

Transfusion transmissible infections in blood donors presenting at department of hematology, Jinnah Hospital, Lahore

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ABSTRACT

Objective: To determine the frequency of transfusion transmissible infections in blood donors presenting at department of hematology, Jinnah Hospital, Lahore.

Material and methods: This cross sectional study was conducted at Department of Hematology, Jinnah Hospital, Lahore from March 2021 to September 2021. Total 190 blood donors presenting at Blood Bank having age 17-65 years both male and female were recruited. Transfusion transmissible infections in blood donors were studied.

Results: Age range in this study was from 17 to 65 years with mean age of 39.59 ± 9.04 years. Majority of the blood donors 124 (65.26%) were between 17 to 40 years of age. Out of the 190 blood donors, 140 (73.68%) were male and 50 (26.32%) were females with male to female ratio of 2.8:1. In this study, I have found the hepatitis B in 08 (4.21%), hepatitis C in 17 (8.95%), HIV in 01 (0.53%) and syphilis in 04 (2.11%) blood donors.

Conclusion: This study concluded that prevalence of HCV, HBV, HIV and Syphilis in blood donors was 8.95%, 4.21%, 0.53% and 2.11% respectively.

Keywords: blood donors, hepatitis B, syphilis.

INTRODUCTION

Accessibility to safe blood and blood products is very low globally and from a financial standpoint, unsafe blood transfusion is quite expensive. Blood transfusion procedures are frequently hampered by competing demands for increasingly scarce resources, and have thus far been a low priority within healthcare expenditures.¹ The most prevalent cause of death after a blood transfusion is a blood-borne infection. Transfusion-transmitted infections are more likely in patients who receive regular packed cell volume (PCV) or any blood component.² Viruses, bacteria, and protozoa can all be etiological agents. These organisms can survive as carriers in the recipient or induce asymptomatic infection. In order to protect recipients from infections, blood banks routinely conduct testing processes.^{1,3,4}

Many patients remain at a risk of transfusion transmitted infections (TTIs) after transfusion due to lack of safe blood transfusion but still blood transfusions can save lives in medical and surgical patients.⁵⁻⁷ Infectious diseases such as HIV, syphilis, hepatitis, and malaria, particularly in Sub-Saharan African countries, are major concerns and priorities for prevention and control in World Health Organization (WHO) blood transfusion plans and programs. Although infectious diseases can spread in a variety of ways, blood donation is one of the most effective ways for these diseases to spread to healthy people.⁷

Blood transfusions and component treatment are well-known and necessary medical treatments. These treatments, however, are not without risk, as they may cause diseases to move from donor to receiver. Hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), and the syphilis-causing *T. pallidum* are all widespread diseases.^{8,9}

MATERIAL AND METHODS

This cross sectional study was conducted at Department of Hematology, Jinnah Hospital, Lahore from March 2021 to September 2021. Total 190 blood donors presenting at Blood Bank having age 17-65 years both male and female were recruited. Donors excluded on the basis of donor deferral criteria of WHO. Study was approved by the ethical committee. Informed written consent was taken from every donor. Five ml blood sample of all donors was taken and frequency of transfusion transmissible infections i.e. HCV, HBV, HIV and Syphilis (as per operational definition) was recorded. This all data was recorded on a specially designed proforma.

Statistical analysis was performed using SPSS version 20.0. Age was presented as mean and standard deviation. Gender,

marital status, socioeconomic status, residential status (rural/urban), family history of transfusion transmissible infections (yes/no), HCV, HBV, HIV and Syphilis (yes/no) were presented as frequency and percentage.

Effect modifiers like age, gender, frequency of blood transfusions, socioeconomic status, place of living (rural/urban) and family history of transfusion transmissible infections (yes/no) were controlled through stratifications. Post-stratification chi square was applied to see their effect on frequency of transfusion transmissible infections and p-value ≤0.05 was taken as significant.

RESULTS

Age range in this study was from 17 to 65 years with mean age of 39.59 ± 9.04 years. Mean number of blood transfusion was 2.41 ± 1.00.

In this study, we have found the hepatitis B in 08 (4.21%), hepatitis C in 17 (8.95%), HIV in 01 (0.53%) and syphilis in 04 (2.11%) blood donors as shown in Table 1.

Two age groups 17-40 years and 41-65 years were created. Total 124 donors belonged to age group 17-40 years while 66 donors belonged to age group 41-65 years. In age group 17-40 years, HBV was noted in 4 donors while in age group 41-65 years was noted in 4 donors. Association between HBV and age group was not significant (P = 0.354). HCV was found in 10 donors of age group 17-40 years and in 7 donors of age group 41-65 years, but association was not significant (P = 0.559). HIV was present in 1 donor of age group 17-40 years and no donor found with HIV in age group 41-65 years. Association was not significant (P = 0.464). Syphilis was noted in 4 donors of age group 17-40 years while no donor of age group 41-65 years found with Syphilis and association was not significant with p value 0.140. (Table 2)

Male donors were 140 and female donors were 50. HBV was found in 4 male donors and 4 female donors. HCV was seen in 14 and 3 male and female donors. No male donor was found with HIV while 1 female found with HIV. Syphilis was found in 3 male donors and 1 female donor. Association of gender with HBV, HCV, HIV and Syphilis was not significant. (Table 3)

Total 112 donors belonged to ≤2 transfusion group while 78 donors belonged to >2 transfusion group. In ≤2 transfusion group, HBV was noted in 6 donors, HCV in 15 donors, HIV in 0 donors and syphilis in 2 donors. In >2 transfusion group, HBV was found in 2 donors, HCV in 2 donors, HIV in 1 donor and syphilis in 2 donors. Significant association of transfusions with HCV was noted while association was insignificant with HBV, HIV and syphilis.

