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Assessment of noncompliance in self-disclosure of deferrable risk behaviors among blood donors

Bala Vignesh Venkatachalam, Ravindra Prasad Thokala, Ashwin Anandan, Krishnamoorthy Radhakrishnan

Abstract:

BACKGROUND: Blood transfusion services work to ensure universal accessibility of safe and effective blood products for transfusion to recipients. Failure of blood donors to disclose complete truthful information before blood donation is termed as noncompliance. Noncompliance in disclosing high-risk behaviors could compromise blood safety. This study aimed to assess the prevalence rate of noncompliance and assess the predictive factors and reasons for noncompliance.

MATERIALS AND METHODS: Blood donors were asked to fill a postdonation anonymous questionnaire after obtaining consent and the responses were tabulated and analyzed. Prevalence of noncompliance for both high-risk and nonhigh-risk behaviors are evaluated. Variables associated with noncompliance are analyzed by univariate analysis and logistic regression.

RESULTS: Total number of participants was 3001, 2850 participants gave valid responses and included in the study. There were 94 (3.30%) responses revealing noncompliance for nonhigh-risk behavior and 30 (1.05%) responses revealing noncompliance for high-risk behavior. The predictor variables for noncompliance in reporting high-risk behavior were education and adultery. The predictor variables for noncompliance in nonhigh-risk behavior reporting were presence of comorbidity and adultery.

CONCLUSION: Noncompliance in disclosure of high-risk behavior compromises blood safety. Blood donors must be ensured sufficient privacy while filling predonation questionnaire and while eliciting history any deferrable behaviors during blood donor medical examination. Privacy and confidence of the donors must be ensured either to share any postdonation information directly or anonymously to facilitate confidential unit exclusion.

Keywords:

Adultery, blood donors, deferral, disclosure, high-risk behavior, noncompliance

Department of Transfusion Medicine, Sri Ramachandra Medical College and Research Institute, Sri Ramachandra Institute if Higher Education and Research, Chennai, Tamil Nadu, India

Address for correspondence:
Dr. Ravindra Prasad Thokala, Department of Transfusion Medicine, Sri Ramachandra Medical College and Research Institute, Sri Ramachandra Institute if Higher Education and Research, Porur, Chennai - 600 116, Tamil Nadu, India.
E-mail: drravi1212@gmail.com

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Introduction

In India, a developing country, an annual estimation of 12.8 million blood units are required to address the blood demand across the country.[1] According to the Central drugs standards control organization, in 2015, there are 2760 blood banks in India which collect around 11.6 million blood units annually.[2,3] Blood transfusion services in India are not uniform as 61% of the blood banks in our country relegated only to eight states.[3] Deferral rate of voluntary blood donors is not uniform among blood banks across the country. Safety of collected blood units is ensured by screening of donated blood for transfusion transmissible infections (TTIs) such as Human Immunodeficiency Virus I and II (HIV I and 2), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Malarial parasites, and Syphilis which are mandatory in India. The mandatory screening tests for various

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TTIs in India are carried out using serological methods. Prevalence of various TTIs are < 1% among blood donors in India (0.14% for HIV, 0.87% for HBV, 0.34% for HCV, 0.06% for Malaria, and 0.17% for syphilis).[4] Studies reveal that risk behaviors like sex with an HIV-infected person and men having sex with men (MSM)/ heterosexual contacts were primary risk factors for acquiring HIV infection. HBV infection is associated with first-time donor status; sex with an injection drug user (IDU) was primary risk factors. HCV infection is associated with IDU; first time donor status; a family member with hepatitis as primary risk factors.[5]

Screening of the blood units even by the nucleic acid testing leaves a certain window period that can be narrowed down but cannot be completely eliminated. Blood donations during window period pose a definite infectious risk to the recipient as there is always a risk of failure in detection of TTIs when a donor is in the window period. Blood donor selection where the donor is educated about the importance of disclosing behaviors and risks that could compromise the recipient safety is the first step in blood safety.[6] Noncompliance in disclosure of deferrable risk behaviors have been reported in various studies and the noncompliance rate varied for different risk behaviors studied. In India, the risk behaviors for acquiring HIV, HBV HCV and are prevalent and no study has been conducted for assessing the compliance of blood donors in revealing high-risk behaviors. Hence, this study was carried out to assess the failure in disclosure of deferrable risk behaviors among voluntary blood donors prior to blood donation.

