



EVALUATION OF THE PREVALENCE OF TRANSFUSION TRANSMISSIBLE DISEASES AMONG BLOOD DONORS IN RURAL AREAS OF BELLUR

MG Abhishek^{1*}, BM Sarvesh², ML Naganna³

¹Associate Professor, ²Assistant Professor, ³Blood Bank Officer, Department of Pathology, Adichunchanagiri Institute of Medical Sciences, B.G.Nagara, Mandya district, Karnataka state, India 571448.

Corresponding Author:- M G Abhishek
E-mail: drmgabhishek@gmail.com

<p>Article Info <i>Received 15/06/2015</i> <i>Revised 27/07/2015</i> <i>Accepted 12/08/2015</i></p> <p>Key words: Transfusion transmitted disease, Blood donor, HIV, HBV,HCV.</p>	<p>ABSTRACT Objective to estimate the seroprevalence of HIV, Hepatitis B , C virus and syphilis among blood donors and also to compare the seroprevalence among voluntary and replacement donors. Cross sectional Observative study conducted over a period of 3 consecutive year from Jun2012 to May 2015, which included 4082 donors with 3096 voluntary donors and 986 replacement donors. Under aseptic condition, 5ml of venous blood was collected immediately after taking donor consent. Statistical analysis was performed with chi-square and Fisher's exact test. Seroprevalence of HIV, HBV, HCV and syphilis was 0.22%, 9.95%, 0.07% and 0.12% respectively. Our study reported increased prevalence of transfusion transmitted diseases among replacement donor and also in the age group of 18-29yr. so it is very important to educate and create full awareness among young individual about prevention of this transmitted diseases.</p>
---	---

INTRODUCTION

Blood transfusion is the most commonly established treatment modality for many medical and surgical procedures [1]. Many infections like HIV I & II, Hepatitis B&C, syphilis, Malaria, EBV, CMV and herpes are transmitted during blood transfusion.[2]All the above transfusion transmitted diseases causes severe mortality and morbidity to the infected person [3]. In recent year, transfusion medicine is upcoming subject with complete blood banking system for separation of component and proper storage. Incidence of Transfusion transmitted disease following one unit of blood transfusion is 1% [2]. Since india is thickly populated nation, and has more than 1.2 billion HIV positive,43 million HBV positive ,the risk of transmission of above disease from blood donor remains very high [4].

Hence ours is a 3 consecutive years study with aim to estimate the prevalence of seropositive case among donors in the rural area like Bellur.

OBJECTIVE

- 1- To estimate the seroprevalence of HIV, Hepatitis B and C virus and syphilis among donors.
- 2- To study and to compare the seroprevalence among voluntary and replacement donors.
- 3- To study the seroprevalence with respect to age and sex.

MATERIAL AND METHOD

Study Design

The present study is a cross sectional Observative study conducted over a period of 3 year from June 2012 to may 2015.

Source of Study

The study was undertaken at blood bank , AH&RC , B.G. Nagara. Bellur. This study was approved by the Ethical committee of our institution.



Study population

4082 blood donors of both sex, who attended blood bank during this period.

Data Collection

Collection of blood Sample

Under aseptic condition 5 ml of Venous blood was collected from the donors who attended blood bank or voluntary blood donation camp in a plain, sterile bottle following informed consent during the above said period. After collection, all the samples were tested for HIV I & II, HBV, HCV by Micro Elisa to detect antibodies and for syphilis by Rapid plasma regain test to detect Treponemal antibody.

Inclusion Criteria

- 1) Both sex
- 2) Both voluntary and Replacement donors
- 3) Subject between age group of 18 to 60 year

Exclusion Criteria

- 1) Donor refusal
- 2) History of major and minor surgeries.
- 3) Unexplained weight loss.
- 4) History of jaundice.
- 5) Previous history of blood donation within 3 month.

Statistical tests

The data entry was carried out using Microsoft Office Excel worksheet and percentage and proportions for

each variable was calculated. The chi-square test and Fisher's exact test were used as a test of significance.

RESULT

Table 1:- Shows the distribution of seroprevalence among voluntary and Replacement donors. The total number of blood donors in our study was 4082 during the year June 2012 to May 2015. Among 4082 total donors, 2096(75.84%) were voluntary donors and 986(24.15%) were replacement donors (Figure:-1). Prevalence of HIV, HBV, HCV and Syphilis among voluntary donors was 22.23%, 19.51%, 33.39% and 40% respectively and in replacement donors was 77.77%, 80.49%, 66.67% and 60% respectively.

Table 2 and 3: - This table shows sex wise distribution of donors among total donors in all the year, the male donor were 3792 in number (92.89%) compared to Female donors 290(7.11%). Table 3 shows seroprevalence are more among male donors 53 (91.38%) compared to Female donors 5 (8.62%).

Table 4: In our study, the majority of donors are in the age group of 18-29yr that is 2644 (64.89%) and this table also reveal more prevalence of seropositive.

