FREQUENCY OF ABO BLOOD GROUP AND Rh-D FACTORS AMONG THE DONOR POPULATION OF WARANGAL

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INTRODUCTION

- ABO is only the blood system that all the humans on the globe share, though they differ in the frequencies of specific types[1].

- It is reported that ABO blood group distribution varies in different geographical and ethnic groups[2].

- Moreover ABO and Rhesus(Rh) blood group antigens are hereditary characters and are useful in population genetic studies and in compatibility test in blood transfusion practice[3].

OBJECTIVE

- Relatively little information on the frequency distribution of ABO and Rh-D in the Warangal population is available and hence we made an attempt to prospectively determine the frequency of ABO and Rh-D blood groups in the donors donating blood to blood bank, Mahatma Gandhi Memorial Hospital(MGMH).

MATERIALS AND METHODS

- MGMH is a 1200 bedded multi-specialty tertiary care teaching hospital and is biggest government hospital in northern region of Telangana state serving majorly to the districts of Warangal, Karimnagar, Adilabad, Nizambad and Khammam.
- Sources of blood in the Blood bank of MGM Hospital are voluntary or replacement donors.
- Blood is supplied not only to the patients of MGM Hospital but also to other private hospital and government hospital.

MATERIALS AND METHODS

- On an average blood bank supplies 40 units of blood per day.
- ABO and Rh grouping was done in the blood bank using Anti-A, Anti-B and Anti-D.
- We collected the six months data of the donors from January to June 2012 prospectively from the records of blood bank as soon as they are grouped.
- Once the data was collected , it was entered into a MS-Access 2014 data base that was designed specifically for the purpose.

MATERIALS AND METHODS

- The data from the database was then analyzed for the results.
- We used SPSS Version 20 for the calculations.
- The association between source of blood and blood group was tested using Chi-square test and level of significance was set at p=0.05.

RESULTS

- 4405 blood units were collected during the study period.
- Of these 3881(93.3%) were males and 276(6.63%) were females among donors at MGM blood bank.
- 248(5.6%) blood units were adjusted from other blood banks in and around warangal

GENDER_RATIO

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MALE	3881	88.1	93.4	93.4
	FEMALE	276	6.3	6.6	100.0
	Total	4157	94.4	100.0	
Missing	System	248	5.6		
Total		4405	100.0		

RESULTS

- Mean age of the donors was found to be 27.6±8.3 Years.

- Average weight of donors was found to be 64.3±15.8 Kilograms.

