National Journal of Physiology, Pharmacy and Pharmacology

RESEARCH ARTICLE

Comparative assessment of stress among medical students in relation to ABO blood groups

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Received: August 19, 2018; **Accepted:** September 10, 2018

ABSTRACT

Background: Stress is a term that refers to the sum of physical, mental, and emotional strains or tensions on a person. Medical education can impose significant psychological stress on undergraduates. Considerable degree of psychological morbidity has been reported among medical students ranging from stress, interpersonal problems, and suicidal ideation to psychiatric disorders and they tend to have greater psychological distress than the general population. The academic demands of medical education are placed on students at the time of their life when they are also involved in issues related to lifestyle and careers. There is very limited data available as of on Indian population regarding the link between stress and ABO blood groups. **Aims and Objective:** The aim of the study was to compare stress levels in students with different ABO blood groups. **Materials and Method:** Blood grouping was done. The medical student stressor questionnaire (MSSQ), a validated instrument, was used to identify levels of stress in medical students. The items in MSSQ represent 20 possible sources of stress in medical students identified from the literature grouped into six main domains: Academic related stressor, intrapersonal and interpersonal related stressor, teaching and learning related stressor, social related stressor, drive and desire related stressor, and group activities related stressor. Data collected were analyzed using SPSS version 23. AS Descriptive analysis of levels of stress in all six domains in relation to blood groups was presented as frequency and percentages using ANOVA. **Results:** No statistical significant difference was found in stress levels in students with different blood groups. **Conclusions:** The study showed that students with different blood groups have the same levels of stress.

KEY WORDS: Stress; Medical Student Stressor Questionnaire; Blood Groups

INTRODUCTION

Stress is an inevitable part of everyday life. Hence, an organism will respond with an adaptive set of reactions to cope with a potentially threatening situation and in the long run to restore homeostasis.[1] Hans Selye divided stress into eustress and distress.[2] Eustress generally refers to those experiences that are of limited duration and that a person can master and which leave a sense of exhilaration and accomplishment, whereas persistent stress or distress refers to experiences where a sense of control and mastery is lacking and which are often emotionally draining, prolonged, irritating, and physically exhausting.[3] Medical students experience a very high level of stress during their undergraduate curriculum, and this has a negative effect on cognitive functioning and learning of students. Studies have shown that mental health worsens in students of a medical school whose performance remains poor throughout the training.[4]

Access this article online	
Website: www.njppp.com	Quick Response code
DOI: 10.5455/njppp.2018.8.0928511092018	

ABO system antigens were first recognized as blood groups and also as the first human genetic markers. Since then, ABO system has shown lot of complexity in the past years.

There is an association between blood groups and cancers, peptic ulcers, clotting disorders, infections, and various other diseases. There is also a possible correlation between blood types and personality traits.[5] The present study was undertaken to find out stress levels in medical students with different ABO blood groups.

MATERIALS AND METHODS

A total of 141 subjects without any history of drug intake, cardiac or respiratory illness, and mental illness were included. The study was approved by the Institutional Ethical Committee. Blood grouping was done, and subjects were grouped into A, B, AB, and O blood groups depending on the results. The study was approved by the Institutional Ethical Committee. History was taken from all subjects. Stress levels were assessed using medical student stressor questionnaire (MSSQ)[6] which is a validated instrument to identify sources of stress in medical students. The items in MSSQ represent 20 possible sources of stress in medical students identified from the literature grouped into six main domains: Academic related stressor, intrapersonal and interpersonal related stressor, teaching and learning related stressor, social related stressor, drive and desire related stressor, and group activities related stressor.[6] Students were asked to answer all the questions and time limit was not imposed. The questionnaire was answered in the presence of the investigators who cleared the doubts, if any, regarding questionnaire.

RESULTS

Data collected were analyzed using SPSS version 23. Descriptive statistics of the study participants were done. The study had a total of 141 students. Students have mild to moderate stress in different stress domains according to MSSQ interpretation. Although there was an association seen between blood groups and stress domains, there was no statistically significant relationship [Tables 1 and 2].

Table 1: Descriptive statistics of stress parameters v/s blood group of the study participants

Stress domains	Blood groups	*n*	Mean±SD
I	A	34	1.835±0.614
	B	38	1.908±0.678
	AB	8	2.045±0.622
	O	61	1.924±0.668
II	A	34	1.268±0.783
	B	38	1.409±0.687
	AB	8	0.916±0.593
	O	61	1.290±0.731
III	A	34	1.191±0.735
	B	38	1.352±0.741
	AB	8	1.211±0.314
	O	61	1.176±0.663
IV	A	34	1.315±0.648
	B	38	1.456±0.644
	AB	8	1.120±0.589
	O	61	1.330±0.621
V	A	34	0.880±0.781
	B	38	0.821±0.717
	AB	8	0.622±0.517
	O	61	0.734±0.749
VI	A	34	1.358±0.714
	B	38	1.624±0.825
	AB	8	1.812±0.623
	O	61	1.571±0.740

Table 2: ANOVA of blood groups with stress domains of questionnaire

Stress domains		*F*	*P*
I	Between groups Within groups Total	0.188	0.903
II	Between groups Within groups Total	1.052	0.371
III	Between groups Within groups Total	0.559	0.642
IV	Between groups Within groups Total	0.766	0.514
V	Between groups Within groups Total	0.444	0.721
VI	Between groups Within groups Total	1.198	0.312

DISCUSSION

In the present study, the students had mild to moderate degree of stress in different stress domains. Even though there was a positive association between blood groups and stress domains, it was not statistically significant.

