

# Trend of blood group distribution among the different ethnic groups of Kathmandu Valley

Tapas Pramanik<sup>1</sup> and Prakash Adhikari<sup>2</sup>

<sup>1</sup>Department of Clinical Physiology, Nepal Medical College, Jorpati, Kathmandu, Nepal. <sup>2</sup>Department of ENT, Head and Neck Surgery, Tribhuvan University Teaching Hospital, Kathmandu, Nepal.

**Corresponding Author:** Dr. Tapas Pramanik, PhD, Associate Professor, Department of Clinical Physiology, Nepal Medical College, Jorpati-7, Kathmandu, Nepal. P.O.Box: 13344 Fax: 9771-1-4473118. e-mail:drpramanik@hotmail.com

## ABSTRACT

This study was undertaken to find out the trend of blood group distribution (ABO and Rh) among the 1310 Nepalese attended in Tribhuvan University Teaching Hospital and Nepal Medical College Teaching Hospital Kathmandu. The frequency of distribution of A, B, AB and O was 28.5%, 27.3%, 8.7% and 35.5% respectively. Only 0.8% of them were found to be Rh (-) ve. In this population of study, O (+) ve blood group was found to be predominant among the *Brahmins*, *Magars* and *Gurungs*. A (+) ve blood group was predominant among the *Chhetris*, and B (+) ve among the *Sherpas* and the *Lamas*.

**Keywords:** A B O blood group, Rh type.

## INTRODUCTION

Blood grouping is based on antigenic property of red blood cells (RBC). It is one of the important tools for anthropological study of ethnic origin of people and for blood transfusion to avoid problems of mismatched transfusion. The RBC membrane contains about 30 different types of blood group antigens and the most important are A and B antigens. These antigens are complex oligosaccharides which differ in their terminal sugars. The antibodies against red cell antigens which are acquired during early childhood are called agglutinins (antibody). According to the presence of these antigens and antibodies blood is divided into four major groups called A, B, AB and O. Human red cell contains another important antigen called antigen D. Red cell containing this antigen are grouped as Rh positive and those which do not have this, are Rh negative.

The distribution of ABO and Rh blood group varies from race to race. Report indicates that, among the Nepalese medical students the frequency of A, B, AB and O blood group was found to be 29.0%, 26.0%, 13.0% and 32.0% respectively.<sup>1</sup> Nevertheless, the number of subjects screened was rather less. So, present study was undertaken to observe the frequency blood group among 1310 Nepalese people attended in Tribhuvan University Teaching Hospital and Nepal Medical College Teaching Hospital Kathmandu. We also tried to find out the blood group distribution among the different ethnic groups among this population.

## MATERIALS AND METHODS

Nepalese people (n=1310) attended in Tribhuvan University Teaching Hospital and Nepal Medical College Teaching Hospital, Kathmandu were taken for the study. Standard slide method was adopted: a drop of each of the monoclonal anti-sera (Anti A, Anti B and Anti D) (manufactured by Tulip Diagnostics (P) Limited, Old Goa, India) were taken on glass slides. The subject's blood cells whose blood group is to be determined was mixed with each serum separately with the help of separate glass rods. Blood groups were determined on the basis of agglutination reaction within 5 minutes of mixing as follows: -

Reaction with Anti A	Reaction with Anti B	Group
+	+	AB
+	-	A
-	+	B
-	-	O

(+) = Agglutination, (-) = No agglutination

When agglutination occurred with anti D, then the group was considered as Rh (+) ve. If there was no agglutination, it was considered as Rh (-) ve blood.

## RESULTS

The frequency of distribution of A, B, AB and O was found to be 28.5%, 27.3%, 8.7% and 35.5% respectively. From the table (Table-1) it is evident that in this population of study, O (+) ve blood group is predominant among the *Brahmins*, *Magars* and *Gurungs*. A (+) ve group is predominant among *Chhetris*; B (+) ve among the *Sherpas*, and *Lamas*. Rh (-) ve blood is rare among this Nepalese population (0.8%) studied.

## DISCUSSION

The distribution of blood group varies from race to race. Among the Western Europeans 42.0% belongs to A, 9.0% to B, 3.0% to AB and 46.0% to O group. Some the Western Europeans show up to 40.0% of B group amongst them. On the other hand some American Indians belong almost exclusively to group O. <sup>2</sup>In the American population the frequency of O, A, B and AB blood group is 45.0%, 41.0%, 10.0% and 4.0% respectively. <sup>3</sup>As for as Rh typing is concerned, 85.0% of white people are Rh positive and the rest are Rh negative. Ninety five percent of American blacks are Rh (+) ve where as 100.0% of African blacks are Rh (+) ve. <sup>4</sup>Eighty five percent of Caucasian are Rh (+) ve and 99.0% of Asians are Rh (+) ve. <sup>3</sup>Reports suggest that, Asian Mongoloids has higher frequency of A gene and relatively low B is observed in population of Korea, Japan, several Asiatic population of USSR and North East part of India. <sup>5,6</sup>Recent studies showed that, among the *Jirels* of Nepal, a small tribe who are the descendents of *Kirat* tribe (Mongoloids) A group is predominant. <sup>7</sup>

Nepalese people are a conglomerate of diverse ethnic communities. The composition of people of Nepal is the outcome of successive migration of Tibeto-Burman group from the North and other from South west. This population is a multiethnic population, a mixture of Indo-Aryan, Tibeto-Burman and other ethnic groups. <sup>8</sup>From the results it is evident that the frequency of distribution of A, B, AB and O was 28.5%, 27.3%, 8.7% and 35.5% respectively. Previous study also indicated O group as most predominant and AB group as least prevailing group among Nepalese population. <sup>1</sup>Only 0.8 % of them were was found to be Rh (-) ve among the population studied which corroborates the previous findings that the Asians are mostly (99.0%) Rh (+) ve. <sup>3</sup>From the results it is evident that in this population of study O (+) ve blood group is predominant among the *Brahmins*, *Magars* and *Gurungs*. A (+) ve group is predominant among *Chhetris*; among the *Sherpas*, and *Lamas* B (+) ve is predominant.

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**Table-1: Blood Group distribution among the different ethnic groups among the Nepalese**

<b>Ethnic Group</b>	<b>Blood Group A</b>		<b>Blood Group B</b>		<b>Blood Group AB</b>		<b>Blood Group O</b>	
	<b>+ ve</b>	<b>- ve</b>	<b>+ ve</b>	<b>- ve</b>	<b>+ ve</b>	<b>- ve</b>	<b>+ ve</b>	<b>- ve</b>
Brahmin	22.72	1.13	24.62	-	2.65	-	47.34	1.51
Chhetri	48.23	-	22.94	-	2.35	-	26.47	-
Newar	29.24	-	23.82	-	18.41	0.36	28.15	-
Sherpa	21.31	-	36.88	-	16.39	-	25.40	-
Limbu	54.44	-	23.33	-	3.33	-	38.88	-
Gurung	26.58	-	18.98	-	11.39	-	43.03	-
Tharu	24.00	-	41.00	-	3.00	-	32.00	-
Magar	18.58	-	22.12	-	6.19	-	53.09	-
Lama	26.31	-	42.10	-	7.36	-	22.10	2.10