

Research Article

Association of psycho-wellness with various blood types in young medical students

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Received: 17 June 2016

Accepted: 08 July 2016

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ABSTRACT

Background: There are many stressors that affect student's mental health. Many evidences indicate that individuals of different blood group have different response to same stressor, suggesting that the genetics of blood type also appear to alter susceptibility to develop neuropsychiatric disease. This study aimed to find out association of blood group with depression so early detection of depression and stress by blood types helps to reduce the overall burden of illness of young students thus improve their academic performance and social life.

Methods: A cross-sectional study was carried out on 226 medical students. They are interrogated as per MMS scale to assess the psycho-wellbeing of students. ABO and Rh blood groups were determined by Anti sera A, Anti sera B and Anti sera D. Data were analysed with Primer version 6 and Chi-square.

Results: In the present study it was observed that majority of students belong to blood group B (39.38%), followed by blood group 'O' (27.88%), 'A' (27.66%) and 'AB' (7.08%) respectively. Blood type A was more in red zone and more prone to PTSD (post traumatic syndrome disorders). Whereas blood type B was more prone to suicidal tendency. Proportion of psychomorbidity was found more in Rh+ than Rh (28.16% verse 15%). But these variations were statistically insignificant.

Conclusions: Blood type 'A' and 'Rh+' were more prone to psycho morbidity and 'B' for suicidal tendency, while 'O' had least suicidal tendency but this variation was not found significant. So it can be concluded that there is no association between blood type and psycho wellness of individual.

Keywords: Depression, Anxiety, Suicidal tendency, PTSD, Blood types

INTRODUCTION

Depression is more prevalent mental illness at the present time. Medical students have higher rate of depression in compare to their nonmedical peers group.¹⁻⁶ The life time prevalence of depression varies from 3% in Japan to 70% in Indian medical students.⁷ There are many factors affecting student's mental health. The common stressors are to adjust in new environment, burden of vast studies, low performance in examination, language problem, coeducation, uncertain future, rural background, poor financial status of parents and family problems.^{8,9} These stressors have a negative effect on student's physical and

mental health, and also on academic performance. Students have higher degree of depression, anxiety, suicidal tendency and PTSD (post traumatic syndrome disorders).

These psychotic disorders also influences students' self-esteem, quality of life, social and moral values of students and divert students from their studies and they are also more prone for addiction of bad habits like smoking, alcohol and abuse of other substances. However, an increasing amount of evidence indicates that individuals of different blood groups have extremely different responses to the same stressor. Equally

surprising, the genetics of blood group also appear to alter your susceptibility to developing certain neuro-psychiatric disorders.¹⁰ Many studies shows that mental illness such as personality disorders, mania, eating disorders, nervous tension are related to blood groups.¹¹

The inception of mental illness occurs early in life, before 24 years of age.¹² The college period is difficult phase due to more stress of studies, social pressure and change in environment. Early detection of depression and stress by blood types helps to reduce the overall burden of illness of young students and improve their academic performance and social life.

So this proposed study was carried out on 1st MBBS students of SMS Medical College, Jaipur, Rajasthan, India, with the aim to find out if any association of mental illness with various blood group typing and Rh antigen.

METHODS

Study design and study universe

A cross-sectional observational study was carried out on 226 students of 1st MBBS after taking clearance from Clinical Trial Screening Committee (CTSC) and Ethical Committee (EC) of SMS Medical College, Jaipur. After taking written inform consent from each of the student, they were given predesigned Proforma to fill.

Study population

1st MBBS students present on the day of survey excluding student's not willing to participate in the survey. Proforma has two major parts. Part (1) has general information regarding socio-demographic data, study pattern and type of blood group. Part (2) Performa is modified mini screen (MMS) scale to assess the psycho-wellbeing of students. Modified mini screen (MMS) acceptability and reliability was found satisfactory by many authors.^{13,14} It is a 22-item scale designed to

identify persons in need of an assessment in the domains of mood disorders, anxiety disorders and psychotic disorders. (Section 'A' for Mood, section 'B' for Anxiety and section 'C' for Psychosis).

MMS also interpret psycho-wellness zone as Green Zone (No Disease Zone) (Scores between '1' to '5') where no further action is required, Orange (Borderline Disease) (Scores between '6' to '8') consider for referring to Psychiatrics and Red Zone (Yes Disease) (Scores '9' and above): referred to Psychiatrics for confirmation of diagnosis and treatment. Question number (4) of MMS says about Suicidal tendency and Question no. (14 and 15) says about depression. If both Questions (14 and 15) are yes it predict Post Traumatic Syndrome Disorder (PTSD) and individual is referred to Psychiatrics for further evaluation. Various blood groups are determined by Anti sera A and Anti sera B.