Materials and Methods

This is a cross-sectional study conducted from January 2018 to June 2019, using a postdonation anonymous questionnaire to voluntary blood donors in the Department of Transfusion Medicine, Sri Ramachandra Medical College and Research Institute, Chennai. Whole blood donors who walked in to the blood bank were provided with information and educational materials about blood donation. Blood donors were then asked to fill a predonation questionnaire capturing donor demographic details, eligibility criteria and other details pertaining to donor's health and risk behaviors. Donors were then registered and subjected to medical examination. A qualified Medical officer Counseled the donors and their fitness for blood donation was ascertained. Donors who were declared fit were permitted to donate blood, others were counseled and deferred. After administration of post donation care blood donors were explained about this study and those who consented to participate were enrolled in the study. A validated postdonation questionnaire was given to blood donors to answer in an electronic tablet. The postdonation questionnaire had questions inquiring in to donor: (a) demographic details, (b) level of understanding about blood donation, (c) Noncompliance in disclosure of deferrable high-risk behaviors, (d) presence of noncompliance in disclosure of deferrable nonhigh-risk behaviors, and (e) the reason for noncompliance.

The postdonation questionnaire was made available online in two languages – English and Tamil (local language). The survey was conducted on Zoho platform, which is a web-based online office suite. Once the target sample size was achieved, data were downloaded from the Zoho platform in MS Excel format for data analysis. Donors were at the liberty to disclose their identity to the investigators if they did not want their collected blood unit to be transfused in the view of their risk behavior. The donors had the complete liberty to opt out of the study at any point of time. Noncompliance is failure to disclose risk behaviors during donor selection process which might have led to their deferral from blood donation.[7] High-risk behaviors include MSM activity, presence of multiple sex partners, presence of injection drug abuse (IDU), history of sexual contact within the past 12 months with a bisexual male/sex worker/individual injecting or abusing illicit drugs.[8,9] Individuals having sex with more than two partners were considered having multiple sexual partners. Nonhigh-risk behaviors include the behaviors such as history of tattooing, acupuncture, body piercing, dog bite with or without ARV, surgery/accident within 6 months, medications with or without prescription within a week, respiratory infection at the time of donation and other incidents or behaviors happened within the stipulated time preceding blood donation which would be determined by individual blood banks based on national/international guidelines.[6] Blood donors who revealed the above-mentioned behaviors were termed as self-confessed noncompliers. Donors who were hesitant to reveal or unsure about their own or partner's risk behaviors are classified as suspected noncompliers.[7]

Prevalence of noncompliance for both high-risk (self-confessed and suspected) and nonhigh-risk behaviors were evaluated. Univariate analysis was performed to compare between self-confessed noncompliers and the remaining blood donors. Chi-square test was applied to compare the categorical variables. A logistic regression model was constructed to examine the factors associated with noncompliance. All variables were entered to the model stepwise and were removed if the *P* value obtained from Chi-square test was larger than 0.1, $P < 0.05$ was taken to denote significance. All analyses were conducted with computer software SPSS 17.0, IBM, Armonk, NY, USA.

