

# ABO and Rh Blood Groups Frequency in Men and Women Living in Eastern Turkey

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## ABSTRACT

**Objective:** ABO and Rh blood groups which are basic for determination of blood compatibility consist of the most important tests of blood center. In this study, we aimed to find out the rates of ABO and Rh blood groups in male and female donors in our region. Therefore, donors attending to our blood center within the last five years were investigated taken into account their gender.

**Methods:** Blood groups were examined by gel-centrifugation or tube agglutination methods.

**Results:** Out of totally 33.193 individuals, 14.716 were female (44.3%) and 18.477 males (55.7%), and average age was 34 (range 20-60 years old). Taken into account the whole donors, A blood type was found as 43.8%, O blood type 30.8%, B blood type 16.2% and AB blood type 8.6% in rate. With respect to blood type frequency in genders group A was in the rate of 44.1% and 43.6%, group O 31% and 30.5%, group B 16.3% and 16.1% and group AB 8.6% and 9.8% in women and men, respectively. The Rh positivity rate into totally whole donors was 85.5%, being 86.0% in men and 84.8% in women.

**Conclusion:** ABO and Rh blood groups rates were very near to each other in women and men, and also the average rate was very similar to averages in Turkey.

**Key Words:** ABO and Rh Blood Groups, Frequency, Genders, Van (Turkey)

## ÖZET

### Türkiyenin Doğusunda Yaşayan Kadın ve Erkeklerde ABO ve Rh Kan Gruplarının Sıklığı

**Amaç:** Kan uygunluğunu tesbit etmek için temel test olan ABO ve Rh kan grupları tayini kan bankaları için en önemli testlerdir. Bu çalışmadaki amacımız bölgemizdeki erkek ve kadın donörlerde ABO ve Rh kan grubu sıklığını tesbit etmektir. Bu amaçla son 5 yılda kan bankamıza başvuran donörlerin kendi cinslerine göre verileri araştırıldı.

**Metodlar:** Kan grupları gel-centrifugation veya tüp aglütinasyonu yöntemi ile çalışıldı.

**Bulgular:** Ortalama yaşları 34 (20-60) yıl olan, 18.477 erkek, 14.716 kadın olan toplam 33.193 donör incelendi. Tüm donörler içinde A kan grubu %43.8, O kan grubu %30.8, B kan grubu %16.2 ve AB kan grubu %8.6 oranında saptandı. Cinsiyete göre kan gruplarının sıklığı ise kadın ve erkeklerde sırasıyla A grubunda %44.1 ve %43.6, O grubunda %31 ve %30.5, B grubunda %16.3 ve %16.1 ve AB grubunda %8.6 ve %9.8 idi. Rh pozitiflik oranı tüm donörlerde %85.5 iken kadınlarda %86.0 erkeklerde %84.8 idi.

**Sonuç:** Kadın ve erkeklerde ABO ve Rh kan grubu oranları birbirlerine çok yakındı ve bu değerler Türkiye ortalaması ile benzerlik gösteriyordu.

**Anahtar Kelimeler:** ABO ve Rh kan grupları, Sıklık, Cinsiyet, Van (Türkiye)

## INTRODUCTION

The main purpose of blood centers is to provide appropriate blood components which the patient needs by preparing certain blood components. Therefore, blood grouping is taken the top place among the routine works of blood centers. However, the studies related to the blood groups have been commenced much earlier; ABO blood groups firstly has been recognized in 1901 and Rh (Rhesus) blood group system in 1940. Afterwards, the recognized blood group systems increased in number and reached to 23 nowadays. ABO and Rh systems antigens which are transmitted by heredity locate respectively on the ninth and the first chromosomes (1).

ABO system is the most important blood group in transfusion medicine, and Rh system takes the second range. The other blood group systems constitute a clinical problem very rarely. Therefore, in routine practice, it is paid attention to ABO and Rh systems as a compatibility test in blood centers; and only in case of a problem, the other blood group are investigated (1,2). The distribution of ABO and Rh blood groups may vary among nations and races (1). The studies performed in our country show that in some regions may be differences with respect to the frequencies of ABO and Rh blood groups (3-10). In this study, ABO and Rh blood groups belonged to the donors attending to our center within the last 5 years were proportioned taken into account in the gender.

