

Original article:

A Relative Frequency of ABO & Rhesus System of Blood Groups From Rural Medical College Hospital-Tertiary Teaching Centre In Kerala-South India

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Abstract

An Analytical Data of ABO and Rhesus Blood Group system from Karuna Medical College Hospital Blood Bank situated at Vilayodi Village, a Rural centre Palghat District, Kerala State in South India is carried out retrospectively & compared with that of others. Out of 4674 cases only 34 are females and 4640 are males. ABO frequency among them are almost similar with those of others in literature. Rhesus negativity is concerned its frequency in AB group is twice more than that of others. It is for this little variation and motivation required for Blood Donation among females in these areas this study is undertaken & is documented.

Key words- ABO & Rh Blood group system, Rural centre, Female motivation

Introduction

More than 20 distinct Blood Group systems have been identified but the ABO & Rh systems are most important clinically for BLOOD TRANSFUSIONS, ORGAN TRANSPLANTATIONS, GENETIC & Anthropological studies, Forensic Pathology, Training Ancestral relation of human along with prevalence of certain diseases in particular groups (1). Going back to discovery of Blood Groups, it was Karl Landsteiner in 1901 found out the first Human ABO Group in 1901. Later Landsteiner with Weiner incidentally discovered Rh group in Rhesus monkey and found in 80-85% and not in 15-20% of Western population in 1941 (2). At present both ABO and Rh Blood group study is more important in relation to disease & environment too apart from blood transfusions organ transplants etc (3). All Blood Bank centres are already documenting everything

about total Number of Donors, whether voluntary or Replacement and screening the Donors blood for HIV, HBsAg, HCV, VDRL, Malaria etc. to FDA, & AIDS control Society. Along with these it is important to document about the sex, age details of Donors to these centres for awareness & motivation among the population regarding Donating Blood. So number of youngsters and ladies donating blood can be increased. In our study more than 97% are male donors & is imperative to note about Numbers of Rh -Ve females in our population and to make them aware of the steps to be undertaken during child bearing period. Thus certain advanced efforts could be carried out. In western countries it is documented 15-17% as Rh -ve without particular relationship to sex and ours 3-8% without recording the sex predilection. In our study all 34 female donors are Rh+ve. So this low percentage does not seem to give

importance for sex predilection as well as particular ABO group where it is quite prevalent. This small number of Donors bring out little about these features too.

Materials & Methods

Retrospective study of ABO and Rh blood grouping recorded in Blood Bank, Karuna Medical College situated in Remote village-Vilayodi, Chittoor Taluk in Palghat District, Kerala State in South India is compared with the available data of other states in our country and other countries.

Out of 4674 donors 34 are females with all Rh +ve and the rest 4540 males with 92.9% Rh+ve and 7.1% Rh -ve (Table 1, Pie Chart 1). Age group is distributed between 19-57 yrs with predominance between 30-40 yrs. The prevalence ABO group distribution is O>A>B>AB (Table 1 & 2, Pie Chart 1&2) & is almost same with those of available from other states (Table-3, Bar diagram 1) except in Pondicherry where

it was taken from one group ie Irulas (tribal group) and is A>O>B>AB.(4)

The prevalence of ABO system compared with countries like Britain, USA, Nigeria, Saudi Arabia, Pakistan, Nepal (5) brings dominance of O group in all except in those of Pakistan and Nepal where it is 'B' & 'A' group dominance respectively (Table-4, Bar Diagram 2). And Rh +ve is 83- 85% in Britain & USA and others have 92- 96% (Table 4 & 5, Bar Diagram 2&3)

The Frequency distribution of Rh System in each ABO system brings out Rh -ve is more in AB group even though AB group is least prevalent group & the Rh-ve prevalence in our study is AB>O>B>A (Table-4, Bar Diagram 2). This each group prevalence of Rh is compared with those of Sangeeta Gayam et al- Telangana state-South India (5) & their frequency of Rh-ve in relation to ABO blood group taken separately & is O>A>B>AB (Table-5, Bar Diagram 3).

Table-1. Distribution of ABO Blood Group System prevalence in Present study

BLOOD GROUPS	Number of Blood Donors In each ABO Group	% Prevalence in each Group
'A'	1204	25.8%
'B'	1339	28.6%
'O'	1814	38.8%
'AB'	317	6.8%
TOTAL	4674	100%

FREQUENCY OF BLOOD GROUPS - O>B>A>AB

Pie Chart 1:

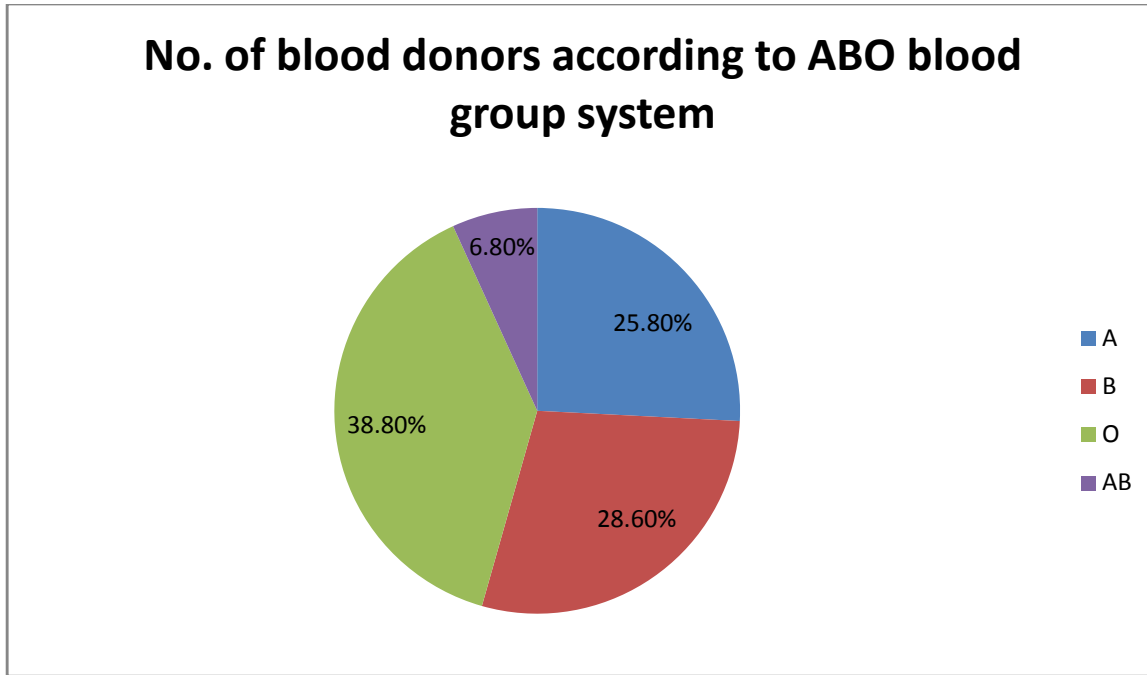


TABLE- 2- RHESUS SYSTEM FREQUENCY in ABO System-Present study

Total Number of Donors	4674	100%
Number of Rh positive	4430	92.9%
Number of Rh negative	244	7.1%

Pie Chart 2:

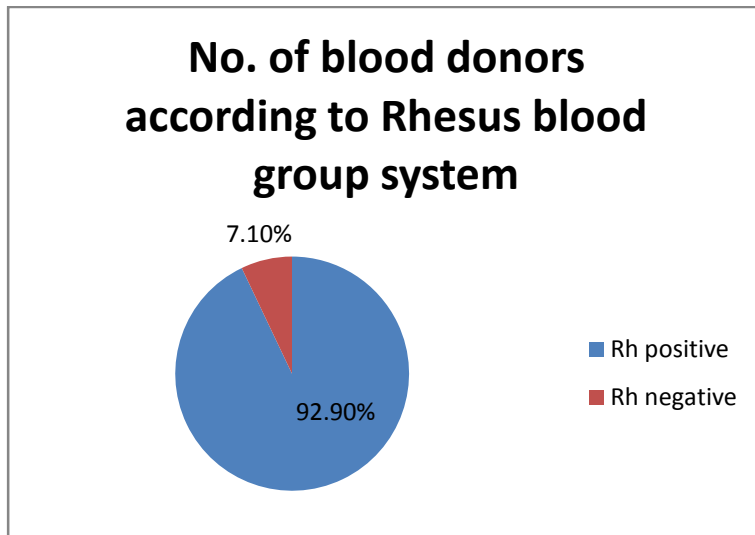


TABLE -3- Rh System Frquency in Individual ABO System

BLOOD GROUP Number of Donors	Rh Distribution Number & Percentage			
	Rh positive & %		Rh negative & %	
'A'	1168	97.11%	36	2.89%
'B'	1290	96.4%	49	3.6%
'O'	1705	94%	109	6.0%
'AB'	267	84.3%	50	15.7%

Rh negative frequency in Individual ABO System: AB>O>B>A

Bar Diagram 1:

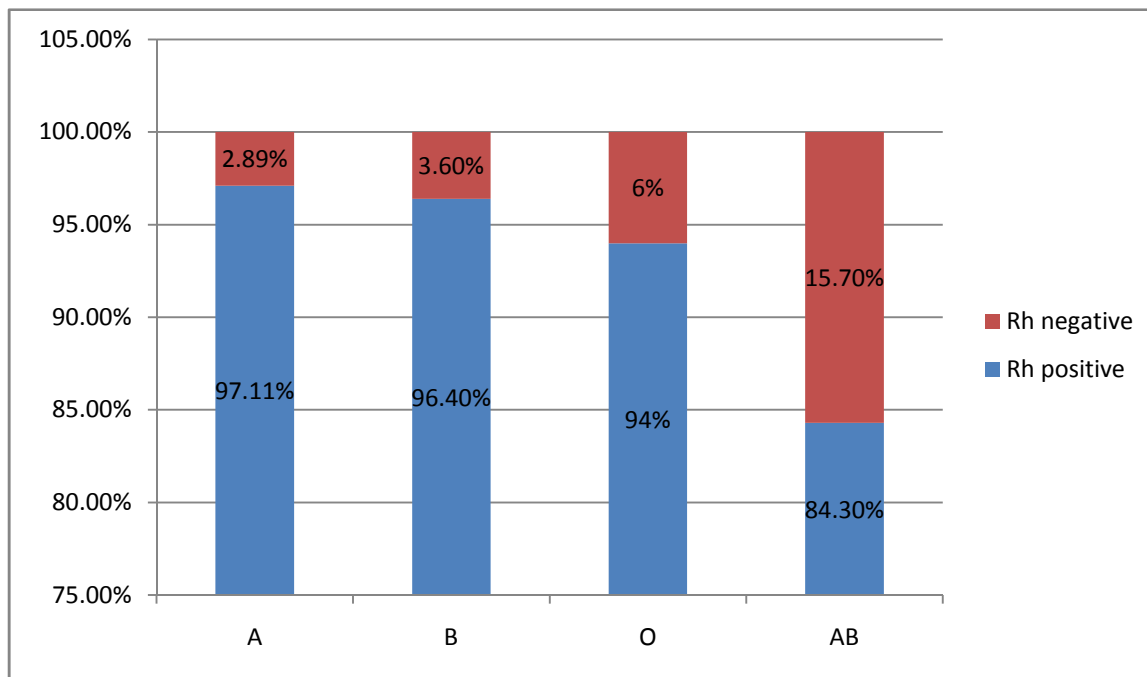


TABLE – 4 – Comparison of frequency of ABO system in different regions of the world.

Regions	A (%)	B (%)	O (%)	AB (%)
Britain	42	8	47	3
USA	41	9	46	4
Nigeria	21.6	21.4	54.2	2.8
Guinea	22.5	23.7	49.1	4.7
Saudi Arabia	24	17	55	4
Pakistan	22.4	43.7	30.5	3.4
Nepal	35	29	32	4
South India	18.85	32.69	38.56	9.9
Maharashtra	27.02	33.61	31.04	8.33
Our Study	25.8	28.6	38.8	6.8

Bar Diagram 2:

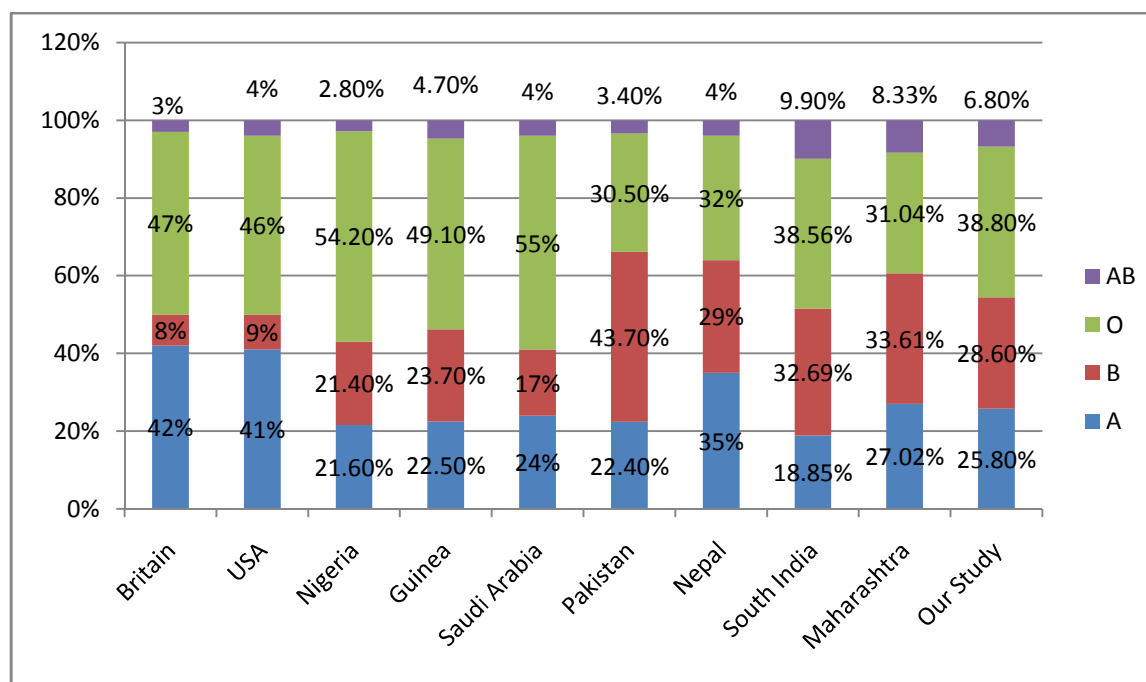
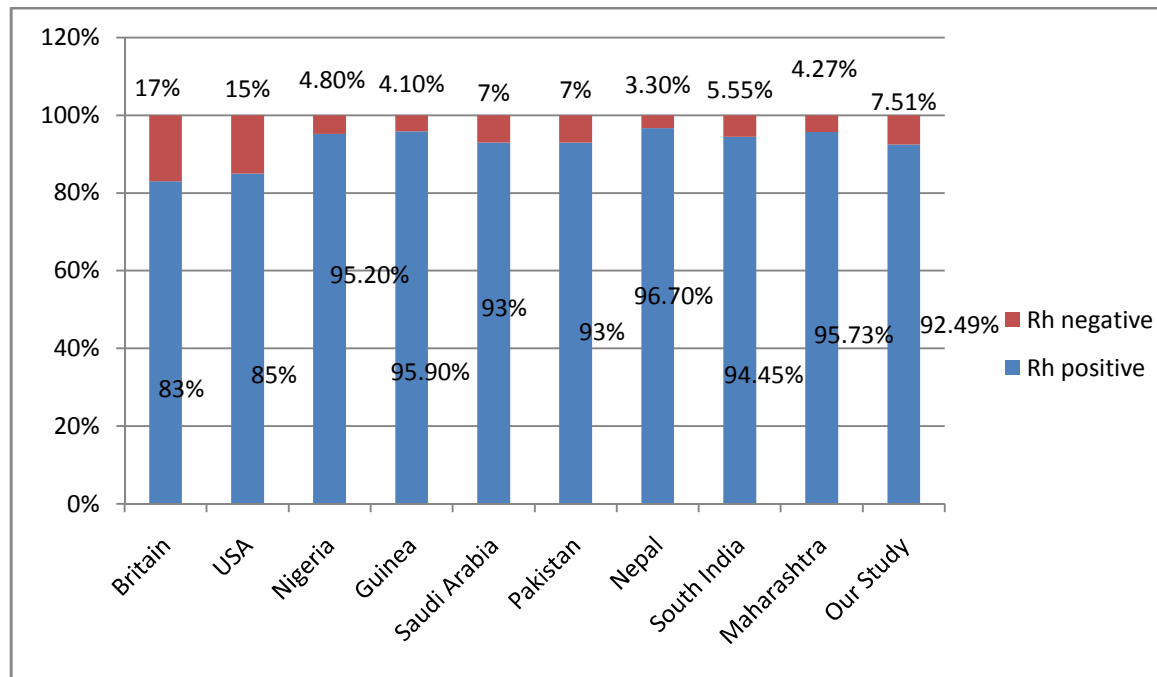


TABLE – 5 – Comparison of frequency of Rhesus system in different regions of the world.

Regions	Rh positive (%)	Rh negative (%)
Britain	83	17
USA	85	15
Nigeria	95.2	4.8
Guinea	95.9	4.1
Saudi Arabia	93	7
Pakistan	93	7
Nepal	96.7	3.3
South India	94.45	5.55
Maharashtra	95.73	4.27
Our Study	92.49	7.51

Bar Diagram 3:



It is for the relative frequency of ABO Blood Group system and Rh system among the donors this paper is presented and to be recorded. The Blood Group frequency among Donors in our study is O>A>B>AB which is almost same with those of other states in our country except that of Pondichery (4) where it is A>O>B>AB where the Blood Group study was taken among one Tribal population –Irulas . With those of other countries, our study correlates (5). Of course when we take up the general population for blood group study instead of only Donors it may differ.

As far as Rh-ve is considered there is vast difference with those of USA & Britain with that of ours & Africa. 13-15% belong to Rh –ve with USA &

Britain. Those of Africa, Nigeria & ours show only 0-8% (Table 4,5). No Rh –ve Group is found in the minimal % of female donors in our study.

Conclusion

In present study & also with those of others ‘O’ Group is the dominant one in ABO System . Rh system shows Rh-ve more with Western countries like USA & Britain & is less among us and Africa & Nigeria. And Rh-ve is prevalent in ‘AB’ group in our study compared to ‘O’ group prevalence with others . Moreover the exact population Blood group study should be undertaken & to be recorded. Awareness among females for Blood Donation is to be motivated.

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