



STUDY OF BLOOD GROUPS AND MYOPIA AMONG MEDICAL STUDENTS FROM WESTERN MAHARASHTRA

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ABSTRACT

Introduction: The blood groups were first discovered by Karl Landsteiner. According to the presence of different antigens on the surface of RBCs, he classified four blood groups viz. A, B, AB and O. Many researchers observed the high prevalence of certain diseases in particular blood groups. Myopia or nearsightedness showed familial tendency and strongly suggest genetic causation. The writing, reading, outdoor exposure and family history are the major risk factor for myopia. Previous studies trying to find relation between myopia and blood groups found contradicting results. **Aim:** To study the myopia and its relation to blood groups among medical students from Western Maharashtra. **Materials and Methods:** The present cross sectional study was carried out in department of Physiology at Dr. Balasaheb Vikhe Patil Rural Medical College Loni from Western Maharashtra. Total 159 first MBBS student were selected for the study. Blood groups were determined by Hem-agglutination Method. Myopia determined by using Snellen's chart. Data analysis was done with SPSS version 21. P value of < 0.05 was considered as significant. **Results:** Blood group 'B' had highest cases of myopia 47(29.55%) followed by 'O' 25(15.72%), 'A' 17(10.69%) and blood group 'AB' 03(1.88%). The cases of myopia in decreasing order were B>O>A>AB. No any significant relationship found between blood groups and myopia (p value=0.2908). Slightly higher cases of myopia 49(30.82%) observed in female as compare to the male 44(27.67%). **Conclusion:** Prevalence of myopia is higher in medical students. There is no significant relationship between blood groups and myopia. Encouragement for outdoor activity and reduced use of mobile and laptop may be helpful to reduce the prevalence of myopia in medical students.

KEYWORDS : ABO blood group, Myopia, Rh blood group.**INTRODUCTION**

The blood groups was first discovered by K. Landsteiner. According to the presence of different antigens on the Red Blood Cells (RBCs) he classified four blood groups viz. A, B, AB and O.¹ The blood groups were further classified in to Rhesus positive (Rh +ve) and Rhesus negative (Rh -ve) on the basis of presence or absence of antigen D on RBCs.

Many studies observed the high prevalence of certain diseases in particular blood groups. Previous studies confirmed the blood group 'A' is associated with cancer stomach and blood group 'O' with peptic ulcer.²

Many studies were carried out to found the relation between blood groups and different refractive errors. There are three types of refractive errors viz. Myopia, hypermetropia and astigmatism. Myopia is the most common refractive error. In myopia parallel rays of light focused in front of retina and result in formation of blurred image.³ Myopia or nearsightedness showed familial tendency and strongly suggest genetic causation.⁴ The previous studies found that writing, reading, outdoor exposure and family history are the major risk factors for myopia. Except family history all other factors are related to behavior and can be modified.⁵ Many researchers try to find the relation between blood groups and myopia. One study observed highest number of cases in blood group 'O' while at the same time other study found lowest number of cases in blood group 'O'.^{6,7}

These results were contradictory to each other. So the present study was planned with the aim to study myopia in medical students and to find if there is any significant relation between blood group and myopia.

MATERIALS AND METHODS**Study Design and Study Area**

The present cross sectional study was carried out in the

Department of Physiology at Dr. Balasaheb Vikhe Patil Rural Medical College Loni in Western Maharashtra.

Ethical Clearance

Study was approved by Institutional Ethical Committee.

Study Population

All first MBBS students were selected for study by applying following inclusion and exclusion criteria. Informed consent was obtained from all participant before enrollment in the study.

Inclusion Criteria

- All first year MBBS students.
- Students who gave written informed consent for participation in the study.

Exclusion Criteria

- Students not willing to participate and denied written informed consent.
- Students with other refractive errors like hypermetropia and astigmatism.

Measurement of Refractive Error

The refractive error of subjects was studied by using Snellen's eye chart kept at distance of 6 (20 feet) meter. Myopia was defined as refractive error of -0.50.

Blood Group Determination

Blood group were determined by Hem-agglutination method on Porcelain (Spot) tile using antisera A, B and D. Blood group were confirmed by observing clump formation under microscope.

Data Analysis

The data obtained was entered in Microsoft Excel sheet. Statistical analysis done using SPSS version 21. P value of < 0.05 was considered as significant.

RESULTS

Table No. 1: Distribution of ABO Rh Blood Groups.

Gender	Blood group								Total (N%)
	A+N (%)	B+N (%)	O+N (%)	AB+N (%)	A- N (%)	B- N (%)	O- N (%)	AB- N (%)	
Male	19 (11.9 5)	40 (25.1 6)	20 (12.5 8)	03 (1.88)	01 (0.6 2)	01 (0.6 2)	01 (0.6 2)	00	85 (53.46)
Female	10 (6.29)	28 (36.4 8)	29 (18.2 4)	05 (3.14)	01 (0.6 2)	00	01 (0.6 2)	00	74 (46.54)
Total	29 (18.2 4)	68 (42.7 7)	49 (30.8 2)	08 (5.03)	02 (1.2 5)	01 (0.6 2)	02 (1.2 5)	00	159 (100)

Table no. 1 showed blood group distribution among first MBBS students. The most common blood group was B 69(43.39%) followed by O 51(32.07%), A 31(19.49%) and AB 8(5.03%).

