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Original Research Article

Study of prevalence of blood groups among male and female students of Patna medical college and hospital, Patna Bihar: A retrospective cross-sectional study

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Abstract: The ABO system was the first human blood group system to be discovered by Australian scientist Karl Landsteiner in 1900.Later Landsteiner and Alexander S. Wiener defined the Rh blood group. Rh system composed of many antigens, D is most antigenic. To create and motivate healthy and educated blood donor for needful emergency patients. 2. To know any pattern of distribution of blood groups among male and female subjects exist or not in the students of Patna medical college and hospital. 3. To compare with other data of similar study within India and all over the world and to know the relative deficiency of particular group at time of need. The data were collected from the Deptt. Of Physiology from the record available from 2014-15 to 2015-16. The subjects were healthy MBBS students of batch 2015 and 2016. The total numbers of students were 285. The students were from various districts of Bihar mainly. ABO and Rh typing was done by antigen antibody agglutination test by available standard antiseras i.e. nti A, anti B and Anti D. Blood groups were done by slide agglutination method. In oth the batches of students B+ and O+ blood groups were maximum where Rh – blood groups in 2015 batch is 3.5% and in 2016 batch is 4.9% only. Healthy blood groups onors are emergency requirement of the any medical colleges and hospital. This study creates awareness amongst medical students and other healthy professional groups of blood donors to involve in such noble job in saving life by donating rare blood groups in emergency patients.
Keywords: ABO and Rhesus (Rh) blood group, Healthy blood donor, Prevalence of blood groups in students of PMCH, Bihar

INTRODUCTION

Blood group antigens are inherited as mendelian dominants. They are present on the membranes of human blood cells, appear 6th week in fetal life and remain unchanged till death. They are glycolipid, differing in terminal sugars [5]. H gene codes for a fucose transferase that adds a terminal fucose, forming the H antigen that is usually present in individuals of all blood types.1Nearly 400 erythrocyte antigens are described and organized into 30 blood group systems by International society of blood transfusion [3].Most of the antigens are weak and therefore are of importance principally for studying the inheritance of genes to establish parentage. The ABO system was the first human blood group system to be discovered by Australian scientist Karl Landsteiner in 1900.3.Later Landsteiner and Alexander S. Wiener defined the Rh blood group.4. Rh system composed of many antigens, D is by far the most antigenic [1]. The Landsteiner's discovery opened the door in the field of immunohematology, blood transfusion among humans irrespective of their natives, paternity testing, disease susceptibility and the discovery of other blood group system etc. [3, 4]. Knowledge of ABO and Rh blood group is essential for local, regional or national transfusion service. Moreover due to paucity of the blood bank and unavailability of safe blood in many regions of Bihar, it is good idea to create a healthy blood donor group-such as students, professionals etc. It will create awareness among all other groups and easily availability of required blood group for emergency patients.

Aim and objectives

- To create and motivate healthy and educated blood donor for needful emergency patients
- To know any pattern of distribution of blood groups among male and female subjects exist or not in the students of Patna medical college and hospital.
- To compare with other data of similar study within India and all over the world and to know the relative deficiency of particular group at time of need.

MATERIAL AND METHODS

The data were collected from the Deptt. Of Physiology from the record available from 2014-15 to 2015-16 batch students. The subjects were healthy MBBS students of batch 2015 and 2016.Students belonged to age group of 20-30 years. The total numbers of students were 285. The fifteen students were left out the course in between out of 300.The students were from various districts of Bihar mainly. ABO and Rh typing was done by antigen antibody agglutination test by commercially available standard monoclonal antiseras i.e. anti A, anti B and Anti D. Blood groups were done by slide agglutination method. Doubtful cases were confirmed by tube agglutination method. Rh –ve blood groups were confirmed by antiglobulin technique. All D positive groups were considered as Rh positive. Data on frequency of ABO and Rh blood groups were reported in simple percentages. The blood group data were recorded tabulated analyzed and compared with the similar studies by other authors. All the students had given verbal consent of blood grouping and also there were motivated for blood donation in emergency if required, and not by compulsion.