(Table 4)

Total 117 donors belonged to rural area and 73 donors belonged to urban area. In rural area donors, HBV was noted in 5 donors followed by HCV in 10 donors, HIV in 1 donor and syphilis in 3 donors. Among urban area group, HBV was noted in 3 donors, HCV in 7 donors, HIV in 0 donor and syphilis in 1 donor. Association of place of living with HBV, HCV, HIV and syphilis was not significant. (Table 5)

Table 1: Frequency of transfusion transmissible infections in blood donors

Transfusion transmissible infections	Frequency (%)	
	Yes	No
HBV	08 (4.21%)	182 (95.79%)
HCV	17 (8.95%)	173 (91.05%)
HIV	01 (0.53%)	189 (99.47%)
Syphilis	04 (2.11%)	186 (97.89%)

Table 2: Stratification of transfusion transmissible infections with respect to age.

		17-40 years (n=124)	41-65 years (n=66)	P-value
HBV	Yes	04	04	0.354
	No	120	62	
HCV	Yes	10	07	0.559
	No	114	59	
HIV	Yes	01	00	0.464
	No	123	66	
Syphilis	Yes	04	00	0.140
	No	120	66	

Table 3: Stratification of transfusion transmissible infections with respect to gender.

		Male (n=140)	Female (n=50)	P-value
HBV	Yes	04	04	0.120
	No	136	46	
HCV	Yes	14	03	0.395
	No	126	47	
HIV	Yes	00	01	0.093
	No	140	49	
Syphilis	Yes	03	01	0.952
	No	137	49	

Table 4: Stratification of transfusion transmissible infections with respect to number of transfusions.

		≤2 (n=112)	>2 (n=78)	P-value
HBV	Yes	06	02	0.346
	No	106	76	
HCV	Yes	15	02	0.010
	No	97	76	
HIV	Yes	00	01	0.230
	No	112	77	
Syphilis	Yes	02	02	0.713
	No	110	76	

Table 5: Stratification of transfusion transmissible infections with respect to place of living.

		Rural (n=117)	Urban (n=73)	P-value
HBV	Yes	05	03	0.956
	No	112	70	
HCV	Yes	10	07	0.807
	No	107	66	
HIV	Yes	01	00	0.428
	No	116	73	
Syphilis	Yes	03	01	0.577
	No	114	72	

DISCUSSION

The objective of this study was to determine the frequency of transfusion transmissible infections in blood donors presenting at department of hematology, Jinnah Hospital, Lahore. In present study, we found the hepatitis B in 08(4.21%), hepatitis C in 17 (8.95%), HIV in 01 (0.53%) and syphilis in 04 (2.11%) donors. In local study, frequency of HBV was 1.84%, HCV 1.7%, HIV 0.04%, Syphilis 2.1% and malaria was 0.07%.¹⁰ In another study, frequency of HCV was 8.34%, HBV 3.91%, HIV 0%, syphilis 0.89% and malaria 1.20%.¹¹ One more study has shown the prevalence of HCV 8.5%, HBV 9.5%, HIV 6.4%, and syphilis 7.5%.¹² In another study¹³, among the 108 blood donors, HIV was found in

56.5% donors, HBsAg in 4.6% donors and HCV in 2.8% donors. In our study, HCV was positive among 17 (8.95%) donors which is comparable with 13.3% reported in Bahir et al¹⁴, 8.7% in Burkina Faso¹⁵, 8.34% in Islamabad¹⁶, and 8% in Ghana.¹⁷ HBsAg was present in 4.21% donors of our study which is lower than the studies of North Ethiopia¹⁴ 25%, Burkina et al¹⁵ 14.9% and Jos et al 14.3%.¹⁸ In an international study, HIV was found in 0.53% donors¹⁴ 4.1% in study of Cameroon¹⁹ 3.8% in study of Ghana.¹⁷ The overall prevalence of syphilis in this study was 2.11%. The value obtained from this study is similar to 3.6 and 2.61% reported in Maiduguri²⁰ and Ile Ife²¹, respectively within Nigeria.

CONCLUSION

This study concluded that prevalence of HCV, HBV, HIV and Syphilis in blood donors was 8.95%, 4.21%, 0.53% and 2.11% respectively. So, we recommend that there is a need for stringent selection of blood donors with the emphasis on getting voluntary donations and comprehensive screening of donor's blood for HCV, HBV, HIV and Syphilis using standard methods to safeguard the blood recipient.

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