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Human abo blood groups and their associations with mizāj (Temperament)

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Abstract
Mizāj (Temperament) is one of the basic concepts of Unani system of medicine upon which diagnosis and line of treatment of a disease are based. Every human being has been furnished a specific Mizaj through which an individual performs his functions properly. If it is disturbed, body becomes more susceptible to develop such diseases having same temperament as that of an individual. This paper is to depict the analysis of relation between mizaj with blood group (ABO system) in healthy individuals. It was found that blood group is not associated with the mizaj of an individual. Instead, DAMVI MIZAJ was found to be predominant among all blood groups. This study showed higher frequency of group B followed by group O, A and AB in given sample of population.

Keywords: Mizāj, temperament, blood group, ABO system

Introduction
Mizāj is the important theory of Unani Medicine, which indicates the properties of an Unsur (atom). A molecule, a cell, a tissue an organ and of the organism as a whole. As the Unani therapy is dependent upon equilibrium so if there is change in the mizaj, Mizāj (equilibrium) is disturbed in any way be in quantity or quality as the whole body is furnished with mizaj (equilibrium) life is threatened [1, 4]. Mizāj is quality produced by action and reaction of opposite qualities of components, which are broken down in small Particles in order to facilitate mixing of all the particles. When these components interact by virtue of their respective power a condition is formed, which is equally divided in other components of compounds. This quality, which comes into existence, is known as Mizāj (temperament) [5]. Mizāj represents the physical and chemical properties of body. It is one of the basic principles of unani medicine, which is know Al umur al tabiya. There may be greter similarity in Mizāj of two individuals but as a whole it is not repeated. Mizāj is the resultant of interaction between the qualities of constituents of a compound irrespective of the reaction taking place in an animate or inanimate [6]. In canon of medicine, Mizāj (temperament) is described as that quality which is a result of mutual interaction of the four contrary primary qualities residing within the elements, these elements are so minutely intermixing with each other that they lie in a very intimate relationship to one another. Their opposite until a state of equilibrium is reached which is uniform throughout the whole. It is this outcome, which is being given the name of temperament (Mizāj) [7].
Human red blood cells contain on their surface a series of glycoproteins and glycolipids, which constitute blood group antigens. Development of these antigens are genetically controlled, inherited in a mandelian fashion and appear early in fetal life and remain unchanged till death [8]. The ABO blood group system was the first human blood group system to be discovered by Landsteiner in 1901 [9]. The ABO blood group system is divided into four blood types on the basis of presence or absence of A and B surface antigens. The blood groups are ABO and AB. ABO blood group system is important because of the fact that A and B are strongly antigenic and anti A and anti B are naturally occurring antibodies present in the serum of persons lacking the corresponding antigen. These antibodies are capable of producing intravascular hemolysis in case of incompatible transfusion [10]. At present, 33 blood group systems representing over 300 antigens are listed by the International Society of Blood Transfusion [11, 12]. Among the 33 systems, ABO remains the most important in transfusion and transplantation since any person above the age of 6 months possess clinically significant anti-A and/or anti-B antibodies in their serum.

Blood group A contains antibody against blood group B in serum and vice-versa, while blood group O contains no A/B antigen but both their antibodies in serum [13]. H-antigen is the precursor to the ABO blood group antigens. It is present in all RBCs irrespective of the ABO system. Persons with the rare Bombay phenotype are homozygous for the H gene (HH), do not express H-antigen on their RBCs. As H-antigen acts as precursor, its absence means the absence of antigen A and B. However, the individuals produce isoantibodies to H-antigen as well as to antigens A and B [13].

Materials and Methods

A cross sectional, analytical study was carried out on a total sample of 303 participants irrespective of age and sex were included in the study. Samples were determined using random sampling technique from students and different faculties of Ayurved and Unani Tibia College, New Delhi, India Ajmal Khan Tibbia College, AMU Aligarh and National institute of Unani Medicine Bangalore. The duration of study was 5 months from July 30 2021 to December 31 2021.

Mizaj Determination: The Mizāj of each subject was evaluated using a Mizāj assessment performa based on the Ajnas e Ashra mentioned in Unani classical literature.

Specimens Collection: Blood samples were taken on a clean slide from the left ring finger tip with the use of a sterile lancet after aseptic washing with 70% ethyl alcohol. To reduce errors, blood groups were determined on a single slide.

