



Pattern of ABO and Rhesus Blood Group Distribution among Students of Jamhuriya University of Science and Technology, Mogadishu, Benadir, Somalia

Shafie Abdulkadir Hassan¹ and Mosab Nouraldein Mohammed Hamad^{2*}

¹Department of Medical Laboratory Science, Jamhuriya University of Science and Technology, Somalia

²Faulty of Health and Allied Sciences, ST. Joseph University in Tanzania, Tanzania

*Corresponding e-mail: musab.noor13@gmail.com

ABSTRACT

Background: Based on the presence or absence of antigen A and B on the surface of red blood cells ABO blood groups are divided into A, B, AB and O blood group. In addition to the presence of D antigen Rhesus blood group is divided into Rhesus positive and Rhesus negative. The purpose of this study is to determine the frequency and distribution of both ABO and Rhesus blood types among students of Jamhuriya University students of Science and Technology. **Results:** This descriptive and cross-sectional study was conducted between April 2021 and June 2021. A total of 350 students including 255 males and 95 females took part in the study. The distribution of ages was between 16 and 47 years. The blood group O was the most common blood group (59.7%), subsequently blood group A (28.9%), then blood group B (9.2%) and AB (2.3%). Most of the participants were Rhesus positive (95.8%) while 4.2% were Rhesus negative. **Conclusions:** Blood group O was the most common blood group in the study, then A, B, and AB respectively. 95.8% were Rhesus positive; only 4.2% were Rhesus negative.

Keywords: ABO, Rhesus blood group, Students, Somalia

INTRODUCTION

Blood in the human body is considered to be the identity for all [1]. Although blood type is determined by genes in their parents, blood types differ between siblings [2]. The ABO and Rhesus blood systems are the most essential human blood type systems for blood transfusion and transplantation [2]. The ABO blood type was discovered by Landsteiner in 1900 after several failed blood transfusion attempts, and rhesus system was discovered in 1939 [2,3]. Following the discovery of ABO, blood transfusion became a reality [4].

A person's blood type is determined based on the presence or absence of antigen A and B on the surface of red blood cells [2]. If the person have (A) antigen belong to group A has blood type A, if the person have (A) antigen belong to group A has blood type B, if the person have both (AB) antigen belong to group AB and People without A and B antigen belong to the blood group O [2]. There is also antigen D found on red blood cells, a person with D antigen is called Rhesus-positive, and a person without antigen D is called Rhesus-negative [3]. Studying the blood group distribution in the community takes significant if the patients need blood urgently, is usually useful in managing allo-immunization situations, especially in multi-transfused patients and prevent losing patients with rare blood during emergency situations [4].

Frequency and distribution of blood types vary from one country to another, the most common blood type in the world is O, followed by A, followed by B, and AB [5]. But in Turkey the most common blood type is A [6]. Pakistan the blood type is B. Rhesus blood type is more common in Rhesus-positive people, much less Rhesus-negative [7].

In a study conducted in Jigjiga, the Somali regional government in Ethiopia stated that O blood type was the highest blood type, while A was the second type, followed by B and AB which was the smallest blood type [8].

In Somalia, no research has been done on the distribution of blood group. This current study was conducted to determine the distribution of ABO and Rhesus blood transfusions among students of the Jamhuriya University of Science and Technology. This can help improve services for blood transfusion blood to prevent transfusion.

METHODS

Approval was taken from the Research Ethics Committee, Faculty of Medicine and Medical Sciences, University of Science and Technology, Mogadishu, Somalia, granted permission. A total of 350 college students, both male and female, were chosen for this study.

Techniques for Data Collection and Analysis

Participants in the study were interviewed in the structured questionnaire to acquire sociological data such as sex and age. All participants who accepted to participate in the study were collected from the blood sample. The ABO and Rhesus factor blood types were determined using the slide method, which is based on antibody-antigen agglutination. The blood group was identified using commercially available anti-sera. Three separate drops were applied to the surface of the slide, followed by the addition of A, B, and D antisera, which were then mixed with wooden sticks. Agglutination reaction was examined. If observed agglutination with A, belonged to the blood group A. If agglutination was observed in B; it belonged to the blood group B. If seen with A and B; it belonged to the blood group AB; and if both A and B not seen with agglutination it belonged to the O blood group. If the 'D' observed agglutination, it is also Rhesus-positive; however, if there is no agglutination, it is Rhesus-negative.

RESULTS

From the total of 350 individuals screened for blood group types at Jamhuriya University of Science and Technology, 225 (72.9%) of them were males whereas the rest 95 (27.1%) were females (Table 1). The most common blood type among the participants was blood group O (59.71%, n=200), followed by blood group A (28.9%, n=101), blood group B (9.14%, n=32) and blood group AB (2.3%, n=8%). As shown in Table 2, 95.6% (n=335) of participants were Rhesus positive while 4.4% (n=15) were Rhesus-negative. Table 3 represents the distribution of blood group among the students.

Table 1 Characteristics of the study participants (N=350)

Characteristic	Frequency	Percent
Age		
18-20	171	48.9%
20-25	174	49.7%
25-30	5	1.4%
Sex		
Male	255	72.9%
Female	95	27.1%

Table 2 Distribution of ABO and Rh blood group to the study participants (N=350)

Characteristic	Frequency	Percent
ABO blood group		
A	101	28.9%
B	32	9.2%
AB	8	2.3%
O	200	59.7%
Rhesus Blood group		
Rhesus +ve	335	95.6%
Rhesus -ve	15	4.4%

Table 3 Distribution of blood group among the students (N=350)

Blood type	Frequency	Percent
A+	98	28%
A-	3	0.9%
B+	30	8.6%
B-	2	0.6%
AB+	8	2.3%
O+	200	57.1%
O-	9	2.6%
Total	350	100%

DISCUSSION

Before starting a blood transfusion, it's critical to know an individual's blood group. Blood transfusion is critical for survival, particularly during surgical procedures [6]. The most common blood type in this study was O, which made up 59.71% of the total, followed by A, which made up 28.9%, B, which made up 9.14%, and AB, which made up 2.3%. This matches a recent study in Somali regional state of Ethiopia, which found that blood group O was the most common, while blood group AB was the least common [7]. In most parts of China, the ABO blood groups were distributed as O>A>B>AB [8]. Other investigations undertaken in South-West Nigeria yielded similar results [5]. Blood group B, on the other hand, is the most frequent in Pakistan, according to Sharma, et al. In Istanbul, the A blood groups were the most common. The geographical environment and ethnic groups of the research populations are most likely to blame for such differences. It also shows that different ABO blood types can be found in different places of the globe.

The overall Rhesus positivity and negativity were 335 (95.6%) and 15 (4.4%), respectively, which is consistent with the bulk of research conducted in different parts of the world [9-12].

Study Limitations

This study was limited by the use of a particular area and a small number of samples, which may not be an accurate representation of the total population in the study area.

CONCLUSION

Blood group O was found to be the most frequent in the study population, with a prevalence of 59.7%, followed by A, B, and AB. Only a small number of the students were Rhesus negative, with the bulk being Rhesus positive. This knowledge would be useful in the healthcare field, especially in the development of blood transfusion programs. Before students join, we recommend building a donor registry and blood group screening. It will be much easier to donate blood as a result of this.

DECLARATIONS

Conflicts of Interest

The authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

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