The Rh antigen determined by Anti D serum. In case of low titre of antigens, agglutination is confirmed under microscope. These proforms were collected after dully filled by students. Data thus collected were compiled in MS Excel and analyzed with Primer version 6 with Chi-square.

RESULTS

In the present study total 226 students participated, majority i.e. 89 (39.38%) of students belong to blood group type 'B' followed by blood group 'O' (27.88%), 'A' (27.66%) and 'AB' (7.08%).

Proportion of students having blood type 'A' were more in red zone of psycho wellness than proportion of students of blood group 'B' but this difference was not found significant (Table1). Statistically no association was observed between blood group type and suicidal tendency, though proportion of suicidal tendency was observed less in blood group 'O' than in blood group 'B' (Table 2).

Table 1: Distribution of psycho wellness zones in various.

| Blood group | total | Psycho wellness zones | | |
|-------------|-------------|-----------------------|-------------|-------------|
| | | Green | Orange | Red |
| A | 58 (25.66%) | 32 (55.17%) | 8 (13.79%) | 18 (31.03%) |
| B | 89 (39.38%) | 54 (60.67%) | 15 (16.85%) | 20 (22.47%) |
| AB | 16 (7.08%) | 8 (50%) | 4 (25%) | 4 (25%) |
| O | 63 (27.88%) | 36 (57.52%) | 8 (12.70%) | 19 (30.16%) |
| Grand total | 266 (100%) | 130 (57.52%) | 35 (15.49%) | 61 (26.99%) |

Chi-square = 3.117 with 6 degrees of freedom; P = 0.794.

Likewise it was observed that students with blood type 'A' were more prone to PTSD than other groups but this

difference also not found statistically significant (Table 3). Proportion of students with Rh positive and negative

was 91.15% and 8.85% respectively. Although psychomorbidity was found more in Rh+ than Rh- (28.16% verse 15%) but this variation was also not found statistically significant (Figure 1). Likewise for suicidal tendency, which was found more in Rh- in comparison to

Rh+ but this variation was non- significant (Figure 2). In this study, no association was found between PTSD and Rh antigen, though higher percentage (34.47%) of PTSD was observed in Rh+ blood type (Figure 3).

Table 2: Association of various blood groups to suicidal.

| Blood group | Total | Suicidal tendency | |
|-------------|-------------|-------------------|-------------|
| | | No | Yes |
| A | 58 (25.66%) | 51 (87.93%) | 7 (12.07%) |
| B | 89 (39.38%) | 14 (87.50%) | 2 (12.50%) |
| AB | 16 (7.08%) | 79 (88.76%) | 10 (11.24%) |
| O | 63 (27.88%) | 57 (90.48%) | 6 (9.52%) |
| Grand Total | 266 (100%) | 201 (88.94%) | 25 (11.06%) |

Chi-square = 0.248 with 3 degrees of freedom; P = 0.999

Table 3: Association of various blood groups to PTSD.

| Blood Group | Total | PTSD | |
|-------------|-------------|--------------|-------------|
| | | No | Yes |
| A | 58 (25.66%) | 37 (63.79%) | 21 (36.21%) |
| B | 89 (39.38%) | 11 (68.75%) | 5 (31.25%) |
| AB | 16 (7.08%) | 58 (65.17%) | 31 (34.83%) |
| O | 63 (27.88%) | 43 (68.25%) | 20 (31.75%) |
| Grand Total | 266 (100%) | 149 (65.93%) | 77 (34.07%) |

Chi-square = 0.349 with 3 degrees of freedom; P = 0.999

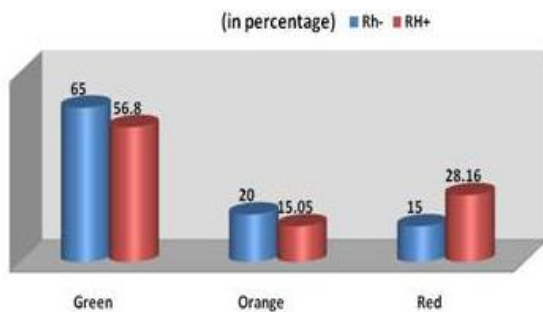


Figure 1: Association of psycho-wellness zone with Rh factor.

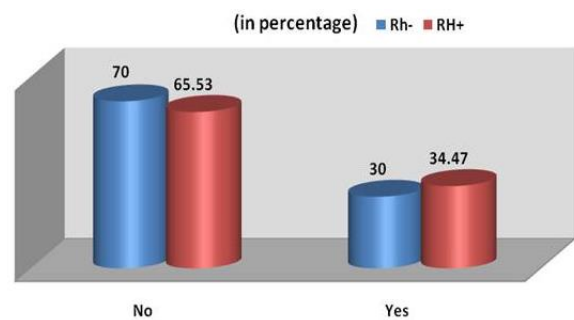


Figure 3: Association of Rh and PTSD in students.