Laboratory Investigation: The ABO blood group and Rh (D) blood group were determined using the slide method. Each volunteer had a drop of blood placed in three different locations on a glass slide. With the help of glass rods, a drop of each antisera A, B, and D was added to and mixed with each blood sample. The mixture was then gently rocked for 60 seconds to look for agglutination. The results of agglutination were recorded immediately after mixing. Agglutination in blood drop A was considered group A, and agglutination in blood drop B was considered group B. If both blood drops agglutinated, it was considered group AB, and if neither blood drop agglutinated, it was considered group O. Agglutination in rhesus blood drops was considered rhesus positive, while non-agglutination was considered rhesus negative.

Data Collection: All participants were informed of the study's goals and objectives, as well as the blood grouping procedures. Written consent was obtained from participants.

Statically Analysis

The Chi square test was used to perform statistical analysis of the relationship between blood group and dominant Mizāj. Each blood group's frequency is expressed as a percentage.

Results

It can be observed that DAMVI Mizāj was dominant in all blood groups with 124 (40.92%) out of 303 participants followed by BALGHAMI Mizāj with 104 (34.32%), SAFRAWI Mizāj with 66 (21.78%) and SAUDAWI Mizāj with 9 (2.97%). Figure 2 is showing the distribution of Mizāj among the total participants. ABO blood group data revealed that blood group “B” was predominant with 40.72%, followed by blood group “O” with 26.49%, blood group “A” with 22.84%. From the ABO data in Balghami and Damvi Mizāj blood group B was the commonest followed by blood group “O”, blood group “A”, and blood group AB. In Safrawi and Saudawi Mizāj the commonest blood group was “B”, followed by blood group “A”, Blood group “O”, and blood group “AB”. Figure 1 is showing the distribution of Mizāj with blood group. Out of 303 participants 109 (35.97%) were male and 193 (63.69%) were female. figure 3 shows the distribution of ABO blood group among the male and female volunteer.

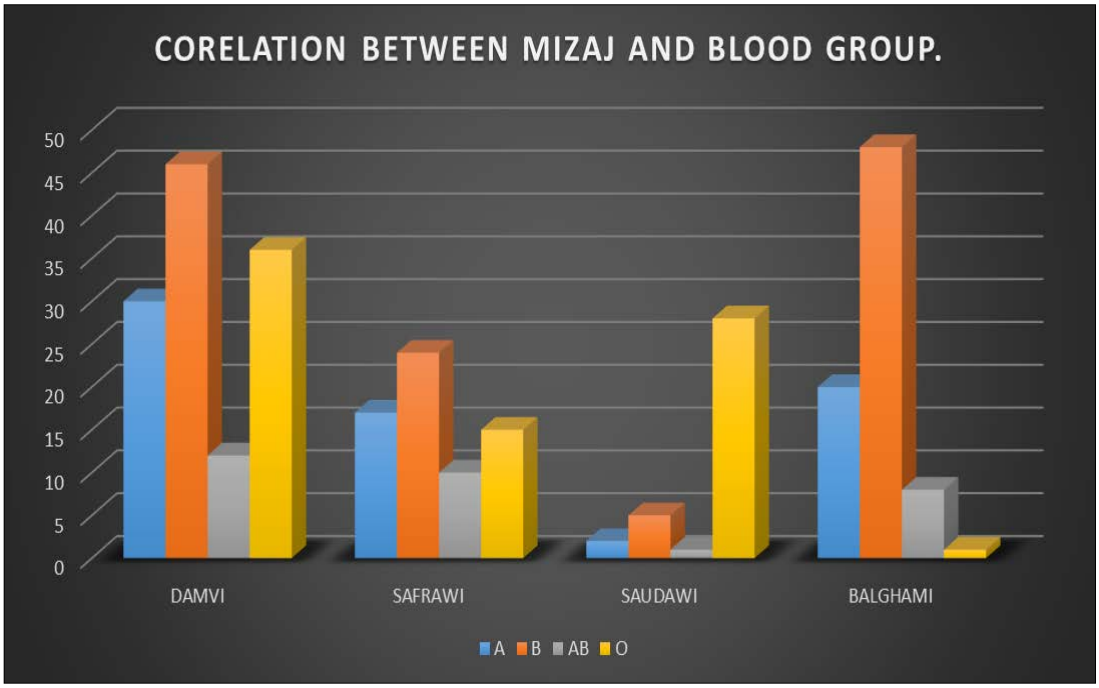

Fig 1: Classification of Mizāj according to the blood group of participant

Table 1: Classification of mizāj according to the blood group of participant

Blood group	Mizāj				Column Total	Column percentage
	Damvi	Safra	Balgham	Sauda		
A	30	17	20	2	69	22.84%
B	46	24	48	5	123	40.72%
O	36	15	28	1	80	26.49%
AB	12	10	8	1	31	9.93%
Row total	124	66	104	9	303	100%
Row percentage	40.92%	21.78%	34.32%	2.97%		