The present study is in conjunction with the study by Yadav *et al*.,[7] which also has shown no association of blood groups with psycho wellness. A study by Hansanian on general population has shown that blood group A is less prone to depression when compared to other blood groups.[8] In the present study, there was no association found between stress domains and blood group probably because the age group of the study subjects was between 18 and 20 years. A study[8] which showed a correlation between blood groups with depression was conducted on subjects of higher age groups. A significant correlation was found in that study probably because of the age factor, as aging, habits, and lifestyle modifications can change the stress outcome.

Blood groups antigens are hereditary, where 9th chromosome contains the ABO alleles. Antigens of ABO and Rh system are placed on the surface of RBC and other cells as membrane antigens, which are dissolved in urine, feces, milk, saliva, and plasma. In addition, serum has strong antibodies against antigens.[9] People of ABO blood group system have different ways to respond to stress. This may be due to the genetic control of blood types along with other things such as cortisol level, dopamine metabolism, and other processes that affect the nervous system.[7] The differences among the four blood groups lie in the variance of carbohydrate and protein molecules attached to the blood cells. These glycoproteins serve as tags on the blood cell.[10] Surprisingly, the genetics of blood group also appear to alter your susceptibility to developing certain neuropsychiatric disorders. It indicates that gene that controls blood type expression is probably also linked to and controls inheritance of the genes that code for the activity of dopamine-beta-hydroxylase, catecholO-methyltransferase, and arginosuccinate synthetase. Coincidentally, these all enzymes influences our neurohormonal response to environmental factors.[9]

The strength of the present study is that MSSQ was used to assess the level of stress in medical students. MSSQ is a validated instrument and is specifically designed to assess the stress in medical students. The sample size of the study was small, and further studies with a larger sample and longitudinal design should be taken up to assess the level of stress in a large population of medical students and to find if there is any significant correlation between stress and blood groups.

CONCLUSION

As the present study group consists of young adults, so the response to the stress may be quite different. Although there was a positive association of stress domains to the blood group, all the blood groups have the same level of stress.

REFERENCES

1. Armbruster D, Mueller A, Strobel A, Lesch KP, Brocke B, Kirschbaum C. Children under stress - COMT genotype and stressful life events predict cortisol increase in an acute social stress paradigm. Int J Neuropsychopharmacol 2015;15:1229-39.
2. Thimmappa B, Yogeeshwaran VV. Assessment of level of stress and its correlation with blood pressure in medical students. Natl J Physiol Pharm Pharmacol 2018;8:878-81.
3. McEwen BS. Physiology and neurobiology of stress and adaptation: Central role of the brain. Physiol Rev 2007;87:873-904.
4. Abdulghani HM, AlKanhal AA, Mahmoud ES, Ponnamperuma GG, Eiad A. Alfaris Stress and its effects on medical students: A Cross-sectional study at a college of medicine in Saudi Arabia J Health Popul Nutr 2011;29:516-22.
5. Chaudhuri A, Ray M, Hazra SK, Goswami A, Bera S. Correlation of perceived stress with blood group A and O among medical students and its effect on lipid profile in a medical college of Eastern India. Saudi J sports Med 2016;16:57-61.
6. Yusoff MS, Rahim AF, Yaacob MJ. The development and validity of the medical student stressor questionnaire (MSSQ). ASEAN J Psychiatry 2010;11:13-24.
7. Yadav A, Sankhla M, Gaur KL, Gupta ID. Association of psycho-wellness with various blood types in young medical students. Int J Res Med Sci 2016;4:3468-72.
8. Sadiq H, Abakah S. Depression and its relation with blood group according differences sex. Int J Appl Sci Technol 2015;5:175-84.
9. Dibajnia P, Moghadasin M. ABO blood groups comparing obsessive-compulsive disorder and depression. Int J Appl Behav Sci 2014;1:51-5.
10. Chan ND. How Do Blood Type, Stress, Emotional Alignment, and Cell Membrane Health Influence Susceptibility to Infections? By Editor Posted December 10, in Naturopathic Doctor News and Review; 2010.

How to cite this article: Vijaya Vageesh Y, Bharath T and Rajeshwari L. Comparative assessment of stress among medical students in relation to ABO blood groups. Natl J Physiol Pharm Pharmacol 2018;8(11):1558-1560.

Source of Support: Nil, **Conflict of Interest:** None declared.