

Original Research Article

Frequency of ABO and Rh Blood Groups among High School Children of Purkot V.D.C., Tanahun, Nepal

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Abstract: A study was carried out at Karmada High school students of Purkot V.D.C., Tanahun, Nepal from October 2016 to November 2016. A total of 145 students were screened for ABO and Rh blood group. Blood samples were collected by finger prick method. A drop of Anti-sera A, B, and Anti D were added to a drop of blood on clean and fresh glass slides and mixed well with glass rod. Out of 145 high school children processed for blood groupings 68(46.9%) were female and 77(53.1%) were male attendant. Among 145 ABO blood groups in students A group was seen in 48(33.1%), B group 32(22.1%), AB group 18(12.4%) and O group 47(32.4%) in both male and female students and the P = 0.012 was seen significant in the male and female of A blood group. Out of 145 students only 2(1.4%) had Rh negative and rest 143(98.6%) had Rh positive group. Among the ethnic group like Brahmin/chhetri, Janjati, Dalit and others the highest attendant was seen in Brahmin/Chhetri. This study concludes that A and O blood groups were common in both sexes and with very high Rh positive.

Keywords: ABO Grouping, Blood groups, Rh factor and students.

INTRODUCTION

Blood group antigens are hereditary determined and play a vital role in transfusion safety, understanding genetics, inheritance pattern, and disease susceptibility. Nearly 700 erythrocyte antigens are described and organized into 30 blood group systems by the International Society of Blood Transfusion [1]. Karl Landsteiner discovered the ABO blood group system in the year 1900. Even 100 years passed after his discovery, detecting blood group of an individual is of utmost importance even today for maintaining blood banking records and for safe transfusion [2].

Individuals are categorized into four major blood groups (A, B, AB and O) according to presence of antigens on the surface of RBC. Group A blood has type A antigens, group B blood has type B antigens and group O blood has neither A nor B antigens. Also plasma from blood group A contains Anti-B antibodies which act against type B antigens, whereas plasma from type B blood contains Anti-A antibodies, which act against type A antigens. Type AB has neither type of antibody and type O blood has both A and B antibodies [3].

ABO blood groups are genetically determined by the presence of agglutinogens on the red blood cell walls. Rhesus (Rh) blood group system was the second system, if RhD antigen present on the surface of their

red cells are considered as positive and lack of RhD antigen considered as negative [4].

The need for distribution of blood group studies is multipurpose, as besides their importance in evolution; their relation to disease and environment is being increasingly sought in modern medicine. Blood group antigens are not only important in relation to blood transfusion and organ transplantation, but also have been utilized in genetic research, anthropology and training ancestral relation of humans [5].

The major objective of this study is to screen out the distribution of ABO and Rh blood groups of the students which will be helpful in the effective management and for the knowledge of blood groupings and their frequency [6].

MATERIAL AND METHODS

Study Design

The study was carried out on Karmada High school students of Purkot V.D.C., Tanahun, Nepal October 2016 to November 2016. A total of 145 students were screened for ABO and Rh blood group.

Blood Group Determination

Blood groups were determined by slide agglutination method, by using commercially available Anti sera A and anti sera B (Tulip Diagnostics (p) Ltd).

On a labeled slide a drop of each of figure prick blood was placed onto which a drop of anti-A, anti-B and anti-D were added and mixed. Results of agglutination are recorded immediately. Agglutination with anti-A showed group A, with anti-B showed group B, with both anti-A & anti-B showed group AB and with neither of these showed O group. The blood samples are also classified as Rh positive or Rh negative according the presence or absence of the anti-D. Screening for Rh type is conducted by using anti-D sera.

Statistical Analysis

The data collected were statistically analyzed with help of SPSS software 17.0 version. Chi-Square (χ^2) test is performed to determine the significance between blood group and other variables and the presentation was done by SPSS software.

RESULTS

Out of 145 high school children processed for blood groupings 68(46.9%) were female and 77(53.1%) were male attendant as shown in fig. 1. Among 145 ABO blood groups in students A group was seen in 48(33.1%), B group 32(22.1%), AB group 18(12.4%) and O group 47(32.4%) as shown in table 1. For both male and female students $P = 0.012$ was seen significant in the male and female of A blood group. Out of 145 students only 2(1.4%) had Rh negative and rest 143(98.6%) had Rh positive group. Among them female students frequency of Rh groups were; 66(45.5%) had Rh(+ve) and only 2(1.4%) female students had Rh (-)ve group. In males; 77(53.1%) had Rh (+) ve and 0(0.0%) subjects had Rh (-)ve group as shown in table 2. Among the ethnic group like Brahmin/chh, Janjati, Dalit and others the highest attendant was seen in Brahmin/Chhetri as shown in Table 3.