## METHODS

This study was performed by investigating retrospectively volunteer donor records attending to our center so as to donate blood between the dates of January 1998 and December 2003. ABO and Rh blood groups examined by gel centrifugation or tube agglutination methods of totally 33.193 individuals whose average age was 34 (range 20-60 years old) were proportioned taken into account female and male gender.

## RESULTS

Out of totally 33.193 individuals enrolled in the study, 14716 (44.3%) were female and 18.477 (55.7%) males. The A, B, O and AB blood groups in total group frequency of were found as 43.8%, 30.8%, 16.2% and 9.2%, respectively. Rh positivity rate was determined as 85%. A, O, B and AB blood group frequency in men was 43.6%, 30.5%, 16.1% and 9.8%, respectively; while these rates were 44.1%, 31.0%, 16.3% and 8.6% in women, respectively. Rh positivity rates were determined as 86.0% and 84.8% in men and women, respectively (Table 1).

## DISCUSSION

Blood group distribution rates show some differences even though in various parts of Anatolia (3-6). However the blood group rates obtained from our study were found close to Turkey aver-

**Table 1.** Average rates of ABO and Rh blood groups in women and men.

ABO Group	A		O		B		AB	
	+	-	+	-	+	-	+	-
Frequency %	37.9	5.9	26.9	3.9	13.9	2.3	8.1	1.1
Total %	43.8	30.8	16.2	9.2				
Male %	37.9	5.7	27.0	3.5	13.8	2.3	8.7	1.1
Female %	38.0	6.1	27.0	4.0	14.1	2.2	7.4	1.2

**Table 2.** Frequency of the ABO blood groups in some regions of Anatolia.

Region	Reference	O (%)	A (%)	B (%)	AB (%)
Turkey (Totally)	3	32.7	42.8	16.5	8.0
Malatya	4	41.2	39.3	11.4	6.0
Gaziantep	5	35.0	40.0	18.1	6.8
Konya	6	32.2	45.0	15.6	7.1
Eskişehir	7	31.1	43.5	16.8	8.5
Diyarbakir	9	33.3	41.5	17.5	7.7
Ankara	10	32.2	44.6	15.5	7.7
Van	this study	30.8	43.8	16.2	9.2

ages (3), it was seen that some differences were present between the results of some regions and ours (4-6). The rates obtained from our study are quite similar to the results of Eskişehir region (7). For example, group A was found in our region as 43.8% and 43.5% in Eskişehir; group B 16.2% in our study and 16.8% in Eskişehir; and group O 30.8% in our study and 31.1% in Eskişehir. Considering Northern Cyprus results (8), especially group A and AB rates, are similar to those in our study. Group A rate was found 44.2% in Northern Cyprus and 43.8% in our study, and group AB rate 9.5% in Northern Cyprus and 9.2% in our study (Table 2).

On the other hand it has been seen that our results differ when compared with some other regions. For example, while group a rate was 43.8% in our region, it was 39.3% in Malatya (4), 40.0% Gaziantep (5) and 46.2% in Konya (6). Similarly, while group O rate was 30.8% in our region, it was 41.2% in Malatya and 35.0% in Gaziantep, while group AB was found 9.2 in our region, whereas it was 6% in Malatya region (Table 2).

Rh positivity rate was been reported as 85% in Caucasian population (1). Our Rh positivity rate 85.5% as well as Turkey average 85% and this is almost the same (3). However, Rh positivity rate has been reported in higher rates in Gaziantep (90.8%), Diyarbakir (88.7%) and Malatya (89.0%) (4,5,9).

With respect to gender difference, frequency ABO and Rh blood groups was found nearly in the same rates in women and men (Table 1). Group AB rates in Malatya region have been found different between women and men, but there has been no significant difference in regard to the other blood groups (4). Group AB frequency in that region has been found as 2.3% in women and 5.2% in men. Because the results belonged to the different genders have not been reported separately in the studies performed in other regions on Anatolia, comparison with those regions was not able to be made.

In conclusion, it was established that ABO and RH blood group rates in women and men living in Van region was similar, and totally the results was nearly the same as Turkey averages despite the fact that there was some difference with other regions.

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