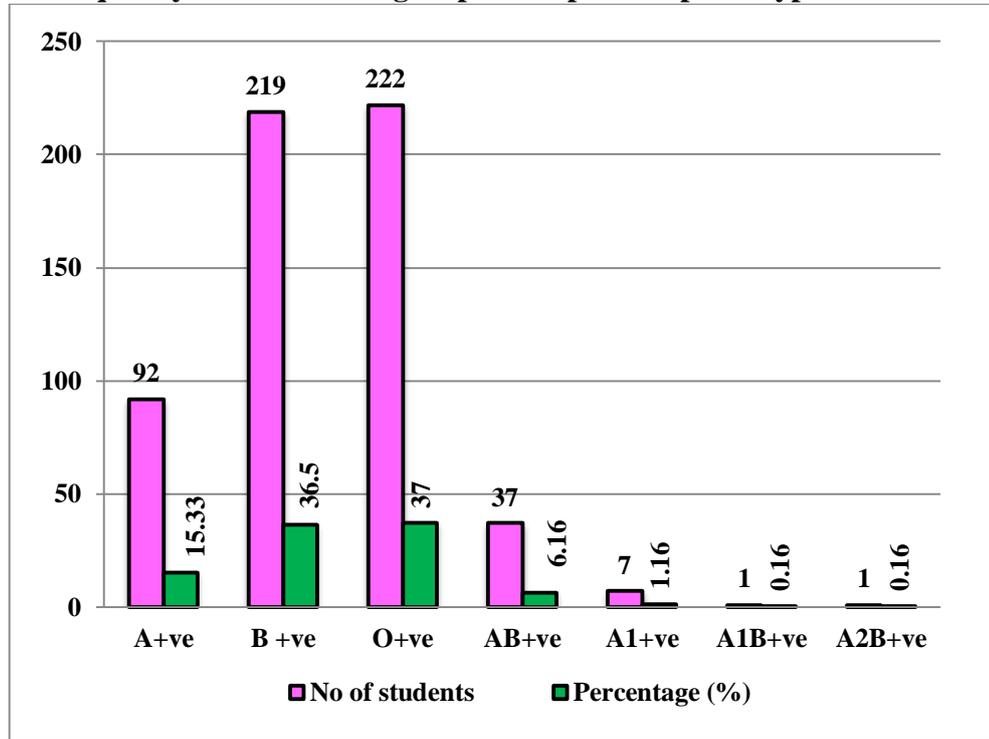
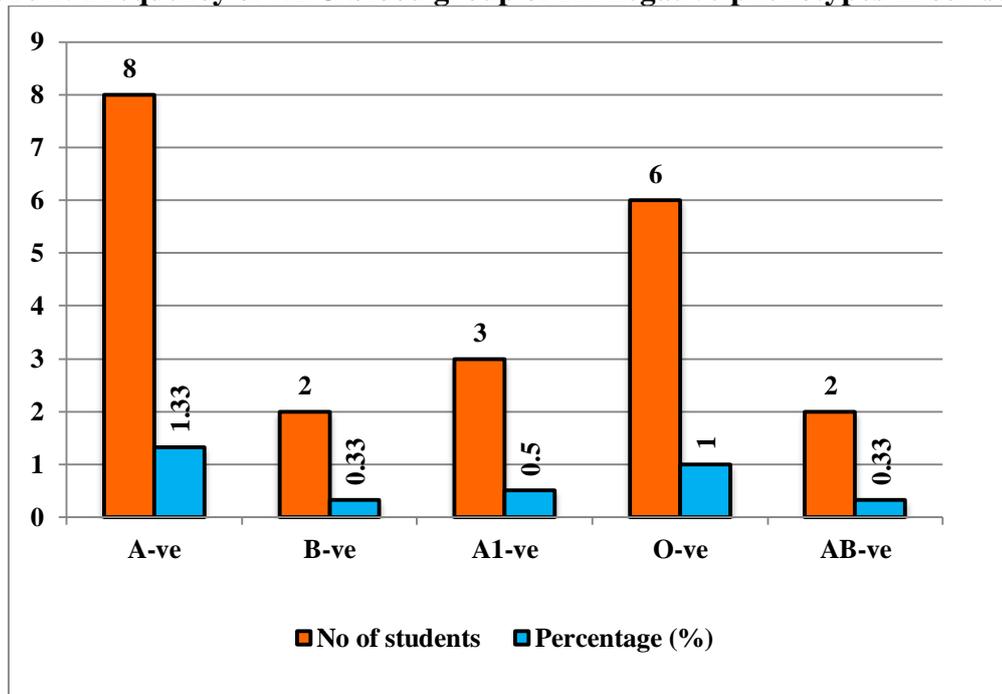


Figure 2: Frequency of ABO blood group of Rh negative phenotypes in our study



Swamy *et al.* (2012) conducted a study among the great eastern medical students of Andhra Pradesh and confirmed that O blood group was most dominant and commonest. Studies in North India also proved that O blood group was predominant followed by B, A and AB. (Das *et al.*, 2001; Reddy and Sudha 2009; Periyavan *et al.*, 2010). Rh positive was found to be more dominant than Rh negative, most literature indicates that 99% Asians were Rh positive (Ganong, 1993). In my study also Rh positive blood group was more frequent 95.98% and Rh negative group was 4.01%, which was similar to that of studies done by (Pramanik, T., Praminic, S., 2000) among Nepalese Medical students.