Table 2: Distribution of ABO blood group among the male and female volunteers

Sex	A	B	AB	O	Total
Male	24 [7.92%]	40 [13.2%]	15 [4.95%]	30 [9.9%]	109 [35.97%]
Female	45 [14.85%]	83 [27.39%]	16 [5.28%]	50 [16.5%]	193 [63.69%]
Total	69 [22.7%7]	123 [40.59%]	31 [10.23%]	80 [26.40%]	303 [100%]

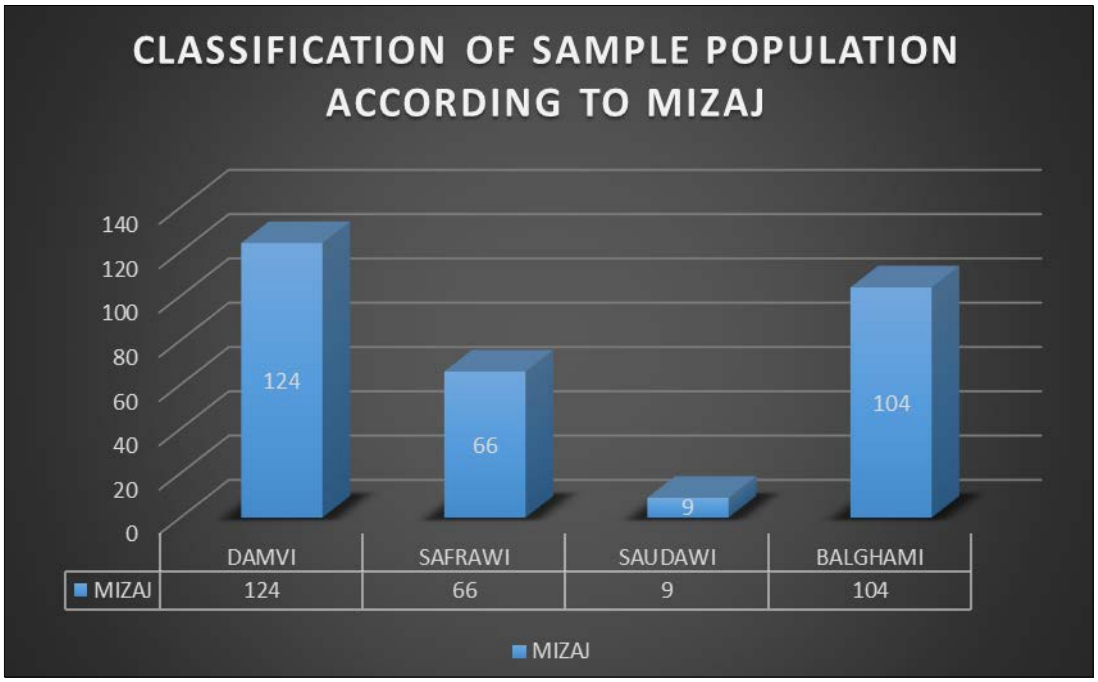

Fig 2: Distribution of blood groups in 303 voluntier

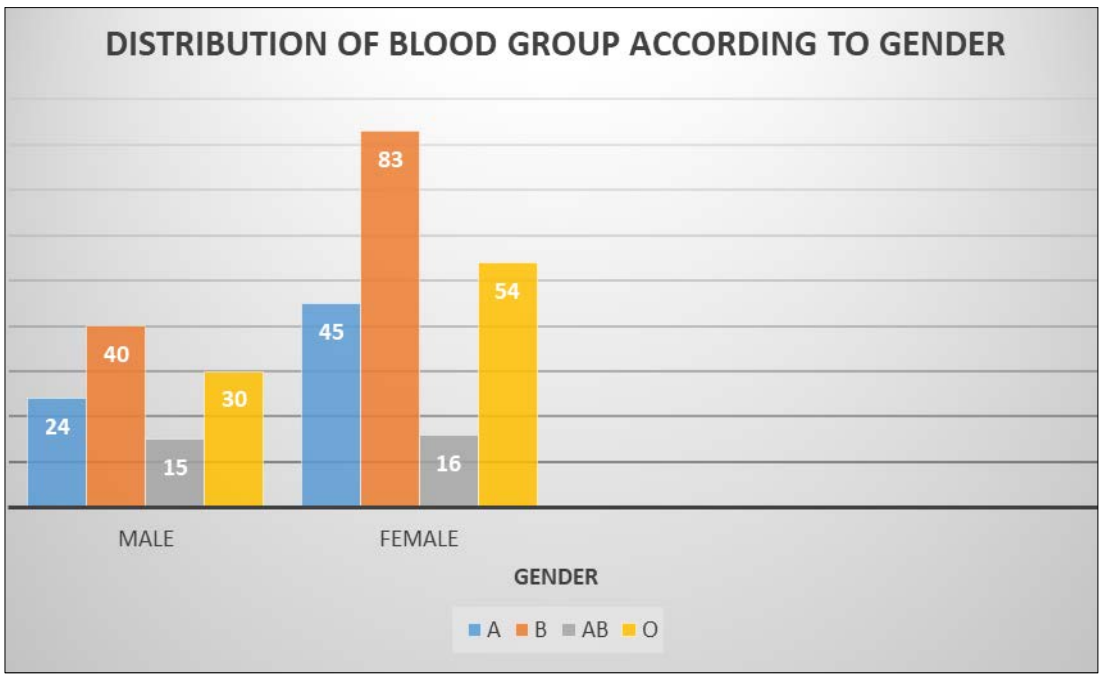

Fig 3: Distribution of blood group according to gender

On statistical analysis of this data, no significant association was found between the blood group and MIZAJ of the participants. The significance values obtained by conducting non-parametric tests (CHI Square Test) are as follows:

Table 3: Statistical test and significance value

Results					
	A	**B**	**AB**	**O**	**Row Totals**
Balghami	20 (23.68) [0.57]	48 (42.22) [0.79]	8 (10.64) [0.66]	28 (27.46) [0.01]	104
Damvi	30 (28.24) [0.11]	46 (50.34) [0.37]	12 (12.69) [0.04]	36 (32.74) [0.32]	124
Safrawi	17 (15.03) [0.26]	24 (26.79) [0.29]	10 (6.75) [1.56]	15 (17.43) [0.34]	66
Saudawi	2 (2.05) [0.00]	5 (3.65) [0.50]	1 (0.92) [0.01]	1 (2.38) [0.80]	9
Column Totals	69	123	31	80	303 (Grand Total)

The chi-square statistic is 6.6262, The p-value is 0.675971, The result is not significant at $p<.05$

Based on the significance values obtained by the above mentioned tests, it can be inferred that no significant association can be seen between blood groups and MIZAJ.

Discussion

