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RESEARCH ARTICLE

PREVALENCE OF ABO BLOOD GROUPS AND RHESUS (RH) FACTOR IN THE POPULATION OF GIRL STUDENTS IN YASHWANTRAO CHAVAN WARANA MAHAVIDYALAYA, WARANANAGAR, DIST – KOLHAPUR, STATE – MAHARASHTRA

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ABSTRACT

The incidence of ABO & Rh blood types varies among different population groups. The knowledge of the distribution of ABO & Rh blood groups is essential for effective management of blood banks, transfusion purposes, in population genetic study, transplantation, hemolytic disease & resolving certain medico–legal issues, of disputed parentage. Our aim was to determine the distribution of different blood groups in girl students in Y.C.W. M. Warananagar. A study was conducted at Zoology Department laboratory in Y.C.Warana Mahavidylaya over a period of two years – 2016 and 2017. During study, some Rh –ve girl students were found. The study of blood groups have a significant implication regarding the inventory management of blood bank, transfusion services and hemolytic disease. Present study concluded that most prevalent Rh negative blood groups are B & O while AB is rare blood group amongst the girl students in Y.C.Warana Mahavidylaya, Warananagar.

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INTRODUCTION

The most well known and medically important invention is Blood Group types. The ABO blood group system is widely credited to have been discovered by the Austrian Scientist Karl Landsteiner (1900), who found three different blood types (Land, 1990). He described A, B,& O blood groups for which he was awarded the Nobel Prize in 1930. Alfred Von Decastello and Adriano Struli (1902). Discovered the fourth type blood group AB (Von decastella, 1902). The Landsteiner's discovery opened the door to the birth of a wide spectrum of discoveries in the field of immune haematology; blood transfusion among humans irrespective of their natives, unmatched pregnancy, legal medicine, anthropology & the discovery of other blood group systems, all are deemed as an application or as a result of Karl's discovery (Jolly, 2000; Khurshid, 1992).

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Rh system emerged as second most important blood group system. The Rh blood group is so named because the Rh antigen, called Rh factor, was first found in the blood of the Rhesus monkey. It has pivotal importance in haemolytic disease & its importance in Rh negative individuals in subsequent transfusions once they develop Rh antibodies (Lo et al., 1998). Identification of Rh system is important to prevent the erythroblastosis foetalis (haemolytic disease), which commonly arises when Rh negative mother carries Rh positive foetus. Normally the antibodies are not formed in large enough quantities to affect the first born child. However subsequent rhesus positive children can suffer destruction of their red blood cells. All human populations share the same blood group systems; although they differ in the frequencies of specific types. The frequencies of ABO & Rh blood groups vary from population to population and time to time in the same region. The knowledge of distribution of ABO & Rh blood groups at local & regional levels is helpful in effective management of blood banks & safe blood transfusion services & it will help a lot in reducing the maternal mortality rate; as access to safe & sufficient in reducing the preventable deaths.

It is therefore imperative to have information on the distribution of these blood groups in any populations (Sidhu, 1980; Enosolease, 2008).

MATERIALS AND METHODS

The volunteer were selected from Y.C.Warana Mahavidylaya, Warananagar. Total 430 girl students of two years (252 of 2016 and 178 of 2017) had checked blood groups by finger pricking method. For determination of ABO and Rh blood group we used antiserum – A, B and D. In this method, a drops of antisera – A & B placed on left & right ends of thoroughly cleaned glass slides respectively. Similarly, antisera – D placed in the centre of another clean slide. Blood drops of pricked finger had taken by sterilized lancet. Subsequent two drops of blood were placed near the antiserum – A & B and one blood drop near antiserum – D. The blood & antiserum were mixed with the help of 3 separate applicator sticks for three antiserum. The slide was observed for agglutination.

We studied blood groups of 430 girl students of two years (252 girl students of year 2015 & 178 girl students of year 2016) in Y.C. Warana College, Warananagar. We found 401 (93.25%) Rh positive and 29 (6.75%) Rh negative girl students (Fig.1), amongst Rh positive girl students of blood group B was found to be most prevalent group (30.46%) followed by blood group A (27.44%), O (26.05%) and AB (9.30%) (Fig. 2). The blood group frequencies with respect to ABO & Rh positive can be shown with the general formula: *(*Table 1*)*. B positive > A positive > O positive > AB positive. Similarly amongst Rh negative girl students blood groups B (2.09%) & O (2.09%) were found to be most prevalent groups followed by blood group A (1.63%), & AB (0.94%)(Figure 2).The blood group frequencies with respect to ABO & Rh negative can be shown with the general formula : B negative = O negative > A negative > AB negative *(*Table 2*)*. A study of this blood group in Y.C.Warana College, Warananagar shows deviation from the study of blood groups had done in Punjab, Southern Rajasthan and Latur blood bank *(*Table-3*)*. We compared this data with the following Table-3 and we found the deviations in

Table 1. Frequency of ABO and Rh positive blood groups among girl students of Y.C.Warana College, Warananagar

Rh positive blood groups	A positive	B positive	AB positive	O positive	Total	Out of
No. and %	118 (27.44 %)	131 (30.46 %)	40 (9.30 %)	112 (26.05 %)	401 (93.25 %)	430 (100 %)