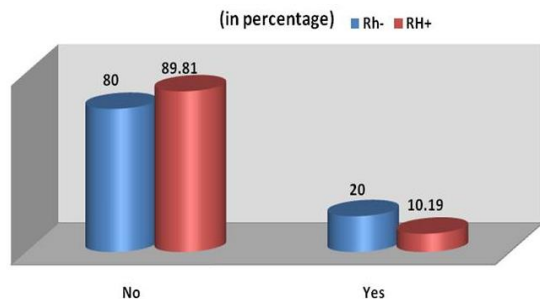


Figure 2: Association of suicidal tendency with Rh factor.

DISCUSSION

Individuals of various blood types have different ways to respond to stress management. This is because the gene control blood types also control other things like dopamine metabolism, cortisol level and other processes that affect nervous system coordination. The surface of red cell membrane contains a variety of genetically determined antigens. The blood group A and B contain H antigen. The terminal sugar N-acetylgalactosamine is present on H antigen on blood group A, while in B group it is galactose. Blood group ‘O’ individuals have none of enzymes. The ABO system is arguably the most clinically important of the 29 established blood group

systems.¹⁵ A single genetic locus on chromosome 9 controls ABO glycosyltransferase activity.¹⁶

In blood group B, nitric oxide NO is factor that provokes mental disease, trouble of memory, trouble of learning, anorexia, cancer, diabetes, high blood pressure, etc. NO is also acting as neurotransmitter (NT) between nervous and immune system, between cardiovascular and reproductive system. Blood groups B and AB can excrete nitrogen oxide faster than other blood groups. Therefore a recovery from stress situations is faster. Blood group A always have problems with high level of cortisol and its disease like high BP, heart attack etc. High cortisol level often also plays a role with senility and Alzheimer.¹⁷ Blood group A has the highest rate of obsessional neurosis. Obsessional illnesses always go with a higher cortisol level and a low melatonin level.¹⁸

Cortisol is a stress hormone, Type O produce less, while Type A construct more cortisol. Overproduction of cortisol causes exhaustion and cause depression and fatigue. Type O reaction to stress can cause overproduction of adrenaline and make them more susceptible to stress and anxiety.¹⁹

The association between blood group type O and depression was observed in normal patients by Singg S et al.²⁰ Boyer demonstrated that blood type might influence psychiatric symptoms. He showed that subjects with blood type A scored higher than those with type O on the obsessive-compulsive and psychoticism factors.²¹ Neumann et al. found that individuals of blood type A demonstrated higher levels of depression, anger, and anxiety than those of blood type O, using a small sample size.²² Rinieris et al. suggested that patients with either obsessive-compulsive neurosis or hysteria demonstrate a higher incidence of blood phenotype A and a lower incidence of blood phenotype O, as compared to a representative sample of the general population.^{23,24}

Also, in another study Rinieris et al. demonstrated a greater incidence of obsessional personality traits in blood groups A, B and AB than in Blood Group O using 600 participants. The researchers determined that blood group O might be associated with personality traits hindering the development of obsessive-compulsive symptomology.²⁵ Marutham et al found blood type B individuals to have higher neuroticism scores compared to blood types O and A on the Eysenck Personality Inventory.²⁶

The present study results resembles to Boyer, Neumann et al, Rinieris et al, Marutham et al, in contrast to Singg S et al blood group O least affected to suicidal tendency. The present study shows blood group A subjects have more pschomorbidity insignificantly and B type have more prone to suicidal tendency.

A significant distribution of blood groups were observed in psychic disorders subjects by Diebold K. Significant

difference were demonstrated in AB in organic disorders and Rh+ in neurotic disorders, AB and Rh + in manic depressive psychosis.²⁷

Whereas in this study psychosis and PTSD was present in blood group A and the B blood type was more prone to suicidal tendency, insignificantly. Similarly to above study Rh+ antigen subjects have more percentage of psychomorbidity, non-significantly. Like our study, A.B. Masters concluded that there is no significant correlation between ABO and Rh blood groups and psychiatric disorders.²⁸

CONCLUSION

There is no significant association between blood groups and psycho wellness. Although blood type 'A' and 'Rh+' were more prone to psycho morbidity and blood group 'B' is more prone for suicidal tendency but this variation was not found significant. Blood group 'O' had least suicidal tendency.

So it can be concluded that there is no association between antigens presents on red blood cells and psycho wellness of individual.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: 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.