The present study has been carried out to determine relation between ABO blood group system and mizaj. Mizaj (Temperament) is one of the basic concepts of Unani system of medicine upon which diagnosis and line of treatment of a disease are based. Every human being has been furnished a specific Mizaj through which an individual performs his functions properly. If it is disturbed, body becomes more susceptible to develop such diseases having same temperament as that of an individual. Blood group (ABO system) in human beings is one such basic physiological parameter of human body. The present study examined whether blood group is associated to mizaj. It was found that blood group is not associated with the mizaj of an individual. Instead, Damvi Mizaj was found to be predominant among all blood groups. Sayed Mahtab Ali *et al*. in their study stated that there is a possible relation between mizaj and blood group. This study showed higher frequency of group B followed by group O, A and AB which reflects the same blood group pattern with the study conducted in Zaman *et al*. research paper in Bangladesh.

Table 4: Frequency of blood group order among sample population irrespective of mizaj is B > O > A > AB

Mizāj	**Blood Group Order**
Balghami	B > O > A > AB
Damvi	B > O > A > AB
Safrawi	B > A > O > AB
Saudawi	B > A > O > AB

This can further widen the scope of this study, which may yield new and valuable knowledge.

Conclusion

This study shows that blood groups cannot be thus used as features to classify Mizāj as no statistically significant association was found between them. Rather, Damvi Mizāj found to be predominant among the sample population. This study also showed the frequency pattern in different Mizāj and frequency pattern of blood group independent to Mizāj.

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