Results

A total of 3001 blood donors participated in the study. Complete response was given by 2850 donors and is included for the analysis. Number of male donors was 2753 (96.60%) and the female donors were 97 (3.40%) [Table 1]. Majority of the donors (n = 1819, 63.83%) were in the 18–30 years of age group with 75.27% of females (n = 73) belonging in the 18–30 years of age group. Majority of the donors were pursuing/obtained

Table 1: General characteristics of the donors

Characteristics	All donors (n=2850), n (%)	Male (n=2753), n (%)	Female (n=97), n (%)
Age (years)			
18-20	261 (9.16)	244 (8.86)	17 (17.53)
21-25	835 (29.30)	797 (28.95)	38 (39.18)
26-30	723 (25.37)	705 (25.61)	18 (18.56)
31-35	472 (16.56)	459 (16.67)	13 (13.40)
36-40	285 (10.00)	280 (10.17)	5 (5.15)
41-45	151 (5.30)	146 (5.30)	5 (5.15)
46-50	75 (2.63)	75 (2.72)	0
>50	48 (1.68)	47 (1.71)	1 (1.03)
Level of education			
Uneducated	20 (0.70)	20 (0.73)	0
School drop-outs	162 (5.68)	160 (5.81)	2 (2.06)
Completed school education	451 (15.82)	444 (16.13)	7 (7.22)
Has/doing a college degree	2217 (77.79)	2129 (77.33)	88 (90.72)
Place of living			
Rural	419 (14.70)	409 (14.86)	10 (10.31)
Urban	2256 (79.16)	2175 (79.00)	81 (83.51)
Sub-urban	175 (6.14)	169 (6.14)	6 (6.19)
Employment			
Full-time	2225 (78.07)	2185 (79.37)	40 (41.24)
Part-time	104 (3.65)	100 (3.63)	4 (4.12)
Carer/self-employed	76 (2.67)	63 (2.29)	13 (13.40)
Student	365 (12.81)	331 (12.02)	34 (35.05)
Unemployed	78 (2.74)	72 (2.62)	6 (6.19)
Retired	2 (0.07)	2 (0.07)	0
Marital status			
Single	1592 (55.86)	1532 (55.65)	60 (61.86)
Married	1240 (43.51)	1205 (43.77)	35 (36.08)
Widowed	2 (0.07)	1 (0.04)	1 (1.03)
Divorced	3 (0.11)	3 (0.11)	0
Separated	3 (0.11)	3 (0.11)	0
In-relation	10 (0.35)	9 (0.33)	1 (1.03)
Reading predonation questionnaire			
Did not read at all	130 (4.56)	127 (4.61)	3 (3.09)
Skimmed through/read selectively	129 (4.53)	127 (4.61)	2 (2.06)
Did not read thoroughly	88 (3.09)	88 (3.20)	0
Read thoroughly	2503 (87.82)	2411 (87.58)	92 (94.85)
Understood to some extent	407 (14.28)	398 (14.46)	9 (9.28)
Understood completely	2293 (80.46)	2209 (80.24)	84 (86.60)
Had some doubts	40 (1.40)	39 (1.42)	1 (1.03)
Response to predonation questionnaire			
Responses misinformed	10 (0.35)	10 (0.36)	0
Responses not sure	171 (6.00)	165 (5.99)	6 (6.19)
Donors withheld some information	42 (1.47)	42 (1.53)	0
Honest responses	2627 (92.18)	2536 (92.12)	91 (93.81)
Donation history			
First time	767 (26.91)	703 (25.54)	64 (65.98)
Repeat donors	2083 (73.09)	2050 (74.46)	33 (34.02)
Previous history of deferral			
Yes	155 (5.44)	141 (5.12)	14 (14.43)

a college degree n = 2217 (77.79%). 451 (15.82%) of the donors had completed school education. Majority of the donors were from urban living and were full time employed. A substantial number of donors among males (n = 331, 12.025%) and females (n = 35, 35.05%) were students. Among the donors 55.865 were single and 43.51% were married.

Number of first time donors were 767 (26.91%) and majority were repeat donors (n = 2083, 73.09%). Among the female donors (n = 97) majority of the female donors were first time donors (n = 64, 65.98%). Previous history of deferral was reported by 155 (5.44%) of the total donors and 14 (14.43%) female donors. Common reasons for previous deferral were low hemoglobin, body weight <45 kg, and lack of sleep.

