IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 17, Issue 3 Ver.12 March. (2018), PP 27-30
www.iosrjournals.org

Association of Transfusion Transmitted Infections with Profile of Donors at Blood Bank of a Tertiary Care Hospital of Jharkhand

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Abstract:
Introduction: *Human blood is an essential element of life since it is the only oxygen transporter in the body. Blood transfusion services have been considered as an integral part of health care system. This study aims to describe the profile of blood donors, find out the case load of TTI's and to find out the association of socio demographic characteristics of donors with infections .* ***Method:*** *This is a cross sectional record based study done at the blood bank of Rajendra Institute of Medical Sciences. The study period was 3 months, August 2017 to October 2017. Total sample size during my data collection period came out to be 1350. Templates were generated on MS Excel sheet and analysis was done using SPSS software(version 20).* ***Result :*** *After analysis of 1350 donors it was found that most common age group of donors was 18-30 years, majority being males(85.27%), most commonly they belonged to hindu religion, were from rural background(77.30%). People with blood group O +ve were the most frequent donors. The mean hemoglobin level and weight of the donors were 12.5gm% and 62.57kgs respectively. Majority of the donors were normotensive. Hepatitis B was the most common infection among the donors followed by Hepatitis C.* ***Conclusion:*** *We conclude that males are the most frequent donors and hepatitis B was the most common infection found among the donors.*

Keywords: *Transfusion Transmitted Infections, Profile, Donors.*

Date of Submission: 05-03-2018 Date of acceptance: 26-03-2018

I. Introduction

Human blood is an essential element of life because it is the only oxygen transporter in the body. A well-organized blood transfusion service (BTS) is an important component of the health care delivery system of any country. An integrated strategy for blood safety is required for elimination of transfusion transmissible infections (TTI)[1]. Safe blood is a critical component in improving health care and in preventing the spread of infectious diseases globally. A blood bank plays a pivotal role in ensuring the supply of safe blood as and when required. However given the ever changing socio-economic environment and human factors involved, healthy donor recruitment and retention is a challenge that faces the health industry today[2]. According to the National AIDS Control Organization (NACO) guidelines all blood sample must be tested for human immunodeficiency virus (HIV) 1 and 2, hepatitis B, hepatitis C, syphilis and malaria[3].

Preventing transmission of transfusion transmitted infections through blood transfusion presents one of the greatest challenges of transfusion medicine[4].

Globally, more than 81 million units of blood are donated each year. More than 18 million units of blood are not screened for transfusion transmissible infections. With every unit of blood, there is a 1% chance of transfusion associated problems including transfusion transmitted diseases[5].

The improved screening and testing of blood donors has significantly reduced transfusion transmitted diseases in most developed countries. This has not been so in developing nations. The median prevalence rate of HIV in blood donations in high-income countries is 0.001%, in comparison with 0.06% and 0.5% in middle- and low-income countries respectively[1].

The Indian subcontinent is classified as an intermediate Hepatitis B Virus (HBV) endemic (HBsAg) zone and has the second largest global pool of chronic HBV infections. The risk of transfusion transmission of these viruses may be alarming due to high seroprevalence of HIV, anti-HCV, and HBsAg among blood donors[6]. The problem of TTIs is directly proportionate to the prevalence of infections in the blood donor community[5]. The problem of TTIs is an indicator of the prevalence of infections in the community, so this study was carried out to describe the profile of blood donors, find out the case load of TTI's and to find out the association of socio demographic characteristics of donors with infections.

II. Methods

A record based cross sectional study was carried out at the blood bank of Rajendra Institute of Medical sciences, Ranchi from August 2017 to October 2017 (3 months). Data was taken from the record register of 1 month i.e September. All the donors who donated blood during the month of September 2017 were included in the study. Total sample size came to be 1350. The data was collected using a performa. The performa was divided into different sections such as socio-demographic data, health profile, and TTIs. Data was entered in MS Excel sheet and analysis was done using SPSS Software (version 20). The study was approved by the ethics committee of the institution.

