ORIGINAL ARTICLE

PREVALENCE OF ABO/RH BLOOD TYPES AMONG FEMALES WITH EATING DISORDERS IN HYDERABAD, PAKISTAN: AN ANALYSIS UTILIZING THE EAT-26 QUESTIONNAIRE

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ABSTRACT

Objective: To assess the proportion of various blood groups and how those groups relate to one another.

Material & Methods: The current study was conducted by the Department of Physiology at Sindh University Jamshoro from June 2023 to December 2023 after obtaining ethical review**.** A total of 210 (n = 210) female participants took part in the study. The study pinpoints the prevalence of eating disorders with reference to junk food and/or breakfast-taking habits in adolescent females. A survey was conducted using the EAT-26 questionnaire, which was distributed in different restaurants in Hyderabad. A score greater than 20 was considered positive for the eating disorder. The blood groups were evaluated by the glass slide method (antigen-agglutination test) with the use of Anti-Sera A, Band O (Rapid Labs UK). The test was repeated to minimize the error.

Results: The proportion of Eds was 38.57% in the B blood group, with an odds ratio of 1.78 and a *P* value of 0.36 showing no significance between blood groups. The B blood group was predominant.

Conclusion: It is concluded that blood group B is associated more with eating disorders.

Key Words: Blood, Eating disorders, Groups, Pakistan.

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INTRODUCTION

Eating disorders may be defined as “irregular restrictions on food due to different and complex reasons." The relationship between eating disorders and mental health is the most significant one. Different mental and psychiatric problems usually lead to the genesis of this disease. It was first reported in the 17th century, and from that date on, their incidences have increased drastically. Non-medical methods to reduce weight and food dieting at an extreme level are the etiological factors. [1] The American Psychiatric Association (APA) and the World Health Organization (WHO) divide eating and restrictive disorders into different categories.[2]

Eating disorders include bulimia nervosa, anorexia nervosa, binge eating disorders, and avoidance/restrictive food disorders. In Anorexia Nervosa, there is a severe restriction of food intake; in Bulimia Nervosa, there is an irregular restriction of food stuff; in Binge eating disorder, there is an irregular but mild restriction; and in ARFD, there is a severe restriction of all kinds of food intake, whether normal or selected.[2,3] In adult women, the estimated lifetime prevalence of binge eating disorder, anorexia nervosa, and bulimia nervosa is 1.42%, 0.46%, and 1.25%, respectively while the estimates for adult men are 0.08%, 0.42%, and 0.12%, respectively.[3]

Eating disorders are more prevalent in women and western countries, but with advancements in lifestyle, they are also growing in Asian countries also.[4] Eating disorders are engulfing the world population rapidly. Five hundred million Americans indulge in this disorder every year.[5]

Eating disorders are usually associated with psychological factors when one is extremely concerned with weight and body figure. It is produced by skipping and restrictive dieting habits. Celebrities and athletes are usually involved.[6] According to the research of Solmi, it shows that eating disorders have a critical role in the mental and physical health of people, mostly affecting the older age group.[7]

Numerous studies have demonstrated that different blood groups have different prevalence rates of systemic disorders that are linked to blood phenotypes.[7,8] Different blood groups were found associated with eating disorders. Dieticians usually prescribe different combination of dieting charts for different blood groups. A book titled "Eating Right for your Type" by D'Adamo informed the world that that dieting habits should be according to different blood groups.[9] D'Adamo's research reveals that blood types range in their diets and eating habits as well as in their susceptibilities to disease, with blood type B having the highest prevalence of disease.[10]

The early 19th century saw the discovery of blood types. Since its discovery, a great deal of research has been done globally to determine the relationship between blood types and other illnesses, such as Eclampsia, cancer, cardiovascular disease, and blood disorders. [11] There are four blood groups for blood transfusions, and blood types are used for transplanting various organs and tissues. The A, B, AB, and O groups are among them. In 1941, Landsteiner made the initial discovery of the Rh group. After that, the groups that were positive and negative were formed. The carbohydrate moiety of ABO blood types is an antigen that clings to the surface of various epithelial cells and red blood cells.[12] The carbohydrate moiety of ABO blood types is an antigen that clings to the surface of various epithelial cells and red blood cells. These antigens have the unique ability to bind to various allergens, which causes the development of various illnesses, e.g., COPD. When there is a history of allergy diseases in the parents, the prevalence of COPD is increased.[13]

There are 345 blood antigens and 43 blood types, according to the International Society of Blood Transfusion. In 1900, blood groupings were first identified. The four blood groups that are recognized globally are A, B, AB, and O. Because of the presence of glycoprotein antigens, they are categorized. Other blood groups that are included are the Kidd, Dell, Duffy, and MN groups. [14] The human body contains antigens specific to ABO blood types in a variety of locations, including red blood cells, platelets, the endothelium of arteries, and other body cells. Blood group antigens function as allergen receptors and are involved in hemostasis and cell membrane stabilization. One blood group may be more resistant to some diseases than another due to the strength of its antigens. [15]

Blood types, particularly the ABO system, are closely linked to a number of illnesses. It has been observed that, whereas non-O blood groups have cardiovascular illnesses, O blood groups are protected against pancreatic cancer. [16] Usually, blood types are linked to allergic bronchospasm. A higher concentration of eosinophil in the serum serves as additional confirmation. 16 Studies have indicated that certain blood groups are more susceptible to certain diseases, such as plasmodium falciparum, which is more common in the B group.[17] The current study was carried out to find out if there was any relationship between blood groups and eating disorders.