Table 5:- This table shows prevalence of HIV, HBV, HCV and syphilis among donors in the entire study population. In this table also shows more HBV positive cases among other Transfusion diseases.

The analysis of HBV and HCV positivity across the age group showed statistically insignificant trend. (chi square was 0.609 and 2.960 respectively)

Table 1. Distribution of seroprevalence among voluntary and Replacement donors

Type of donor	Total No	HIV		HBV		HCV		Syphilis	
		No	Percentage	No	Percentage	No	Percentage	No	Percentage
Voluntary	3096	02	22.23%	08	19.51%	01	33.35%	02	40%
Replacement	986	07	77.77%	33	80.49%	02	66.67%	03	60%
Total	4082	09	100%	41	100%	03	100%	05	100%

HIV:- Human Immunodeficiency Virus, HBV:- Hepatitis B virus, HCV:- Hepatitis C virus.

Table 2. Sex wise distribution of blood donors in entire study population

Year	Total donors	Male		Female	
		No	Percentage	No	Percentage
2012-13(Jun-May)	1481	1365	92.16%	116	07.84%
2013-14(Jun-May)	1283	1199	93.45%	84	06.55%
2014-15(Jun-May)	1318	1228	93.17%	90	06.83%
Total	4082	3792	92.89%	290	07.11%

Table 3. Distribution of seropositive Male and Female subject in the entire study

Sex	Total no	HIV		HBV		HCV		Syphilis	
		No	Percentage	No	Percentage	No	Percentage	No	Percentage
Male	3091	8	88.89%	38	92.68%	3	100%	4	80%
Female	991	1	11.11%	3	7.32%	0	0%	1	20%
Total	4082	9	100%	41	100%	3	100%	5	100%

HIV:- Human Immunodeficiency Virus, HBV:- Hepatitis B virus, HCV:- Hepatitis C virus.

Male : Female(seropositive cases) = 53:5 ratio.



Table 4. Age wise distribution of seropositive blood donors

Age(year)	Total no	HIV		HBV		HCV		Syphilis	
		No	Percentage	No	Percentage	No	Percentage	No	Percentage
18-29yr	2649	6	66.67%	29	70.73%	3	100%	3	60%
30-44yr	1074	2	22.22%	10	24.40%	0	00%	1	20%
45-60yr	355	1	11.11%	2	4.87%	0	00%	1	20%
Total	4082	9	100%	41	100%	3	100%	5	100%

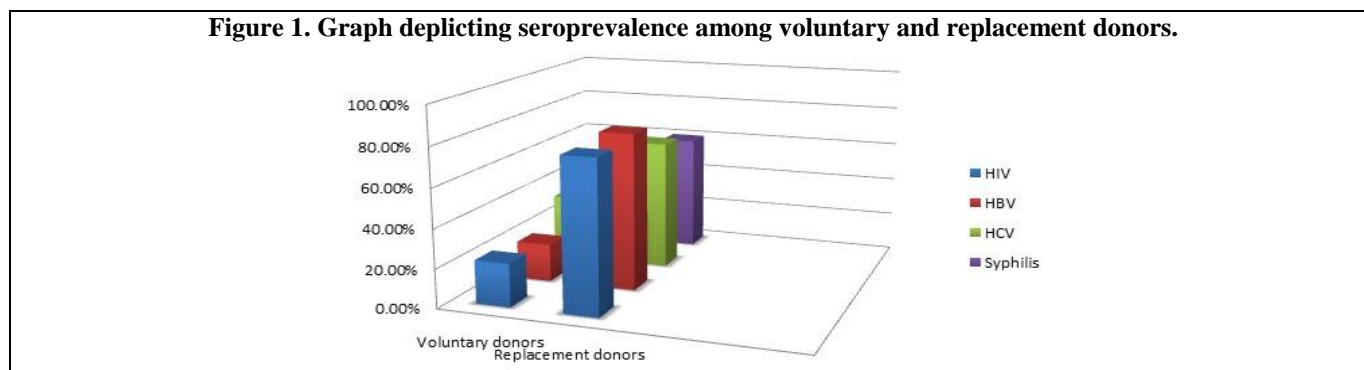
HIV:- Human Immuno deficiency Virus, HBV:- Hepatitis B virus, HCV:- Hepatitis C virus.

Table 5. Prevalence of HIV,HBV ,HCV and Syphilis among blood donors in entire 3 year study

Year (June-May)	Total donors	HIV		HBV		HCV		Syphilis	
		No	Percentage	No	Percentage	No	Percentage	No	Percentage
2012	1481	5	55.56%	20	48.78%	1	33.33%	2	40%
2013	1283	2	22.22%	16	39.02%	2	66.67%	2	40%
2014	1318	2	22.22%	5	12.20%	0	00%	1	20%
Total	4082	9	100%	41	100%	3	100%	5	100%

HIV:- Human Immunodeficiency Virus, HBV:- Hepatitis B virus, HCV:- Hepatitis C virus.

Figure 1. Graph depicting seroprevalence among voluntary and replacement donors.



