

Original Article

COMPARISON OF ACADEMIC PERFORMANCE OF STUDENTS OF DIFFERENT BLOOD GROUPS AND GENDER

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ABSTRACT

Background: There has been increasing concerns that personality characteristics including knowledge, behavior, skill, and intelligence can be predicted by a person's blood group. This study was conducted to compare the academic performance of students of different blood groups and gender

Material and methods: Cross-sectional study was conducted at Akhtar Saeed Medical and Dental College. The study included 181 participants. General characteristics and academic scores were recorded on a structured Performa and the blood group of each participant was determined by the glass slide method. Comparison of academic scores of students in different ABO blood groups was done by one-way ANOVA. Academic scores of males and females students were compared by independent t-test. Comparison of academic scores in Rh-positive and negative groups was done by independent t-test.

Results: Academic scores were significantly higher in blood group O (p-value=0.02). There was no significant association in academic scores among genders and Rh blood groups.

Conclusion: Students with blood group O have high academic performance.

Key Words: Blood Groups, Academic Performance, Gender

INTRODUCTION

Blood groups are determined by antigens present in the red cell membrane. Two antigens A and B are responsible for four blood group types; A, B, AB, and O in ABO blood group system.¹ In Rh system of blood grouping, the blood type is either positive or negative based on the presence or absence of Rh antigen in the red blood cell membrane respectively.² The importance of blood groups cannot be denied. The blood group of a person is very important in blood transfusion and forensic medicine.³ Researches have also proved the importance of blood groups in the development of cardiovascular diseases, cancers, and other disorders.⁴ There has been increasing evidence that personality characteristics like intelligence, knowledge, skills, and behavior can also be predicted by the blood group of a person.⁵ Studies have been conducted to find out the association of emotional intelligence and behavior with blood groups.⁶

Academic performance is the evaluation of knowledge developed by a student over a specific period through marks obtained in tests/examinations.⁷ Academic performance is a very important parameter to assess intelligence as well as knowledge of a person.⁸ Studies have been conducted to determine the influence of gender on academic performance and variation in academic performance of different blood groups.^{9,10} There is less data available about the comparison of academic performance in different blood groups and gender in our part of the world. This study was conducted to compare the academic performance of students of different blood groups and to find the gender differences in academic performance

MATERIAL AND METHODS

This was a cross-sectional study, conducted in the Physiology department at Akhtar Saeed Medical and Dental College, Lahore. A total of 181 students of MBBS I and II participated in this study. After taking informed consent, general characteristics including age, gender, parent's blood group and academic performance were recorded on

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a standardized proforma. Matric/O-level and F.Sc/A-level marks were recorded and an aggregate of the matric/O level and F.Sc/A was calculated to assess academic performance.

The blood group of each participant was determined by the glass slide method. Blood was obtained with aseptic techniques on three separate glass slides marked as A, B, and D. The blood was mixed with antisera A, B, and D at A, B, and D respectively. Agglutination was observed with the naked eye and under the microscope in case of the doubt after 10 minutes.

The data was entered and analyzed in SPSS version 21. Mean and standard deviation was determined for quantitative parameters while qualitative parameters were presented as percentages. On the basis of presence or absence of agglutination, the subjects were divided into four groups in the ABO system (A, B, AB, and O groups) and for Rh blood groups; the subjects were divided into two groups (Rh-positive and Rh-negative). Comparison of academic scores of the students of different ABO blood groups was determined by one-way ANOVA. Comparison of academic scores in gender and Rh blood group was determined by independent t-test. A p value ≤ 0.05 was considered significant.

RESULTS

A total of 181 students participated in this study. Of these, 105 were female and 72 were males. Mean \pm SD of the age of male and female students is given in Table-1. In the ABO system, blood group B was the most frequent blood group (Table-2) while 88% of subjects were Rh positive (Table-3). It was found that subjects with blood group O had significantly high mean academic scores as compared to other blood groups (Table-4). No significant difference in academic scores was found between Rh positive and Rh negative the students (Table-5). There was no significant difference between the academic scores of male and female students (Table-6).

Table-1: Mean age and standard deviation of the students (n=181)

Gender	Age of the students (Year)
	Mean \pm Standard Deviation
Male	19 \pm 0.765
Female	19 \pm 0.818

Table-2: Percentages of ABO blood groups in students (n=181)

Blood group	Percentage of students (%)		
	Male	Female	Total
A	17	14	16
AB	9	15	12
B	43	37	40
O	30	33	32

Table-3: Percentage of Rh factor in students (n=181)

Rh blood group	Gender		
	Male (%)	Female (%)	Total (%)
Rh Positive	79	97	88
Rh Negative	21	3	12

Table-4: Comparison of academic scores in students with different ABO blood groups

Blood group	Academic score Mean \pm SD	p-value
A	1893 \pm 146	0.028*
AB	1871 \pm 138	
B	1884 \pm 131	
O	1914 \pm 102	

* $p < 0.05$ significant

Table-5: Comparison of academic scores in students with Rh positive and Rh negative blood groups

Blood group	Academic score Mean \pm SD	p-value
Rh Positive	1895 \pm 125.73	0.63
Rh-Negative	1877 \pm 126.37	

$p > 0.05$ non-significant

Table-6: Comparison of Academic scores in male and female students

Gender	Academic scores Mean \pm SD	p-value
Male	1888 \pm 119.1	0.6
Female	1897 \pm 130.47	

p > 0.05 non-significant

DISCUSSION

Different clinical conditions have been established to have been associated with blood groups like carcinomas, clotting, and bleeding disorders.⁴ In the recent year the concern is growing to find association of blood groups and biological characteristics.¹¹ Researches have been investigating the relation of intelligent quotient and personality traits with blood groups. Studies have also been conducted to find the relation of blood groups with academic performance. It was found in a study, that the eligibility to appear in examinations of universities and academic achievements were associated with blood groups. The students having blood group A had high academic scores but these differences were not statistically significant.¹² Niraj and Asha compared the academic achievement of medical students with ABO blood groups and found that there was no relation between blood groups and high academic performance.⁴ In another study conducted by Anandarajan et al, students having blood group O scored high.¹³ The present study found significantly high academic scores in students having blood group O ($p \leq 0.5$). Kumar Sarvottam et al also found that students with blood group O obtained highest percentage in first year examination¹⁴ while in another study, a significant association was found between blood group O and proficiency in computer gaming.¹ Saif Ullah Sheikh et al conducted a study to find the association of emotional intelligence with blood groups and found that emotional intelligence was significantly high in students having blood group O.¹⁵

Academic performance was not associated with Rh factor ($p=0.6$) in the present study. Similar findings were reported by Barun et al. in their study.¹⁶ Mankumari and Ajay found that the academic performance of females was significantly higher than males. Similarly, Kumar Sarvottam et al also reported that females have statistically significant high scores in academics as compared to male students.¹⁴ In contrast, the present study did not find the difference of academic performance among gender. Similar results were also determined by Ritu Chandara in his study.¹⁷ Other studies also did not find differences of academic scores between males and females.^{18,19}

CONCLUSION

The present study concludes that high academic performance varies in ABO blood groups while Rh blood group and gender have no impact on academic performance.

AUTHOR'S CONTRIBUTION

SK: Principal author, complete write-up
 MR: Data Collection, data analysis
 QM: Discussion write up
 HJQ: Helped write up, introduction, literature review, results and discussion

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