

Analysis of Transfusion Transmitted Infections among Blood Donors in Karwar

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Abstract

Background: Blood transfusion presently plays a key role in the management of medical and surgical patients. Large number of lives can be saved by using safe blood transfusion practices. Unsafe blood transfusion can be resulting in transfusion transmitted infection. There are very limited studies have been conducted in the coastal region of the Karnataka.

Methods: Hence the present study was done to evaluate the prevalence of TTIs among the blood donors of Karwar Medical College Blood Bank, Karwar.

Results: A total of 3183 donors were screened over 4 ½ years to assess the prevalence of infectious disease markers. On completion of blood donation, the units were screened for the five commonest TTIs namely HIV I and II, HBsAg, HCV syphilis and malaria. Out of the total donors, 3081 were Male donors, 102 were female and all were voluntary donors. 83.74% of the blood donors were in the age group of 18–39 years. 17 were seropositive for the transfusion transmitted infection, giving the percentage of 0.53%. Out of the 17 seropositive units 14 blood units were positive for HBV, 2 for Syphilis and 1 for malaria.

Conclusion: It is noted in many studies that percentage of TTIs are less in voluntary donors when compared to replacement donors. Seroprevalence of TTIs in our study was low, it may be attributed to the voluntary blood donors as all the blood donors in our study were voluntary donors.

Keywords: Blood transfusion • Transfusion transmitted infection • Blood donors

Introduction

Blood transfusion presently plays a key role in the management of medical and surgical patients. Large number of lives can be saved by using safe blood transfusion practices. Unsafe blood transfusion can be resulting in transfusion transmitted infection [1]. An unsafe blood transfusion results in increased morbidity, mortality and is not acceptable even from an economical point of view. It not only affects the recipient but also other people who are related to the recipient [2]. It also affects the health status and economy of the country adversely. Hence it is important to reduce the incidences of transfusion transmitted infections. It is very difficult to completely eliminate the transfusion transmitted infection but it can be reduced by improving donor selection methods and by implementing highly sensitive screening tests [3]. Presently in India, it is compulsory to screen every donated unit of blood before it being transfused for markers of HIV I, HIV II, HBV, HCV, malaria and syphilis [4]. Currently in India Elisa and rapid methods are used as screening tests. Recently in India NAT testing is used as screening test to improve the detection of transfusion transmitted infection in many blood banks [5].

In India, among blood donors, the prevalence of HIV is 0.084%–3.87%, Hepatitis B surface Antigen (HBsAg) is 0.66%–12%, hepatitis C virus is 0.5%–1.5%, syphilis is 0.85%–3% and malaria occur at rate of 0.25 cases per one

million blood units collected [6]. Seroprevalence of TTIs among blood donors is frequently done but studies involving coastal region of Karnataka are very limited. There are very limited studies have been conducted in the coastal region of the Karnataka. Hence the present study was done to evaluate the prevalence of TTIs among the blood donors of Karwar Medical College Blood Bank, Karwar.

Materials and Methods

The present study was carried out at blood bank, Karwar Institute of Medical Sciences, Karwar. It was a four and half year (July 2013 to December 2017) non-interventional, retrospective, observational study. The blood collections were carried out from the voluntary donors at outdoor blood donation camp and in-house blood bank as well as from replacement donors at blood bank. Donors were selected based on the guidelines from drug and cosmetic act and NACO. Collected blood units were screened for the five commonest TTIs namely HIV I and II, HBsAg, HCV, syphilis and malaria. HIV I and II, HBsAg, HCV were screened using ELISA and rapid kit, for malaria rapid kit and Peripheral smear were used, VDRL is used for screening Syphilis. The reactive samples were retested for confirmation and once confirmed, the reactive units were discarded.

Results

The present study was conducted in Blood Bank, Karwar Institute of Medical Sciences, Karwar, Karnataka. Our study was non-interventional, retrospective study. Duration of our study was four and half year (July 2013 to December 2017), a total of 3183 donors donated the blood during our study period.

In the present study all blood donors were voluntary donors. None of the blood donors during the study period were replacement donors. Out of the total donors, 3081 were Male donors and female donors were 102 (Table 1).

The age of the blood donors in the present study ranged from 18–64 years. Maximum number of donors were in the age group of 20–29 years (43.76%), followed by the age group of 30–39 years (31%). 83.74% of the blood donors were in the age group of 18–39 years (Tables 2-4).