RESULTS

The results of the blood groups among batch 2015 and 2016 were recorded and analyzed in table no.1, table no.2 and table no.3 respectively. In the batch 2015 (Table no.1) total students screened were 143 out of that female and male subjects were 51 and 92 consequently. Among all blood groups in female maximum number were from the blood groups of B+ and O+. The trend of blood groups in female were as follows: B+16> O+14> A+13> 4 AB+>1=A- ,AB-,B- ,O-, where as in male students with maximum blood groups were B+ (33) out of 92 and O+ were (28) out of 92. The trends of occurrence of blood groups among male as follows; 33 B+>, 28 O+>19A+> 07 AB+> 03 O- >1B- =A-, AB- nil. The figure no. 01 clearly presents the frequency of distribution of blood groups in the healthy students of Patna medical college and hospital. So common blood group is B+ and O+ and rarest blood group were AB-. In the batch 2016 (Table no.2) total students screened were 142 out of that female and male subjects were 48 and 94 consequently. Among all blood groups in female maximum number were from the blood groups of B+ and O+. The trend of blood groups in female were as follows: B+17 > O+14> A+10 > AB+ 4 >1=A- , B-,O-,AB- nil, where in male students with maximum blood groups were 0 +(29) out of 94 and B+ were (27) out of 94. The trends of occurrence of blood groups among male as follows; 29 0+>, 27 B+ > 21A+ > 13 AB+ > 02 B- >1A- =0-, AB- nil. Common blood group is O+ and B+. Rarest blood group was same as 2015 batch AB-. The figure no. 02 clearly presents the frequency of distribution of blood groups in the healthy students of Patna medical college in batch 2016. In both sex students and in both batches almost showed equally propionate blood groups occurrence B+ and O+. Table no.3 shows the percentage distribution of blood groups amongst batch 2015 and 2016. In 2015 B+ is commonest blood group; the total 34.3%students were B+, male (23.1%) and female (11.2%). Next is 0+, total is (29.4%), male (19.6%) and female (9.8%).AB- is rarest 1 in 143 students: 0.7%.Rh- is 5 in 143(3.50%). In 2016 O+ is commonest blood group; the total 30.3%students are 0+, male (20.4%) and female (9.9%). Next is B+, total is 31%, male (19%) and female (12%).AB- is rarest .0 in 142 students: nil, Rh- is 7 in 142(4.9%).

Table-1: Distribution of blood Group in male & female students of batch 2015

Blood groups name	Female	Male	Total
A-	1	1	2
A+	13	19	32
Ab-	1	0	1
Ab+	4	7	11
B-	1	1	2
B+	16	33	49
O-	1	3	4
O+	14	28	42
Total	**51**	**92**	**143**

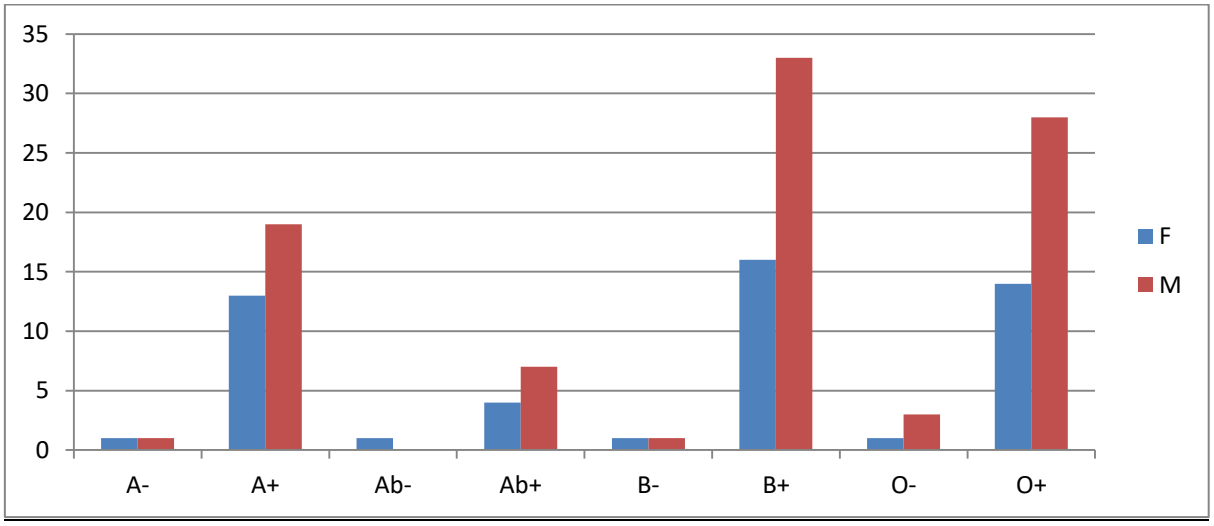

Fig-1: Distribution of blood groups in male & female students of batch 2015

Table-2: Distribution of blood groups in male & female students of batch 2016

Blood Groups name	Female	Male	Total
A-	1	1	2
A+	10	21	31
Ab+	4	13	17
B-	1	2	3
B+	17	27	44
O-	1	1	2
O+	14	29	43
Total	**48**	**94**	**142**