Donors were asked to respond to how they read, understood and responded to the predonation questionnaire. Majority of the donors (n = 2503, 87.82%) had read the predonation questionnaire thoroughly, while 130 (4.56%) of the donors did not read the predonation questionnaire. Similar picture is observed in understanding of the predonation questionnaire that the predonation questionnaire was completely understood by 2293 (80.46%) donors and "to some extent" by 407 (14.28%) donors. There were 40 donors (1.40%) who responded that they had some doubts in the predonation questionnaire. Common doubts were about medical terms such as vaccines, immunization, antibiotics, anti-coagulants, and names of various disorders/diseases. More than 90% of the donors revealed that their responses to postdonation questionnaire were honest (n = 2627, 92.18%). A small proportion of donors (n = 42, 1.47%) revealed that they had withheld some information from revealing in the predonation questionnaire, whereas 0.35% of donors revealed that they had misinformed in the predonation questionnaire. Most of the donors did not disclose the specific information that they misinformed/withheld before donating blood in the predonation anonymous questionnaire. Comorbidities such as hypertension, for diabetes mellitus, bronchial asthma, and eczema were present in 68 (2.38%) donors and they have revealed in this study.

Three-fourth of the donors (n = 2117, 74.28%) were aware about the fact that the high-risk activities such as MSM, multiple sex partners, paid/been paid for sex, injection drug abuse, and sexual contact with individuals involving high-risk activity within 12 months are deferral criteria for blood donation. "Adultery" is voluntary sexual intercourse between a married individual, and the other individual either married (other than his or her spouse) or not.[10] Around 5.23% (n = 149) of the donors reported adultery, 120 (4.21%) of the donors reported premarital affair and 29 (1.02%) donors reported extra-marital affair. Majority of the donors who reported unrevealed adultery behavior were males and three female participants among 97 have revealed adultery behavior.

Thirty (1.05%) donors reported noncompliance for high-risk behaviors [Table 2]. No female donors reported noncompliance for high-risk behaviors. Twenty-five donors reported noncompliance for single high-risk behavior, five donors reported noncompliance for 2 or more high-risk behaviors. Ten donors were classified as suspected noncompliers for high-risk behaviors. In this study, noncompliers and suspected noncompliers together added up to forty (1.40%) donors who were noncompliant for high-risk behaviors. Number of donors reported noncompliance for nonhigh-risk behaviors are 94 (3.30%). Nonhigh-risk behaviors reported by noncompliers were the presence of respiratory diseases such as cough, cold, or breathing difficulty (n = 48, 1.68%), exposure to tattoos or body-piercing (n = 16, 0.56%), dog bite with or without anti-rabies vaccination within 12 months (n = 12, 0.42%), history of medication without prescription within a week (n = 10, 0.35%). There were two female donors who reported noncompliance for nonhigh-risk behaviors. There were three donors who reported noncompliance for both high-risk and nonhigh-risk behaviors. Nonhigh-risk activity reported were tattooing within 12 months by two donors and symptoms of respiratory infection at the time of donation by one donor.

Univariate analysis was performed between noncompliers for reporting high-risk/nonhigh-risk behaviors and compliers. Then, Chi-square test was performed to find the significant variables for noncompliance in reporting both high-risk and nonhigh-risk behaviors. The $P < 0.05$ was considered statistically significant. Significant variables for noncompliance in high-risk reporting were education ($\chi^2 = 6.257$, $P = 0.012$), response to questions in the predonation questionnaire ($\chi^2 = 4.044$, $P = 0.044$), presence of noncompliance in reporting nonhigh-risk behavior ($\chi^2 = 10.667$, $P = 0.001$), and adultery ($\chi^2 = 231.779$, $P = 0.001$) [Table 3].

Significant variables for noncompliance in reporting nonhigh-risk behavior shown in Table 4 were reading predonation questionnaire ($\chi^2 = 13.099$, $P = 0.001$), understanding the questions in the predonation questionnaire ($\chi^2 = 15.785$, $P = 0.001$), response to questions in the predonation questionnaire ($\chi^2 = 15.524$, $P = 0.001$), comorbidities ($\chi^2 = 10.690$, $P = 0.001$), presence of noncompliance in reporting high-risk behavior ($\chi^2 = 4.269$, $P = 0.039$), and adultery ($\chi^2 = 21.305$, $P = 0.001$).