MATERIAL AND METHODS

A cross-sectional study employing a survey was conducted between June 2023 to December 2023. The University of Sindh, in the city of Jamshoro, Pakistan, provided the sample, which was picked at random. Only female participants were selected. A written consent was acquired from each participant ahead of data collection. The number of samples (n) was 210. EAT-24 questionnaire was handed out to participants, who ranged in age from 18 to 24, during the interview or investigation. At the same time of day and at room temperature, every recruit was examined, and care was taken to make certain that each participant understood the questionnaire thoroughly during the measurements and interview. The study group consists of both married and un-married female. The cutoff value was 2.8 in EAT-26 questionnaire. Additionally, the study excluded those suffering from any form of ailments, including digestive, cardiovascular, and type I or II diabetes.

The results were tested for significance by using Graph Pad Prism 5. The Chi square test was employed as appropriate.

RESULTS

Eating disorders was more prevalent in blood group B. While no significant association was found in the Rh (+) group (p = 0.36, odds ratio = 1.78), the Rh (-) group had 8.57% of individuals at risk compared to 3.33% normal. **(Table 1)**

We assessed data on blood types (A, B, AB, and O) and their association with normal individuals and those at risk for eating disorders. No significant association was found for any blood type (p > 0.05), with percentages of normal and at-risk individuals provided for each blood type. **(Table 2)**

The findings show that B+ blood group had high percentage of eating disorder (36.66%), followed by O+ with 29.05% and A+ with 18.57%. The *P* value was 0.90, which is not significant. **(Table 3)**

Table 1: Rhesus (Rh) blood groups of normal versus eating disorder risk individual

	Normal	Eating disorder	Total	Odds ratio	95% confidence interval	X^2	*d.f*	*p*-value
Rh(+)	102(48.57%)	90(42.86%)	192(91.43%)					
Rh(-)	07(3.33%)	11(5.24%)	18(8.57%)	1.78	0.6622 to 4.790	0.83	1	0.36
Total	109(51.90%)	101(48.10%)	210(100%)					

Table 2: The distribution of ABO blood groups in normal versus eating disorder risk

	Normal	Eating disorder risk	Total	X2	*d.f*	*p*-value
A	21(10.00%)	20(9.52%)	41(19.52%)			
B	45(21.43%)	36(17.14%)	81(38.57%)			
AB	07(3.33%)	10(4.76%)	17(8.09%)	1.26	3	0.74
O	36(17.14%)	35(16.67%)	71(33.80%)			
Total	109(51.90%)	101(48.10%)	210(100%)			

Table 3: The distribution of ABO blood groups in normal versus eating disorder risk

Blood type	Normal	Eating disorder	Total	X^2	df	*p*-value
A+	20(9.52%)	19(9.05%)	39(18.57%)			
A-	01(.48%)	01(0.48%)	02(0.95%)			
B+	43(20.48%)	34(16.19%)	77(36.66%)			
B-	02(0.95%)	02(.95%)	04(1.90%)			
AB+	07(3.33%)	08(3.80%)	15(7.14%)	3.392	8	0.90
AB-	00(0.00%)	02(0.95%)	02(0.95%)			
O+	32(15.24%)	29(13.81%)	61(29.05%)			
O-	04(1.90%)	06(2.85%)	12(5.71%)			
Total	109(51.90%)	101(48.10%)	210(100%)			

DISCUSSION

The extensive statistical exploration delves into the potential interrelationships between the Rh factor, various blood types, and susceptibility to eating disorders. Analysis of the Rh factor shows that individuals with Rh (+) status do not exhibit a statistically significant association with eating disorders, as evidenced by a p-value of 0.36 and an odds ratio of 1.78. This suggests that observed differences in eating disorder prevalence among Rh+ individuals lack statistical significance. Similarly, for those with Rh (-) status, no statistically significant correlation with eating disorders is found, emphasizing the intricate nature of these relationships.

Turning our attention to blood types (A, B, AB, and O), the study finds that there is no statistically significant correlation between any blood type and the likelihood of developing an eating disorder; p-values for all blood groups are higher than 0.05. This comprehensive analysis indicates that, within the parameters of the study, there is no blood type that is substantially linked to an increased or decreased risk of eating disorders.[17]

The association between eating habits and blood group was also discussed by Tsamesidis I which concluded that AB blood groups are more relevant to some specific food and eating disorders.[18,19] in a literature review study conducted by Cusack in 2013 it is deducedthat blood groups are not specifically associated with eating habits and eating disorders.[20]

Furthermore, a comprehensive analysis integrating both Rh factor and blood type underscores the absence of a statistically significant association with eating disorders ($p = 0.90$). This combined approach provides a nuanced perspective, indicating that neither the Rh factor nor specific blood types, in isolation or combination, manifest a substantial correlation with the risk of eating disorders in the studied population.

In conclusion, the meticulous statistical analyses consistently portray a scenario where neither the Rh factor nor specific blood types demonstrate a noteworthy connection with the risk of eating disorders within the examined population. These findings underscore the complexity of these relationships and highlight the need for further research with diverse demographics to unveil potential nuances in these associations.

CONCLUSION

The study indicates that among young, affluent male university students, eating disorders are currently fairly prevalent and that eating habits and junk food are associated with these medical conditions.

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