

## Original article

# Relation between blood group and mood changes

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### ABSTRACT:

**Introduction:** Recent clinical studies have supported the relationship between blood type and psychological disorders. There are studies relating the blood type with the personality of a person. We tried to find out the relationship between mood changes and blood type in students.

**Materials & Methods:** Four hundred students were selected by random sampling. The students were asked to answer the DASS42 questionnaire from which their anxiety, depression and stress scales were calculated.

**Results:** No statically significant relationship between mood changes and blood group.

**Conclusion:** The three psychological parameters anxiety, depression and stress related to mood changes are not related to blood type of a person. But among the three parameters, type A and type O students were found to have statistically significant higher scores in anxiety.

**Key words:** Blood group, Anxiety, Depression, Stress, DASS42 questionnaire

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### INTRODUCTION:

After the discovery of the ABO blood group by K. Landsteiner numerous studies have been done to relate the ABO status with physiological variations and pathological processes [1-3]. Popular books have published scientific studies on a possible connection between blood type and personality traits. There is also a common, popular belief in Japan, Korea, and other East Asian countries that a person's personality, temperament, and compatibility with others can be predicted by her/his ABO blood type [4-14].

Medical science tried to investigate the relationship between blood group and different diseases, while clinical studies have supported the associations

between blood type and psychological disorders [15-18]. There are evidences which indicate that the gene that controls blood type expression is probably also linked to the genes that code for the activity of dopamine-beta hydroxylase, catechol-O-methyl transferase, and arginosuccinate synthetase [19]. These are all enzymes that influence our neuro-hormonal response to environmental factors. It is also very interesting to find that the chemical structure of dopamine resembles the ABO antigens. Though many of the studies confirm the association between blood group and psychological disorders, there is no report that would investigate the relationship between blood types and mood changes (depression, anxiety &

stress) in students so far. Thus, this study aims at finding distinguishable features from depression, anxiety & stress scale among ABO blood types in students.

## **MATERIALS AND METHODS**

### **Study Participants**

The present cross sectional study, based on a total of 400 subjects aged 17-21 years was approved by the Human Research Ethical Committee.

**Sampling:** Study participants include both male & female students, undergoing MBBS course at Sri Manakula Vinayagar Medical College and hospital, Puducherry. Out of 750 total medical students, 400 students, that is, 80 students from each batch (total five batches) were selected by simple random sampling

### **Study Design**

Informed consent was obtained from all the study participants. The information bias was overcome by asking the students not to reveal their name and age in the given questionnaire. DASS42 questionnaire was used to find depression, anxiety and stress among medical students.

### **Data collection Tool:**

The self-administered Depression, Anxiety and Stress Scale (DASS42) questionnaire was used to collect data. The DASS is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress. Each of the three scales contains 14 items. The DASS questionnaire

has been used earlier in Indian studies [20]. The validity and reliability of the DASS questionnaire in measuring the dimensions of depression, anxiety, and stress has been proved in different studies and several are listed at the official website [21-23]. No copyright issues, it is a public domain, refer DASS official website [24].

### **Analysis Plan**

DASS42 questionnaire consists of 42 self administered questions. In each item, the respondents will be asked to rate the extent to which they have experienced the given state over the past week, using a 4-point severity/frequency scale. Scores for Depression, Anxiety and Stress will be calculated by summing the scores for the relevant items. From the total score for depression the subject with scores 0-9 will be categorized as normal & scores above 9 are categorized as depressed. Based on the total scores for anxiety the subjects with scores 0-7 will be categorized as normal & scores above 7 are categorized as anxious. Based on the stress scale scores the subjects with scores 0-14 will be categorized as normal and scores above 14 as stressed.

### **Statistical Analysis**

Results were entered and analyzed using Epi info software version 3.4.3. The relationship between blood groups and mood changes was analyzed using Chi square test. P value <0.01 was considered statistically significant.