Table 2: Distributions of various risks reported by noncompliant donors

	Total (*n*=2850), *n* (%)	Male (*n*=2753), *n* (%)	Female (*n*=97), *n* (%)
Temporary deferral behavior noncompliance	94 (3.30)	92 (3.34)	2 (2.06)
Exposure to tattoos/acupuncture/body-piercing within 12 months	16 (0.56)	16 (0.58)	0
Dog-bite and/or treated with ARV within 12 months	12 (0.42)	12 (0.44)	0
Undergone any major accident/surgery within 6 months	4 (0.14)	4 (0.15)	0
Had any medications without prescription within a week	10 (0.35)	9 (0.33)	1 (1.03)
Cold/cough/breathing difficulty at the time of donation	48 (1.68)	47 (1.71)	1 (1.03)
Never/not applicable	2756 (96.70)	2661 (96.66)	95 (97.94)
Other responses[i]	4 (0.14)	4 (0.15)	0
Adultery			
Premarital sex/affair	120 (4.21)	118 (4.29)	2 (2.06)
Extra-marital sex/affair	29 (1.02)	28 (1.02)	1 (1.03)
Never/not applicable	2701 (94.77)	2607 (94.70)	94 (96.91)
High-risk behavior	25 (0.88)	25 (0.91)	0
MSM	3 (0.11)	3 (0.11)	0
Multiple sexual partners	13 (0.46)	13 (0.47)	0
Had paid for sex	8 (0.28)	8 (0.29)	0
Injected illicit drugs	1 (0.04)	1 (0.04)	0
Never/not applicable	2825 (99.12)	2728 (99.09)	97 (100)
Contact history within 12 months			
Bisexual male	4 (0.14)	4 (0.15)	0
Sex worker	4 (0.14)	4 (0.15)	0
Someone who injected or abused drugs	2 (0.07)	2 (0.07)	0
I'm not sure	30 (1.05)	30 (1.09)	0
Total number of high risk responses			
High risk	30 (1.05)	30 (1.09)	0
No risk	2820 (98.95)	2723 (98.91)	97 (100)
Risk reporting for high-risk behavior			
Single risk reported		25	
2 or more risk reported		5	

[i]Other responses: Hepatitis B virus-infected donor=1, donor treated for malaria within 3 months=1, donor on regular anti-anxiety medication=1, Donor with unhealed ulcer=1. ARV=Antirabies vaccine, MSM=Men having sex with men

Table 3: Noncompliant behavior for high-risk behavior

Variables	Univariate analysis			Logistic regression analysis							
	χ^2 score	df	*P*	*B*	SE	Wald	df	Significance	OR	OR 95% CI	
										Lower	Upper
Education	6.257	1	0.012*	0.622	0.285	4.776	1	0.029	1.862	1.066	3.253
Nature of job	2.771	1	0.096	0.076	0.143	0.287	1	0.592	1.079	0.816	1.428
Response to predonation questionnaire	4.044	1	0.044*	0.175	0.264	0.437	1	0.509	1.191	0.709	2.000
Temporary deferral behaviour	10.667	1	0.001*	0.187	0.183	1.040	1	0.308	1.206	0.842	1.727
Affair	231.779	1	0.000*	1.875	0.205	83.524	1	0.000	6.520	4.362	9.748