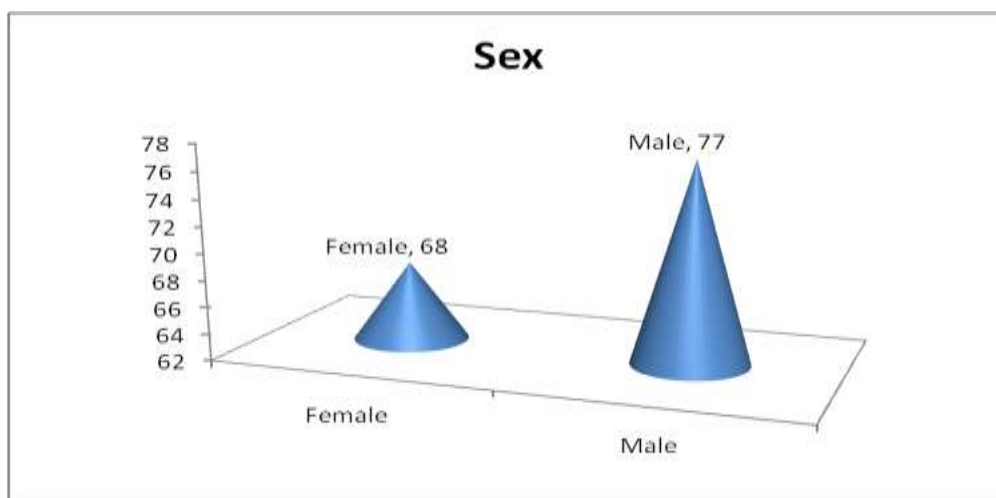


Fig-1: Shows the male and female attendant.

Table-1: Distribution of ABO blood groups among high school children

Blood Group	Female	Male	Total	p value
A	18(12.4%)	30(20.7%)	48(33.1%)	p = 0.012
AB	9(6.2%)	9(6.2%)	18(12.4%)	p= 1.000
B	19(13.1%)	13(9.0%)	32(22.1%)	p = 0.106
O	22(15.2%)	25(17.2%)	47(32.4%)	p = 0.340
Total	68(46.9%)	77(53.1%)	145(100.0%)	p = 0.118

Table-2: Distribution of Rh factor among high school children

Rh factor	Female	Male	Total
Positive	66(45.5%)	77(53.1%)	143(98.6%)
negative	2(1.4%)	0(0.0%)	2(1.4%)
Total	68(46.9%)	77(53.1%)	145(100.0%)

Table-3: Distribution of ABO blood group among different ethnic group of school children

Ethnic Group	A	AB	B	O	Total
Brahmin/chh.	16(11.0%)	3(2.1%)	13(9.0%)	17(11.7%)	49(33.8%)
Janjati	21(14.5%)	9(6.2%)	11(7.6%)	23(15.9%)	64(44.1%)
Dalit	5(3.4%)	4(2.8%)	7(4.8%)	4(2.8%)	20(13.8%)
Others	6(4.1%)	2(1.4%)	1(0.7%)	3(2.1%)	12(8.3%)
Total	48(33.1%)	18(12.4%)	32(22.1%)	47(32.4%)	145(100.0%)

DISCUSSION

Variation of blood group frequency in different parts of the world due to the influence of genetic and environmental factors. Comparison of data among the different studies in the Indo-Pak sub-continent revealed that there was an equal dominance of group B and O [7]. Other studies in South India showed group B is the most prevalent followed by group O, A, and AB [8, 9]. Study in country like Nepal and India showed different picture of higher frequency of group A [10-13]. The prevalence of Rh-D positive remains very high compared to the Rh-D negative blood throughout the world. Blood group A has highest frequency in our study.

CONCLUSION

ABO blood group study results reveals there is no relationship between the gender and blood group & Rh type of the students. However the study was done to provide the knowledge of their various blood groups to the students which were achieved.

Acknowledgement

The authors are grateful to the students and staffs of Karmada High school of Purkot V.D.C., Tanahun, Nepal for helping in shaping of the work.

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