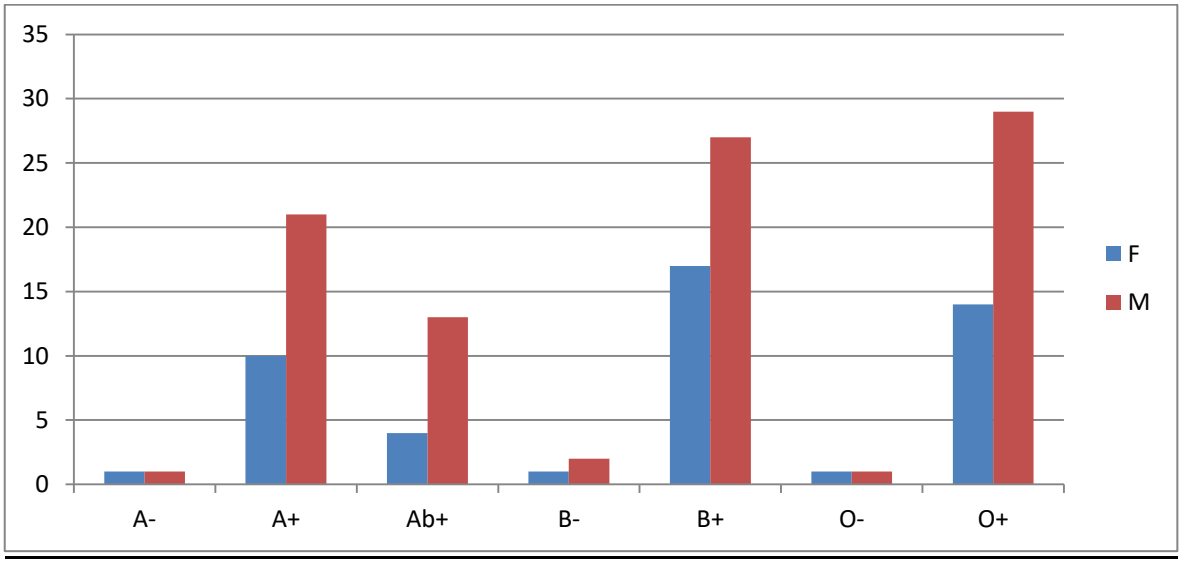

Fig-2: Distribution of blood groups in male & female students in batch 2016

Table-3: Distribution of blood groups in the healthy male and female students of Patna medical college, Patna

Year				**Blood groups**								Total
				A+	A-	B+	B-	AB+	AB-	O+	O-	A+
2015 batch	Sex	Male	Count	19	1	33	1	7	0	28	3	92
			% of Total	13.3%	.7%	23.1%	.7%	4.9%	.0%	19.6%	2.1%	64.3%
		Female	Count	13	1	16	1	4	1	14	1	51
			% of Total	9.1%	.7%	11.2%	.7%	2.8%	.7%	9.8%	.7%	35.7%
	Total		Count	32	2	49	2	11	1	42	4	143
			% of Total	22.4%	1.4%	34.3%	1.4%	7.7%	.7%	29.4%	2.8%	100.0%
2016 batch	Sex	Male	Count	21	1	27	2	13		29	1	94
			% of Total	14.8%	.7%	19.0%	1.4%	9.2%		20.4%	.7%	66.2%
		Female	Count	10	1	17	1	4		14	1	48
			% of Total	7.0%	.7%	12.0%	.7%	2.8%		9.9%	.7%	33.8%
	Total		Count	31	2	44	3	17		43	2	142
			% of Total	21.8%	1.4%	31.0%	2.1%	12.0%		30.3%	1.4%	100.0%

DISCUSSION

The present study was done to determine the distribution of ABO and Rhesus blood group among medical students of Patna medical college and hospital, Patna and also to develop and make aware of healthy donors to donate blood in case of emergency needs of patients. The frequency of ABO and Rh blood group observed in this study were as follows as B+ and O+ blood groups were subjects maximum and these findings are in concordant with findings of the most of the research papers. In batch 2015 and in 2016 AB- subject was recorded only one in batch 2015 students which is lowest amongst all blood groups and the subject was female, where A- and B- ve blood groups were one each in male and female blood groups , which was second rarest amongst all blood groups. As per studies conducted in India on basis of regions classified arbitrarily as northern India , western India , central India , southern India shows the similar kind of distribution in the donors groups. In both groups of batches of students RH –ve findings were as follows five [5] and seven [7] in their consecutives batches. These findings are as per distribution in other parts of India. These blood groups are rare so there records are maintained in the Department of physiology for emergency donors and also shared with blood bank of this medical college in case rare blood group donors are required. There were almost similar pattern of distribution of blood groups in the both sex with commonest blood groups were B+ and O-. This age group (20-30) fulfills maximum inclusion criteria set by NACO for blood donation [6].There is less risk of transmitting transfusion transmitted infections with voluntary donations [7].

CONCLUSION

Healthy blood groups donors are emergency requirement of the any medical colleges and hospital. This study creates awareness amongst medical students and other healthy groups of blood donors to involve in such noble job in saving life by donating rare blood groups in emergency patients. This study will also throw light on the reasons of deficiency of a particular blood group so that deficient group donors may be encouraged to donate more frequently.

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