*P<0.0. SE=Standard error, OR=Odds ratio, CI=Confidence interval

Table 4: Noncompliant behaviour for temporary deferral behaviour

Variables	Univariate analysis			Logistic regression Analysis							
	χ^2 score	df	*P*	*B*	SE	Wald	df	Significance	OR	OR 95% CI	
										Lower	Upper
Marital status	1.317	1	0.251	0.297	0.202	2.170	1	0.141	1.346	0.907	1.998
Reading predonation questionnaire	13.099	1	0.000*	0.100	0.163	0.377	1	0.539	1.105	0.803	1.521
Understanding predonation questionnaire	15.785	1	0.000*	0.292	0.242	1.451	1	0.228	1.339	0.833	2.154
Response to predonation questionnaire	15.524	1	0.000*	0.293	0.169	3.024	1	0.082	1.341	0.963	1.866
Co morbidities	10.690	1	0.001*	1.332	0.426	9.790	1	0.002	3.788	1.645	8.726
Affair	21.305	1	0.000*	0.590	0.174	11.528	1	0.001	1.803	1.283	2.535
Noncompliance in reporting high-risk behavior	4.269	1	0.039	0.193	0.686	0.080	1	0.778	1.213	0.316	4.654

*P<0.05. SE=Standard error, OR=Odds ratio, CI=Confidence interval

Variables having $P < 0.1$ obtained from Chi-square test were added into a logistic regression model in a stepwise fashion. The predictor variables for noncompliance in high-risk behavior reporting were education (odds ratio [OR] = 1.862, 95% confidence interval [CI]: 1.066–3.253) and adultery (OR = 6.520, 95% CI: 4.362–9.748). The predictor variables for noncompliance in nonhigh-risk behavior reporting were the presence of comorbidity (OR = 3.788, 95% CI: 1.645–8.726) and adultery (OR = 1.803, 95% CI: 1.2832.535).

Total number of responses revealing noncompliance behavior for blood donation was 121 (4.24%). There were 94 (3.30%) responses revealing noncompliance for nonhigh-risk behavior and 30 (1.05%) responses revealing noncompliance for high-risk behavior. There were three responses revealed noncompliance for both high-risk and nonhigh-risk behavior.

Common reasons cited by voluntary blood donors for noncompliance behavior were: (i) Compulsion from family and friends, (ii) Practiced such deferrable behaviors with safety precautions, (iii) Felt no need to disclose such deferrable behaviors, (iv) Not bothered about consequences, (v) Feeling of guilt/shame to reveal such behaviors and did not want to be banned from blood donation, (vi) Not able to find another donors, (vii) To check sexually transmitted disease status. Reasons such as the risk behaviors mentioned are seldom practiced at present and disagreement with deferral mechanism were also cited by the noncompliant donors.

Discussion

In this study, prevalence rate of noncompliance for overall high-risk behaviors is estimated to be 1.05%.The least noncompliance rate being 0.04% for IDU to 0.46% for history of contact with multiple sexual partners. Similarly, the prevalence rate of noncompliance for nonhigh-risk behaviors is estimated to be 3.30% (ranging from 0.14% for history of any surgery or accident within 6 months (as per our blood donor deferral criteria) to 1.68% for the presence of cough/cold/breathing difficulty at the time of donation). All donors who had reported noncompliance for high-risk behavior were males and only 2 out of 94 donors were females who had reported noncompliance for nonhigh-risk behavior. As female participants are only 3.4% ($n = 97$), male gender cannot be considered as predictor of noncompliance in self-disclosure of deferrable risk behaviors. In this study, the presence of adulterous behavior and level of education as having/pursuing graduate degree were the predictive factors for noncompliance for high-risk blood donor deferral behaviors. The presence of adultery and presence of any comorbidities were the predictive factors for noncompliance of nonhigh-risk behaviors.

This study made an attempt to estimate the rate of noncompliance for nonhigh-risk behaviors. Other similar studies only focused on estimating rate of noncompliance for sexual activity-based high-risk deferral behaviors. Rate of noncompliance for sexual activity-based high-risk behavior assessed by Wong *et al*. in Hong Kong was around 2.2%, by Lucky *et al*. in Australia was around 1.65%, and Blatyta *et al*. in Brazil documented the noncompliance rate to be around 13%.[7-9] Other studies reported higher rate of noncompliance for MSM behavior as 1.5% among Hong Kong blood donors reported by Wong *et al*. and around 0.23% among Australian donors reported by Lucky *et al*.[7,9] The present study reports 0.14% as the prevalence of noncompliance for MSM behavior. History of sexual contact with multiple partners is the commonly reported noncompliant high-risk behavior observed in this study.