Table 2. Frequency of ABO and Rh negative blood groups among girl students of Y.C.Warana College

Rh negative blood groups	A negative	B negative	AB negative	O negative	Total	Out of
No. and %	07 (1.63 %)	09 (2.09%)	04 (o.94 %)	09 (2.09 %)	29 (6.75 %)	430 (100 %)

Table -3 [10,11,12]. Prevalence of Blood groups in different regions of India

Sr.No.	Population	Rh positive bloodgroup order	Rh- negative blood group order
1.	Punjab (Amritsar)	B > O > A > AB	O > B > A > AB
2.	Southern Rajasthan	B > O > A > AB	B > O > A > AB
3.	Marathwada (Latur)	B > O > AB > A	A > AB > O > B
4.	Maharashatra, (Y.C.WaranaCollege, Warananagar Kolhapur)	B > O > A > AB	B = O > A > AB

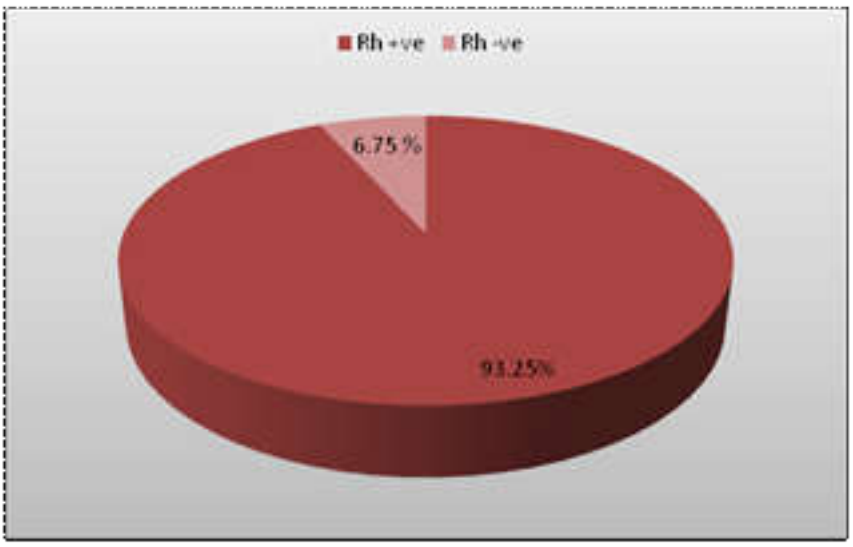

Figure 1. Percentage of Rh positive and Rh negative blood groups of girl students in Y. C. Warana College, Warananagar

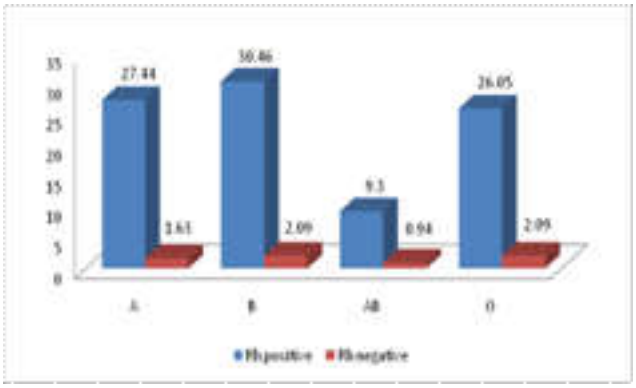

Figure 2. Distribution of ABO blood group among girl students in Y.C.Warana College, Warananagar based on Rh blood group

DISCUSSION

Research on ABO blood group and Rh blood group system has been of immense interest, due to its medical importance in hemolytic disease. These blood group systems are not only important in blood transfusions, organ transplantation, erythroblastosis in neonates, but also one of the strongest predictors of national suicide rate & a genetic marker of obesity (Mollison, 1979; Hein, 2005). The genetic history of a person can be known by studying blood groups (Sokolov, 1993). In our study the ABO blood groups & Rh negativity in girl students of Y.C.Warana College, Warananagar showed that the blood groups B & O were most prevalent followed by A & AB. In contrast, the blood group O (2.73%) is the most prevalent group in Punjab followed by B (2.68%), A (1.97%) & AB (1.34%). (Harjot Kaur et al., 2013) Likewise in Southern Rajasthan blood group B (33.5%) is most prevalent followed by O (32.3%), A (21.02%) & AB (7.2%) (Himanshu shekhar et al 2018.). While in blood bank of Latur, Marathwada, A (5.45%) is the most prevalent blood group followed by AB (5.26%), O (5.21%) & B (5.05%) (Deshpand, 2013). India is a country with a lot of diversity based on race, religion & creed. Hence diversity has been observed in the distribution of blood groups in population within the country. So the data generated can be helpful to blood banks, health planners to face the health challenges of the region.

Conclusion

The most prevalent Rh negative blood groups are B & O while AB is rare blood group amongst the girl students in Y.C.Warana College, Warananagar. This was deviated from the prevalence of ABO and Rh negative blood groups in above reported areas of India.

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