Table No.2 ABO Blood Group Distribution Among Myopics and Non-myopics.

Blood group	Myopia N (%)	Non-myopics N (%)	Total N (%)
A	17(10.69%)	14(8.80%)	31(19.49%)
B	47(29.55%)	22(13.83%)	69(43.39%)
O	25(15.72%)	26(16.35%)	51(32.07%)
AB	03(1.88%)	05(3.14%)	08(5.03%)
Total	92(57.85%)	67 (42.13%)	159(100%)
p value =0.2908			

Table no. 2 showed Blood group B had highest number of cases of myopia 47(29.55%) followed by O 25(15.72%), A 17(10.69%) and blood group AB 03(1.88%). The cases of myopia in decreasing order were B>O>A>AB. No any significant relationship found between blood group and myopia (p value=0.2908).

Table No 3: Gender Distribution in Myopic and Nonmyopic in Medical College Student

Gender	Myopics N (%)	Non-myopics N (%)	Total N (%)
Male	44(27.67%)	41(25.78%)	85(53.46%)
Female	49(30.82%)	25(15.72%)	74(46.54%)
Total	93(58.49%)	66(41.51%)	159(100%)
p value 0.3856			

Table no.3 showed 49(30.82%) myopic subjects were female as compare to male 44(27.67%). Female had slightly higher number cases of myopia but it was non-significant (p value=0.3856)

Table No. 4: Myopia in Rh Positive & Rh Negative Blood Group

Rh Blood group	Myopics N (%)	Non-myopics N (%)
Rh +ve Blood group	93(58.49%)	61(38.36%)
Rh-ve blood group	01(0.69%)	04(2.52%)
Total	94(59.13%)	65(40.88%)
p Value 0.7062		

Table no. 4 showed 93(58.49%) myopic subjects were Rh +ve and 1(0.69%) subject was Rh -ve. No any significant relation found between myopia and Rh blood group (p value= 0.7062)

DISCUSSION

The present cross sectional study carried out in the Department of Physiology at Dr. Balasaheb Vikhe Patil Rural Medical College Loni. Total 159 First year MBBS students were selected for the study.

The most common blood group in study population was blood group 'B' 69(43.39%). The similar results with 'B' blood group as most common blood group were observed by Ved L.B. et al⁶, NK Gupta et al⁸ and Sonal R. et al.⁹ But some other studies by Khaskheli¹⁰ et al and Hussain A et al¹¹ found blood group 'O' as most common blood group and so was not in agreement with the present study. The differences in the results may be due to

different demographic factors like geographical location, age of the subjects, race etc.

In the present study highest numbers of myopic cases were in blood group 'B' 47(29.55%) followed by 'O' 25(15.72%), 'A' 17(10.69%) and blood group 'AB' 03(1.88%). The cases of myopi in decreasing order were B>O>A>AB. Similar results with predominance of myopia in blood group B were observed by NK Gupta et al⁸ and Sonal R. et al⁹, Seth et al¹², Garg et al¹³. But contradictory to these results some other researchers like Ved L.B. et al⁶, Mubeen Zahra et al¹⁴ and Shazo Sana et al.¹⁵ found higher prevalence of myopia in blood group 'O' and thus not in agreement with the present study. Present study could not found any significant relation between blood group and myopia (p value= 0.2908).

In the present study Female had slightly higher cases of myopia 49(30.82%) as compare to male 44(27.67%). Similar results with higher predominance of myopia in female was observed by Sonal R. et al⁹. Present study could not found any significant relation between gender and myopia (p value= 0.3856).

In the present study 93(58.49%) myopic subjects were Rh +ve and 1(0.69%) subject was Rh -ve. Present study could not found any significant relation between Rh blood group and myopia (p value= 0.7062). The results were in agreement with other studies by Sonal R. et al⁹ and Shazo Sana et al¹⁵.

In the present study 93(58.49%) medical students were myopic. Similar results with higher number of myopic cases in medical students were observed by Ved L.B. et al⁶, Sonal R. et al⁹ and Shazo Sana et al.¹⁵

From present study and the other similar studies we come to conclusion that the prevalence of myopia is more in medical students. The reason for this higher prevalence may be excessive reading and writing work in medical students due to hard and heavy syllabus. The excessive use of smartphones and laptops for gaming, watching video for academic study or entertainment may be resulted in higher cases of myopia among medical students. Similarly reduced physical activity and reduced outdoor exposure may additional contributing factors for myopia.

The present study highlight the problem of myopia among medical students. Proper preventive measures like avoiding excessive reading, writing work. Reducing mobile and laptop use for gaming and video watching may help to reduce myopia among medical students. Encouragement for outdoor activity like sports and physical exercise may be helpful for the students.

Limitations

The present study was carried out in medical students and results are not applicable to general population. Excessive reading and writing work in medical students may be additional contributing factors for higher prevalence of myopia in medical students as compared to general population.

CONCLUSION

Prevalence of myopia is higher in medical students. There is no any significant relation between blood groups and myopia in medical students. Encouragement for outdoor activity and reduced use of mobile and laptop may be helpful to reduce the prevalence of myopia in medical students.

Conflict Of Interest: None

Acknowledgement: None

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