Out of the total 3183 screened blood units 17 were seropositive for the

Table 1. Sex wise distribution of donors.

Total donors	Female	Male
3183	102 (3.20%)	3081 (96.79%)

Table 2. Age wise distribution of the blood donors.

Age	sex		Number	Percentage
	Male	Female		
18-19	249	16	265	8.32
20-29	1353	40	1393	43.76
30-39	986	22	1008	31.66
40-49	389	15	404	12.69
50-59	103	9	112	3.51
60-69	1	0	1	0.03
Total	3081	102	3183	

Table 3. Distribution of seropositive blood donors.

HIV	HCV	HBV	Malaria	Syphilis
0	0	14	1	2

Table 4. Age wise distribution of seropositive blood donors.

Age group	Seropositive blood donors					Total
	HIV	HBV	HCV	Syphilis	Malaria	
18-20	0	0	0	0	0	0
21-30	0	6	0	1	0	7
31-40	0	7	0	0	0	7
41-50	0	0	0	1	1	2
51-65	0	1	0	0	0	1
Total	0	14	0	2	1	17

transfusion transmitted infection, giving the percentage of 0.53%.

Discussion

Even though blood transfusion is one of the important entities of medical management, it is associated with the risk of transfusion transmitted infection. TTIs increase the morbidity, mortality in the recipient of the blood transfusion and also adversely affect the economy of the nation. Hence to ensure safe blood transfusion, it is very important to screen each and every blood unit collected from donation.

In our study female blood donors accounted for 3.20%. Similarly, in a study done by Giri, et al. male predominance in blood donation was noted [7]. The low percentage of female blood donors can be attributed to anaemia and underweight are the common causes donor rejection and are responsible for nearly more than half of the donor rejection [8].

In the present study all blood donors were voluntary donors. A very high percentage (95.56%) of voluntary donors were noted in study done by Patel, et al. [9]. Similarly study done by Deshpande, et al. had 79.33% of voluntary donors [10]. In contrast to our study few studies have reported higher percentage of replacement donors [11,12]. Voluntary blood donors are responsible for safe and adequate supply of blood and its products. It is established that blood donors who are voluntary, non-remunerated blood donors from low risk population are the safest blood donors and in our country it is best to switch over to 100% voluntary donation as it is considered as the safest [13].

In our study maximum number of donors were in the age group of 20–29 years (43.76%), followed by the age group of 30–39 years (31%). 83.74% of the blood donors were in the age group of 18–39 years. Similar statistics were noted in the study conducted by Kulkarni, et al. where 63% of the blood donors were in the age group of 21–30 years. It signifies the responsibility and the active participation show by the younger age group in ensuring adequate supply of blood and its products and it should be encouraged.

Out of the total 3183 screened blood units 17 were seropositive for the transfusion transmitted infection, giving the percentage of 0.53%. When compared to other studies the seroprevalence of TTIs were less in our study. (14, 15) Out of the 17 seropositive units 14 blood units were positive for HBV, 2 for Syphilis and 1 for malaria. Seroprevalence of HBV in our study was 0.43%, seroprevalence for HBV in other studies ranged from 0.99% to 1.35% [14,15]. HBsAg prevalence in India still remains high in spite of availability of safe and effective vaccination. The seroprevalence of syphilis in our study was 0.06% which is similar to study done by Chandra, et al. [16] Malaria in our study was detected in 1 blood donor, accounting for 0.03%. Low prevalence of malaria was noted in majority of the studies and our result was similar to study of Bahadur, et al. [17] It is noted in many studies that percentage of TTIs are less in voluntary donors when compared to replacement donors. Seroprevalence of TTIs in our study was low, it may be attributed to the voluntary blood donors as all the blood donors in our study were voluntary donors.

Conclusion

17 blood units were seropositive for the transfusion transmitted infection, giving the percentage of 0.53%. Out of the 17 seropositive units 14 blood

units were positive for HBV, 2 for Syphilis and 1 for malaria. It was noted that seroprevalence of TTIs in our study was low when compared to other studies. All blood donors were voluntary, non-remunerated blood donors who are considered as the safest donors, which is evident in our study and is reflected by the low seroprevalence of TTIs.

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Conflicting Interests

Nil

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