Participants of this study were asked to reveal any adulterous behavior indulged at any point in their lifetime. Adultery can be considered as sex-based high-risk deferral behavior for blood donation if donors are involved in multiple relationships in their lifetime, but the donors who indulge in adultery may not agree the same. Donors might feel guilty or hesitant in revealing adulterous history before blood donation to the blood bank medically officer, especially when they are accompanied by their family members and friends. In this study, most of the donors who revealed their adultery behavior postdonation had not realized or admitted their involvement in sexual activity-based high-risk deferral behavior for blood donation. Thus, the presence of adultery behavior was considered as one of the variables for noncompliance in disclosing deferrable behaviors for blood donation. Adultery behavior was found to be a predictive factor for noncompliance in self-disclosing high-risk and nonhigh-risk deferrable behaviors. If the adultery behavior is considered as high-risk factor for blood donation deferral, the prevalence rate of noncompliance for high-risk behavior estimated from this study data is 5.57%.

Prevalence of noncompliance for high-risk behavior disclosure reported is found to be lower compared to findings of other studies. This could be due to single centric nature of the present study in contrast to the multi centric nature of other studies, mode of postdonation interview lacking audio computer-assisted structured interview, possibility of noncompliance while responding to postdonation questionnaire, blood donors having deferrable behaviors not listed in the postdonation questionnaire, participants who revealed adultery behavior having not considered adultery as a high-risk behavior, the confidentiality and safety of the online data collection and storage.[7-9]

This study evaluated the noncompliance for temporary, nonhigh-risk deferrable behaviors for blood donation. In the present study, 3.30% (n = 94) was the prevalence rate of noncompliance for temporary, nonhigh-risk deferrable behaviors for blood donation. The presence of co-morbidities and adultery behavior were the predictive factors for noncompliance for nonhigh-risk behavior. The presence of mild upper respiratory infections at the time of blood donation was often concealed by 1.68% of blood donors. Other nonhigh-risk behaviors often not reported at the time of blood donation were exposure within 12 months to body piercing like tattooing, acupuncture, 0.56% (n = 16), history of either dog bite or anti-rabies vaccination were not revealed by 0.42% (n = 12 donors), medication without prescription within a week preceding the blood donation were not revealed by 0.35% of donors.

The nonhigh-risk deferrable behaviors are temporary deferral behaviors for blood donation. Reasons for noncompliance in disclosing nonrisk behaviors as stated by the blood donors are: (a) Unaware of blood donation deferral policies, (b) Compulsion from family or friends, (c) Difficulty in finding alternate blood donors, (d) Other reasons like feeling it as unnecessary to disclose nonhigh-risk behaviors, and (e) Not concerned about consequences.

Although uniform guidelines on blood donor selection and deferral are available, blood donor selection criteria and deferral policy and blood donor deferral rate vary among different blood banks across the country.[11] There exists a possibility of a donor, especially repeat donors being unaware of deferral policies of a particular blood bank at the time of blood donation if he/she had not read the predonation questionnaire thoroughly.

Blood donors must be provided with educational materials containing information about general overview of blood donation, TTI screening and predominant risk behaviors for the spread of TTIs, list of deferrable behaviors for blood donation and need for deferral before filing predonation questionnaire. Provision of educational materials may lead to self-deferral of donors indulged in deferrable behaviors. Blood donors must be made aware of various methods of screening, their detection limit and about window period. TTI screening may fail to detect the true positive infection, if a donor is in window period, which varies according to different methods of TTI screening. Residual risk narrows down the window period but cannot eliminate it and hence, the infectious risk always persists despite screening by effective methods. The presence of variant pathogenic strain causing TTI can evade screening. Emerging and re-emerging infections that may spread through blood transfusion always pose a threat to blood safety. Thus, a proper selection of risk free, nonremunerated voluntary blood donors for blood collection will ensure blood safety.