III. Results

The socio demographic characteristics of the donors are shown in Table 1. Majority 1152 out of 1350 (85.27%) of the donors were males. Donors from rural residence were more as compared to that from urban areas.

The blood group distribution of the donors is shown in Table 2. Most common blood group among the donors was O+ve i.e 514 (38.07%) followed by B +ve donors i.e 443 (32.81%). The least common blood group was AB –ve 03 (0.23%).

The mean hemoglobin of the donors was 12.5gm%.

The mean body weight of the donors was 62.57kgs.

Table 3 shows the type of blood donation and 1209 (89.55%) were replacement donors.

Out of 1350 blood donors,31 of them were found to be infected i.e 2.30% and Figure 1 shows the distribution of various transfusion transmitted infection among the donors. Hepatitis B was found to be the most common infection among the donors 13 out of 1350(0.96%) were infected with hepatitis B Virus.

Table 4 shows the association of Socio demographic characteristics with the occurrence of infection among the donors. Religion and residence was found to be significantly associated with the infected state among the blood donors.

Table 1: Socio demographic characteristics of blood donors (n=1350):

S.No.	Variables		Frequency	Percentage
1	Gender	Male	1152	85.27%
		Female	198	14.73%
2	Ethnicity	Tribal	547	40.5%
		Non Tribal	803	59.5%
3	Residence	Rural	1044	77.30%
		Urban	306	22.70%
4	Religion	Hindu	754	55.84%
		Non Hindu	596	44.16%

Table 2: Blood group distribution of the blood donors (n=1350)

S. No.	ABO Group	Rh			
		(+)		(-)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1	A	257	19.04%	17	1.26%
2	B	443	32.81%	08	0.59%
3	AB	99	7.34%	03	0.23%
4	O	514	38.07%	09	0.67%
	Total	1313		37	

Table 3: Type of Blood donation (n=1350)

S. No.	Type of Donor	Frequency	Percentage(%)
1.	Replacement donation	1209	89.55%
2.	Voluntary donation	141	10.45%
	Total	1350	100%