**RESULTS:**

**Table – 1**

**Relation of blood group with anxiety**

BLOOD GROUP	ANXIETY		“p” VALUE
	Present	Absent	
A (N=71)	36	35	0.2
B (N=156)	96	60	
AB (N=24)	13	11	
O (N=149)	96	53	

N – Number of students having the blood group

**Table – 2**

**Relation of blood group with stress**

BLOOD GROUP	STRESS		“p” VALUE
	Present	Absent	
A (N=71)	41	30	0.16
B (N=156)	71	85	
AB (N=24)	12	12	
O (N=149)	85	64	

N – Number of students having the blood group

**Table – 3**

**Relation of blood group with depression**

BLOOD GROUP	DEPRESSION		“p” VALUE
	Present	Absent	
A (N=71)	31	40	0.7
B (N=156)	65	91	
AB (N=24)	12	12	
O (N=149)	74	85	

N – Number of students having the blood group

**Table – 4**

**Prevalence of mood type among the blood group A**

<b>BLOOD GROUP</b>	<b>PARAMETER</b>		<b>“p” VALUE</b>
<b>A</b> (N=71)	<b>ANXIETY</b>	Present - 36	0.2
		Absent - 35	
	<b>STRESS</b>	Present - 41	
		Absent - 30	
	<b>DEPRESSION</b>	Present - 31	
		Absent - 40	

N – Number of students having the blood group

**Table – 5**

**Prevalence of mood type among the blood group B**

<b>BLOOD GROUP</b>	<b>PARAMETER</b>		<b>“p” VALUE</b>
<b>B</b> (N=71)	<b>ANXIETY</b>	Present - 96	0.0001
		Absent – 60	
	<b>STRESS</b>	Present - 71	
		Absent – 85	
	<b>DEPRESSION</b>	Present - 65	
		Absent – 91	

N – Number of students having the blood group

**Table – 6**

**Prevalence of mood type among the blood group AB**

<b>BLOOD GROUP</b>	<b>PARAMETER</b>		<b>“p” VALUE</b>
<b>AB</b> (N= 24)	<b>ANXIETY</b>	Present - 13	0.9
		Absent – 11	
	<b>STRESS</b>	Present - 12	
		Absent - 12	
	<b>DEPRESSION</b>	Present - 12	
		Absent - 12	

N – Number of students having the blood group

**Table – 7**

**Prevalence of mood type among the blood group O**

BLOOD GROUP	PARAMETER	“p” VALUE
<b>O</b> (N= 149)	<b>ANXIETY</b>	Present - 96
		Absent – 53
	<b>STRESS</b>	Present - 85
		Absent – 64
	<b>DEPRESSION</b>	Present - 74
		Absent – 85

N – Number of students having the blood group

Tables 1 – 3 show that there is no significant relation between blood groups and mood changes.

Table 4 and table 6 show no prevalence of any of the mood type among the blood group “A” and blood group “AB” respectively

Table 5 shows the significant prevalence of anxiety among blood group “B”

Table 7 shows the significant prevalence of anxiety among blood group “O”

**DISCUSSION:**

The results of our study reveal that there is no association between blood type and mood changes like anxiety, depression and stress. Some studies of brain chemistry have documented a link between ABO group and certain differences in brain functions [25]. But these studies are not yet fully confirmed.

Some researchers believe blood types are associated with personality traits [26-28]. There are many psychological or statistical approaches, but these are not yet completely confirmed, either. Most reports that demonstrated statistical correlation attribute differences to self-fulfilling prophecy [29]. However, there is no study that directly proved the existence of "self fulfillment". Therefore, two questions arise among the researchers at present: 1. whether there is statistical correlation or not, 2. whether any statistical correlations are superficial,

being caused by subjects' self-fulfilling prophecy, or if they are truly caused by the blood type.

Kengo Nawata, a Japanese social psychologist, statistically analyzed three data sets of over 10,000 Japanese and American people in total [30]. However, 65 of the 68 items yielded non-significant differences between blood types and the other three items showed relatively slight relationships. Therefore, the blood type explained only 0.3% of the whole differences of these data sets. This result suggests that blood type explained very little of people's personalities. Nawata came to the conclusion that there is actually no relevance of blood type for personality.

Jonas Sugandhan Sundarakumar [31] study on the blood type personality also revealed that there is no correlation between blood groups and personality. We also tried to find out whether there is statistical correlation between blood type and mood of a person.

It is concluded from our results that there is no significant relation between mood and blood type except for the prevalence of anxiety in group “B” and group “O”. Further confirmative studies can be done

in a larger population involving the patients with mood disorders attending the psychiatric clinic in the hospital.

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