

# Prevalence of ABO and Rh Blood Groups in Lahore

S F IMAM\* M HAROON L ULLAH\*\* N IMAM\*\*\*.

\*Department of Medicine, K.E. Medical College/Mayo Hospital, Lahore

\*\*Department of Medicine, Lahore General Hospital, Lahore

\*\*\*College of Home Economics, Lahore

Correspondence to be addressed to Dr.Lutuf Ullah, Department of Medicine, Lahore General Hospital, Lahore.

One thousand subjects comprising of normal people and patients from Lahore General Hospital, Gulab Devi Hospital, Punjab Institute of Cardiology and Mayo Hospital were checked for their blood groups. It was found that blood group B was the commonest group with a prevalence of 35.9% and O, A and AB were found in 31.3%, 23.5% and 9.3% of the subjects. Rh+ve subjects were 95.1% and Rh-ve subjects were 4.9%.

**Key words:** ABO blood group

Various studies have been carried out in Pakistan and Lahore regarding the prevalence of ABO and Rh blood groups in population. These studies were carried out in different settings. Figures regarding the prevalence in Pakistan are different as compared to some of the western countries<sup>1</sup>.

In conservative society like that of Pakistan most of the marriages used to take place within the family and were popularly known as "cousin marriages". Now many marriages are arranged outside the family. As a result it is expected that a change in gene pool might give rise to a different prevalence.

This study was carried out to find out the prevalence of different ABO and Rh blood groups and to compare the results with the previous findings to detect any changing patterns.

## Materials and Methods

One thousand subjects of both sexes were checked for their ABO and Rh blood groups. These subjects were examined at Lahore General Hospital, Punjab Institute of Cardiology Gulab Devi Hospital and Mayo Hospital. All these hospitals are located in the city of Lahore, Pakistan. The subjects were included in the study after their consent was obtained. All subjects were above the age of 18 years. The subjects were examined for their blood group irrespective for their purpose of visit to the hospital. The subjects included a variable number of patients and normal subjects. This study was carried out in year 1998 to 1999.

ABO and Rh blood grouping was done by slide haemagglutination method on venous samples. Typical agglutination patterns were checked both with naked eye examination against white light as well as under microscope after one to two minute. Anti-A, Anti-B and Anti-D sera were used prepared by Sanofi Diagnostic Pasteur Co. and Lorne Laboratories Ltd.

## Results

A total of one thousand subjects were checked for their ABO and Rh blood groups. Of these one thousand subjects, 686 were males and 224 were females.

The prevalence of different blood groups is shown in Table I.

Table I. Prevalence of ABO and Rh Blood Groups.

Total number of subjects: 1000.	
Blood Group	No. (%)
A	235 (23.5)
B	359 (35.9)
O	313 (31.3)
AB	93(9.3)
Rh+ve	951 (95.1)
Rh-ve	49 (4.9)

## Discussion:

This study was carried out in 1,000 subjects to find out the prevalence of different blood groups according to ABO and Rh blood grouping systems. There are other blood groups also which have clinical relevance in special situations. Blood groups according to ABO and Rh bases are the most commonly discussed and are have most clinical relevance.

Knowing the prevalence of blood groups in a society helps one to determine the availability of donors in an emergency situation or when getting prepared for a possible emergency situation. It also gives an idea about the possible chances for a couple to have a major blood group incompatibility indicating the requirement of preventive measures at

The time of birth. There are certain diseases, which are prevalent in people with a particular blood group, and that blood group is considered to be a risk factor for that particular disease. Association of blood group with peptic ulcer and carcinoma of stomach is well known<sup>2</sup>. Blood group is also related with plasma cholesterol<sup>3,4</sup>. Specific blood group is also a minor risk factor for ischaemic heart disease<sup>5,6,7</sup>.

Henderson et al (8) found that ovarian cancer particularly adenocarcinoma was more common in women with blood group A. Similarly a lot of work has been done regarding association of blood groups with other diseases. This constitutes a non-modifiable risk factor. Knowledge about the prevalence helps in determining the prevalence of a particular risk factor in the given community.

The prevalence of blood groups varies significantly in different parts of the world and in different races. The blood group distribution of a population from one region



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may not represent those of another region. Afzal et al (9) in 1977 observed that blood groups

A was 25.69%, B was 35.25%, O was 26.23% and AB was 12.82%. As mentioned by Shah<sup>1</sup> in 1990 the prevalence of A group was 41% in England and 45% in USA This was most frequent group in USA and second most frequent group in England how ever its prevalence is lower in various studies from Pakistan including this study. Group O is found among 45% of English and 43% of American population while its prevalence has not been reported higher than 40% in any study from Pakistan. Prevalence of

group B ranges from 29.68% to 36% in Pakistan where as these figures for USA and England are 8% and 10.4% according to Contreras et al. AB group ranges from 3.3% to 12.84% in Pakistan as compared to 4% in USA and 3.84% in England. Shah in 1990 studied 310 healthy volunteers and out of them 40% had blood group O. 32.26 were O+ve and 7.74 were O-ve. The next common group was B and out of this group which constituted 29.68%, 25.80 were B+ve and the rest were B-ve. Mahood<sup>10</sup> found blood group AB as the most uncommon of the ABO groups. Some of the comparative findings are shown in Table II.

Table II. Comparison of different studies of prevalence of ABO and Rh blood group

Author	Place of study	Year of study	No. of subjects	Blood groups in %				
				A	B	O	AB	Right
Contreras & Lubenko.	England	1984	52,636	41.09	10.04	44.94	3.84	85
Gilbert	USA	1983	79,960	45	8	43	4	
Perveen et al	Lahore	1983	3,000	24.2	31.9	35.3	8.4	
Shah	Lahore	1989	310	21.29	29.69	40	9.03	85
Rathore et al	Faisalabad	1993	2,477	22.4	36.4	31	8.8	95.4
Mahmood	Rawalpindi	1993	4,646	23.5	35.6	31.6	8.2	94.3
Fakhar	Lahore	1999	1,000	23.5	35.9	31.3	9.3	95.1

In this study we found that blood group B was the most common group and it was 23.5% of the total subjects checked. Least common blood group was AB and 9.3% subjects of the total had this most uncommon group. 31.3% subjects had O and 25.3% subjects had A blood group. Rh blood grouping showed that 95.1% were Rh+ve and only 4.9% were Rh-ve. These findings consistent with findings of Mahmood from Rawalpindi but differ with the results of studies previously conducted in Lahore. Findings of study from Faisalabad, Pakistan by Rathore et al<sup>11</sup> are also compatible with the results of this study.

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