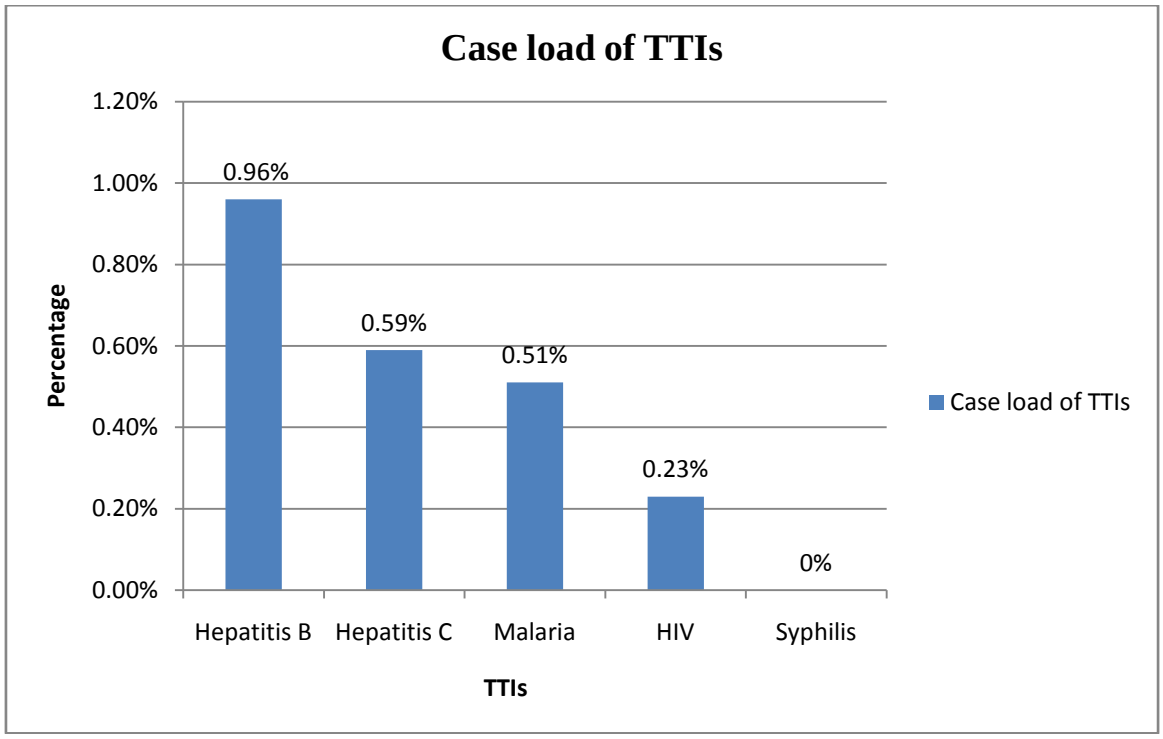

Figure 1: Bar diagram showing the case load of various TTIs

Table 4: Association of socio demographic characteristic with the infection among donors

S. No.	Variables		Infected	Non Infected	P value
1	Gender	Male	29 (2.52%)	1123 (97.48%)	0.08
		Female	02 (1.01%)	196 (98.99%)	
2	Ethnicity	Tribal	13 (2.37%)	534 (97.62%)	0.62
		Non Tribal	18 (2.24%)	785 (97.76%)	
3	Religion	Hindu	27 (3.58%)	727 (96.42%)	<0.05
		Non Hindu	04 (0.67%)	592 (99.33%)	
4	Residence	Rural	00 (0%)	1044 (100%)	<0.05
		Urban	31 (10.13%)	275 (89.87%)	

IV. Discussion

In the present study, we found 85.27% of the donors to be males which is similar to a study done by Unnikrishnan b et al at kasturba medical college, manglore, 95.20% of the donors were males[7]. Ray karmakar et al also found 85% of the donors to be males[1] which is similar to the findings of our study. Similarly in another study done by Gagan s et al males were found to be the most frequent donors i.e 96.93%[8].

In the current study it was found that most of the donors were from the rural areas (77.30%) which is in contrast to the findings of Gagan s et al where about 70.85% of the donors were from the urban areas[8].

In this study we found blood group O+ve to be the most common among blood donors whereas Ray karmakar et al in their study at Kolkata found blood group B +ve to be the most common[1].

In the present study we found replacement donors to constitute 89.55% which is in contrast to the findings of the study done by Debdutta haldar et al at KPC medical college and hospital, Kolkata, where replacement donors constituted only 12.28% of the donors[5], whereas in another study done by Unnikrishnan b et al at kasturba medical college, manipal, manglore, replacement donors were found to be 77.20%[7] which is similar to the findings of our study. In the present study, 2.30% of the donors were found positive for TTIs, which is similar to the findings of Ray karmakar et al in their study at Kolkata where 2.79% of the donors were positive for any TTI[1].

In this study we found Hepatitis B to be the most common infection among the donors which is similar to the findings of Unnikrishnan b et al at kasturba medical college, manglore.

V. Conclusion

At the end of this study, we conclude that Males were the most frequent donors i.e 85.27%. Most of the donors were from rural areas i.e 77.30%. Blood group O+ve was found to be the most common group among the donors followed by B+ve. Most of the donations were of the replacement type. Hepatitis B was found to be the most common TTIs.

VI. Limitations

Literacy, occupation and the socio economic status of the donors could not be assessed since this was a record based study and these were not maintained in the record, but these variables might constitute important parameters for association with the infected state of the donors. Also we could not find out gap between blood donation and the frequency of donation among the donors due to the lack of such records.

Conflict of Interest: Nil
Financial Support: Nil

Acknowledgement

I express my sincere thanks to the faculties of my department for their permission and help in conducting this study. I am also thankful to the staffs of blood bank for their co operation and help.

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Dr. Kumari Asha Kiran1. " Association Of Transfusion Transmitted Infections With Profile Of Donors At Blood Bank Of A Tertiary Care Hospital Of Jharkhand." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 17, no. 3, 2018, pp 27-30.