Figure 3: Distribution of ABO and Rh blood phenotypes in numbers (600 students)

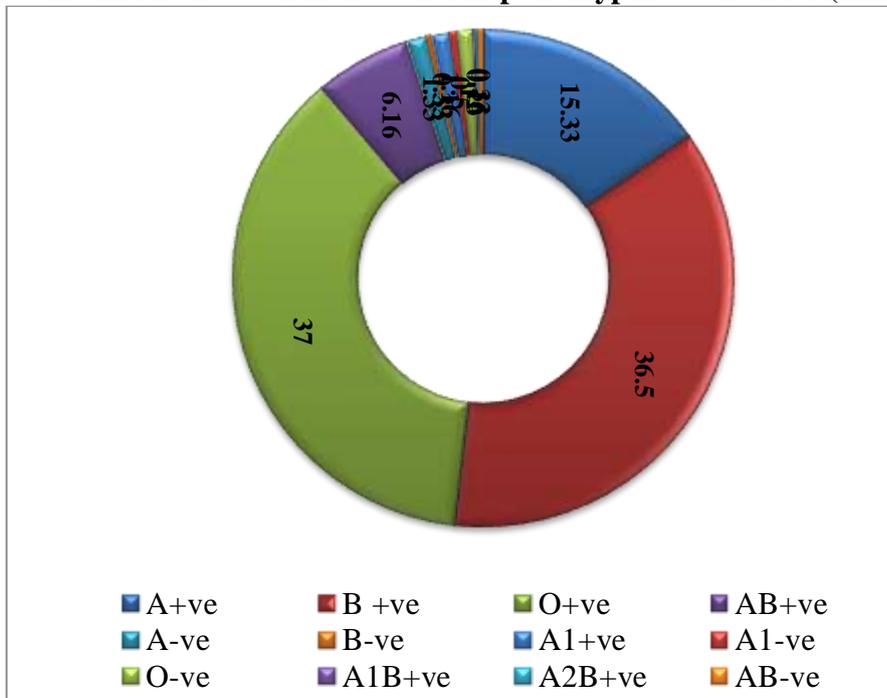
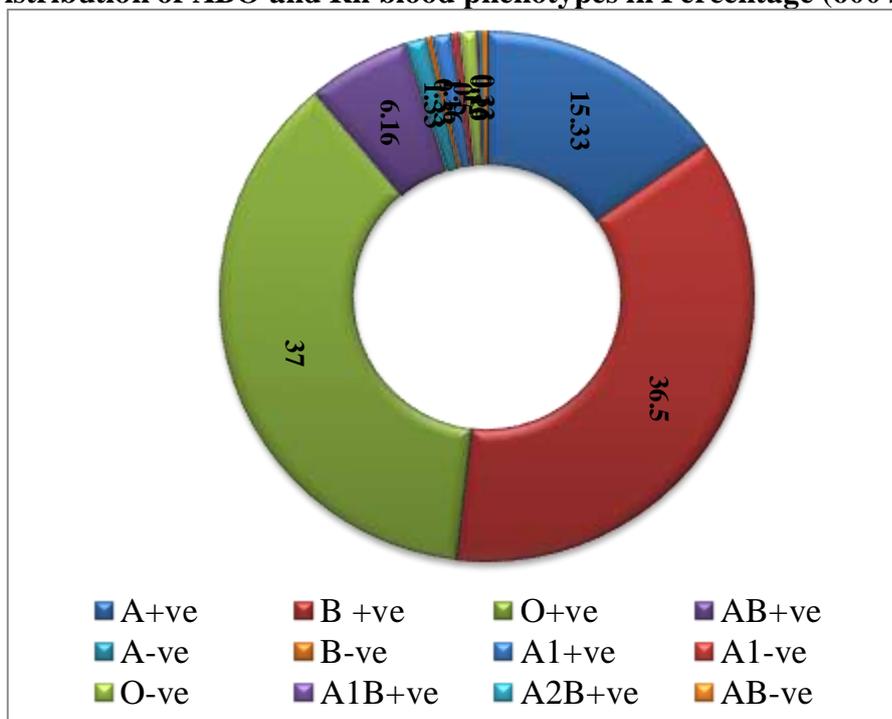


Figure 3: Distribution of ABO and Rh blood phenotypes in Percentage (600 students)



IV. CONCLUSION

It is concluded that Similar to our study, many study represents the frequency of ABO and Rh Blood group phenotypes in various areas conducted all over India at various region. Moreover, in all the studies O+ group is the predominant phenotypes in all case like our study.

V. ACKNOWLEDGMENT

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