RESULTS

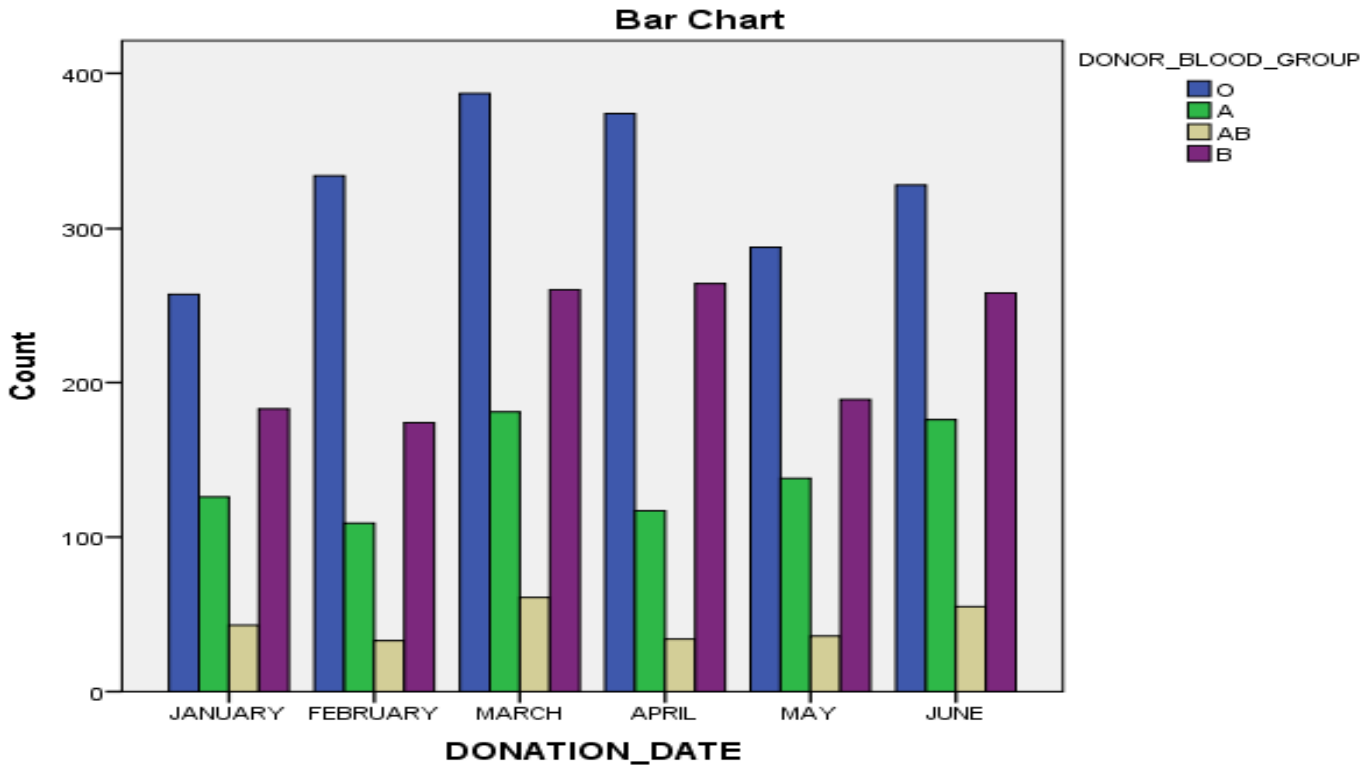
- Replacement donors were 52.8% and Voluntary donors were 47.2% among MGM blood bank donors.

ISSUE TYPE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	REPLACEMENT	2195	49.8	52.8	52.8
	VOLUNTARY	1962	44.5	47.2	100.0
	Total	4157	94.4	100.0	
Missing	System	248	5.6		
Total		4405	100.0		

RESULTS

- Highest donations were seen in the month of March accounting for 20.2%.



RESULTS

- Most frequently occurring blood group is “O”(44.7%) followed by “B”(30.1%).

FREQUENCIES OF BLOOD GROUPS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	O	1968	44.7	44.7	44.7
	A	847	19.2	19.2	63.9
	AB	262	5.9	5.9	69.9
	B	1328	30.1	30.1	100.0
	Total	4405	100.0	100.0	

RESULTS

- Among Rhesus, the frequency of Rh-Positive is 95.3%.

Rh-D

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NEGATIVE	209	4.7	4.7	4.7
	POSITIVE	4196	95.3	95.3	100.0
	Total	4405	100.0	100.0	

RESULTS

FREQUENCIES OF BLOOD GROUPS AND Rh-D

			DONOR_Rh(D)		
			NEGATIVE	POSITIVE	Total
BLOOD_GROUP_DONOR	A	Count	43	804	847
		% within DONOR_Rh(D)	20.6%	19.2%	19.2%
	AB	Count	16	246	262
		% within DONOR_Rh(D)	7.7%	5.9%	5.9%
	B	Count	61	1267	1328
		% within DONOR_Rh(D)	29.2%	30.2%	30.1%
	O	Count	89	1879	1968
		% within DONOR_Rh(D)	42.6%	44.8%	44.7%
Total		Count	209	4196	4405
		% within DONOR_Rh(D)	100.0%	100.0%	100.0%

RESULTS

- Inhospital donations were highest (52%).

sources

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	IN_HOSPITAL	2292	52.0	52.0	52.0
	CAMP	1865	42.3	42.3	94.4
	LEND	248	5.6	5.6	100.0
	Total	4405	100.0	100.0	

RESULTS

- We found that there is no association between ABO blood group and Rh status.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.565[a]	3	.667
Likelihood Ratio	1.479	3	.687
N of Valid Cases	4405		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.43.