DISCUSSION

Viral infections like HIV, HBV and HCV are commonly transmitted through blood and blood product including sexual pathway. Human beings are the common reservoir for above diseases. Among above routes, blood transfusion is a potential route of transmission [5]. WHO report states that HIV viral load is more in blood transmission [6]. The above mentioned diseases can cause acute and chronic life threatening disorders [7].

In our study, the prevalence of HBV was 9.95% which is more compared to the study done by Chatteraj et al [8], Singh B et al [9], Different results of HBV prevalence are reported in various study [10,11]

Present study reported, prevalence of HIV was to be 0.22% which was supported by similar findings in Chatteraj et al [8] and Karkee S et al [12]. They reported 0.23% and 0.19% occurrence among donors respectively. Gupta et al [11], in their study reported 0.084% occurrence among donors which shows lower seroprevalence. For HCV infection and syphilis, our study reported lower prevalence of 0.07% and 0.12% respectively. This prevalence is much lower compared to other studies done by Kaur H et al [13], Chatteraj et al [8]

and Gupta et al [11]. With respect to sex wise distribution of seroprevalence, our study shows more prevalent among male donors compared to female donors. Similar finding in the study done by rose D et al [14]. This lower prevalence may be due to risky behavior among male subject.

Among age group, youth of age between 18 to 29 yr shows more seroprevalence 70% in our study. This may be attributed to highly sexual active age group.

CONCLUSION

Higher prevalence of all blood transmitted diseases was among younger age group and more among replacement donors. This reflects on less awareness and education regarding the route of transmission. Health awareness programs and educational programmes should be encouraged by the NACO (National aids control society) by bringing the awareness among the younger generation to decrease the occurrence of these diseases. Our study revealed lesser female donor due to lack of education. Hence benefits of blood donation like decrease risk of Cardiac problems should be highlighted. Voluntary donors are safer compared to replacement donors.



REFERENCES

1. Isbister JP. (1996). Risk management in transfusion medicine. *Transfus Med*, 10, 183-202
2. Widmann FK, editor. (1985). Technical manual American Associations of Blood Banks. Anglington USA, 325-44.
3. Screening Donated Bloods for Transfusion-Transmissible-Infections, World Health Organization, (<http://www.who.int/bloodsafety/ScreeningTTI.pdf>).
4. Purushottam A. Giri, Jayant D. Deshpande, Deepak B. Phalke, and Laximan B. Karle. (2012). Seroprevalence of Transfusion Transmissible Infections Among Voluntary Blood Donors at a Tertiary Care Teaching Hospital in Rural Area of India. *J Family Med Prim Care*, 1(1), 48–51.
5. Irshad M, Peter S. (2002). Spectrum of viral hepatitis in thalassemic children receiving multiple blood transfusions. *Indian J Gastroenterol*, 21, 183–4.
6. Wienberger KM, Bauer T, Bohm S, Jilg W. (2000). High genetic variability of the group-specific a-determinant of hepatitis B virus surfaceantigen (HbSAg) and the corresponding fragment of the viral polymerase in chronic virus carriers lacking detectable HbSAg in serum. *J Gen Virol*, 81, 1165-74.
7. Das BK GB, Aditya S, Chakrovorty SK, Datta PK, Joseph A. (2011). Seroprevalence of Hepatitis B, Hepatitis C, and human immunodeficiency virus among healthy voluntary first-time blood donors in Kolkata. *Ann Trop Med Public Health*, 4, 86-90.
8. Chattoraj A, Bhel R, Kataria V. (2008). Infectious disease markers in blood donors. *Med J Armed Forces India*, 64(1), 33–5.
9. Singh B, Verma M, Verma K. (2004). Markers of transfusion associated hepatitis in North Indian blood donors, Prevalence and trends. *Jpn J Infect Dis*, 57.49–51.
10. Garg S, Mathur DR, Garg DK. (2001). Comparison of seropositivity of HIV, HBsAg, HCV and syphilis in replacement and voluntary blood donors in Western India. *Indian J Pathol Microbiol*, 44.409–12.
11. Gupta N, Vijay Kumar, Kaur A. (2004). Seroprevalence of HIV, HBV, HCV, and Syphilis in voluntary blood donors. *Indian J Med Sci*, 58, 255–7.
12. Karkee S, Ghimire P, Tiwari B, Shrestha A.(2009). Seroprevalence of HIV and Hepatitis C coinfection among blood donors in Katmando valley, Nepal. *Southeast Asian J Trop Med Public Health*, 40(1), 66–70.
13. Kaur H, Dhanon J, Pawar G. (2001). Hepatitis C infection amongst blood donors in Punjab – a six year study. *Indian J Hematol Blood Transfus*, 19, 21–2.
14. Rose D, Sudarsanam A, Padankatti T, Babu PG, John TJ. (1998). Increasing Prevalence of HIV antibody among blood donors monitored over 9 years in blood donors monitored over 9 years in blood banks. *Indian J Med Res*, 108, 42-4.