RESULTS

- We also found that there is no association between source of blood either with ABO blood group or Rh status.

ASSOCIATION BETWEEN SOURCE OF BLOOD AND BLOOD GROUP

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.752[a]	3	.626
Likelihood Ratio	1.763	3	.623
Linear-by-Linear Association	1.514	1	.219
N of Valid Cases	4157		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 17.40.

RESULTS

ASSOCIATION BETWEEN SOURCE OF BLOOD AND Rh-D

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.286[a]	1	.593		
Continuity Correction[b]	.154	1	.695		
Likelihood Ratio	.298	1	.585		
Fisher's Exact Test				.671	.359
Linear-by-Linear Association	.286	1	.593		
N of Valid Cases	4157				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.88.

b. Computed only for a 2x2 table

DISCUSSION

- Studies on assessment of frequency of blood group in warangal population is important not only for blood transfusion, organ transfusion but also can be used for genetic studies[4].

- In our study blood group-O was predominant(44.7%) while AB group was least common(5.9%). This finding is in agreement with the study done by Abo Algasim et al[5].

- The results show that it follows the Asiatic trend of O>B>A>AB[6].

- Syria and Jordhan show a different picture where blood group A is more common than O[6,7].

- Nanu and Thapliyal reported group 'B' as predominant in North India[8].

- Rh-D Positive individuals were high in this study and this is in agreement with Shayeh and Feudy study[9].

CONCLUSION

- The present study is first comprehensive study that documents the frequencies of ABO, subgroup ABO and Rh(D) blood groups among Warangal population and may assist in planning and establishment of functional blood service that would meet ever-increasing demand for safe blood and blood products.

- The present study has been conducted in a single center. Large population and multi-centric studies are required to estimate accurate frequencies of common blood groups in Warangal population.

WHO VISION 2020

- All Countries to obtain their blood supplies entirely (100%) from Voluntary unpaid donors.

HOW ?

DONATE BLOOD
AND
BECOME HERO

AWARENESS

REALIZATION IN PUBLIC

REFERENCES

1. Ipsita Nag, Sudipta Sekhar Das:ABO and Rhesus blood groups in potential blood donors at Durgapur Steel city of the district of Burdwan, West Bengal. Asian J. Transfus. Sci. 2012; 6(1):54-5.
2. Shyamal K: The Distribution of the ABO Blood Types in Patients with Diabetes Mellitus. Anthropologist 2008; 10(2):129-132.
3. Mathew EE, Godwin NB Distribution of ABO and Rh-D blood groups in benin area of Nigeria-Delta:Implication for regional blood transfusion. Asian J. Transfus. Sci 2008;2(1):3-5.
4. Mollison PL, Engelfriet CP, Conteras M:ABO, Lewis li and P groups. In:Mollison PL, Engelfriet CP, Conteras M, editors. Blood transfusion in clinical medicine. 9th ed. Oxford: Blackwell Scientific Publication;1993;p.4,150-1.
5. Abo Algasim EI, Malik H, Tarq E. Dawoud equencies of ABO, Rh-D and Kell(Kpa,Kpb) Blood group Antigens in dinka Sudanese Ethnic Group, SUST, 2007;01-12.
6. Sundar P and Sangeetha SK Distribution of ABO and Rhesus-D blood groups in and around Banglore. Asian J Transfus Sci. 2010;4(1):41-41.

REFERENCES

7. Sakharov RS, Nofal'Kh K. The frequency of ABO blood groups and the expression of group antigens and isohemaglutinins in Syria Arabs. Sud Med Ekspert 1996;39:34-6.
8. Hanania S, Hassawi D, Irshaid N. Allele frequency and molecular genotypes of ABO blood group system in Jordanian population. J Med Sci 2007;7:51-8.
9. Nanu A, Thapliyal RM. Blood group gene frequency in a selected north indian population. Indian J Med Res 1997;106:242-6.
10. Shayeh A, Feudy AH. Distribution of ABO blood groups and the Rh factor in Palestinian living in Northern part of the West Bank. Najah Res J.1988;2(1):35-41.

THANK YOU