The various ways to minimize the occurrence of noncompliance in risk disclosure during blood donation are ensuring privacy while filling predonation questionnaire, eliciting history for any deferrable behaviors during blood donor medical examination, ensuring privacy and confidence of the donors to share any postdonation information (PDI) either directly or anonymously to facilitate confidential unit exclusion. PDI containing anonymous details must be adequate enough to isolate the correct units. Blood banks must take efforts to encourage PDI from noncompliant blood donors while ensuring confidentiality.

Limitations of the study

This study could not track the TTI screening results of collected blood units from noncompliant donors owing to the anonymous nature of online data collection. Thus, investigators could not establish link between TTI screening results after blood donation and the noncompliant risk behaviors reported.

Conclusion

Noncompliance in revealing high-risk behavior that would otherwise make the blood donor ineligible to donate blood exists among our blood donor population. Practicing high-risk behaviors such as adultery, multiple sexual partners, male-to-male sex, having a comorbid conditions and being educated enough to conceal this information are associated with noncompliance. Blood donors must be educated, informed, and enquired about the various deferral conditions for blood donation at multiple levels before blood donation. Blood donors must be produced with sufficient privacy and confidentiality to encourage voluntary disclosure of high-risk behaviors before blood donation. Processes must be in place to provide opportunity and confidentiality for blood donors to provide PDI that is sufficient for a confidential unit exclusion.

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Conflicts of interest

There are no conflicts of interest.

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Study Questionnaire

1) Age (in years). Please enter the age group you belong.
   a) 18–20 d) 31–35 g) 46–50
   b) 21–25 e) 36–40 h) >50
   c) 26–30 f) 41–45

2) Gender
   a. Male b. female

3) Education
   a. Uneducated
   b. Dropped out in school
   c. Completed school education
   d. Has/doing a bachelor/masters/PhD degree.

4) How do you classify the place you are from?
   a. Rural
   b. Urban
   c. Semi-urban

5) Employment
   a. Working full time (more than 30 h a week).
   b. Working part-time (8-30 h a week).
   c. Career (of home, family, etc.,-full time).
   d. Student (full time).
   e. Temporarily unemployed (but actively seeking work).
   f. Retired
   g. Permanently unemployed.

6) Nature of job
   a. Professional (engineers, doctors, lawyers, charted accountants, teachers, professors, research scholars).
   b. Beaurocrats (politicians, people holding higher posts in government institutions).
   c. Skilled (farmers, factory workers, laborer, mechanics, artisans, etc.).
   d. Semi-skilled (security, drivers, sanitary workers, policemen, people serving armed forces)
   e. Business
   f. Daily wages
   g. Others (please specify)

7) Marital status
   a. Single
   b. Married
   c. Widowed
   d. Divorced
   e. Separated
   f. In relation
   g. Living together.

8) How do you feel after donating blood?
   a. Uncomfortable
   b. Comfortable
   c. Feeling good
   d. Proud

9) How did you read the predonation questionnaire?
   a. Did not read at all.
   b. Skimmed through/read selectively

c. Did not read thoroughly
d. Read thoroughly

10) Did you understand all the questions in the predonation questionnaire?
a. Not at all understood.
b. Understood to some extent.
c. Understood completely.
d. Had some doubts in certain questions (please specify)_____

11) What do you think of the predonation questionnaire?
a. Necessary
b. Unnecessary

12) How did you respond to all questions in the predonation questionnaire?
a. I misinformed
b. I'm not sure.
c. I withheld some information.
d. I was honest
e. Others (please specify)

13) Have you donated blood before?_____
a. Yes
b. No

14) Have you been deferred (rejected) from donating blood?
a. Yes
b. No

15) What do you think of blood donation?
a. A duty
b. A good deed
c. An obligation.
d. An opportunity for free health check-up
e. Other (please specify)

16) Do you have/had any experiences in any of the following? (Multiple responses allowed).
a. Exposure to tattoos/acupuncture/body piercing in the past 12 months.
b. Dog-bite and/or treated with anti-rabies vaccine.
c. Undergone any major accident/surgery within 6 months
d. Had any medications without prescription in a week.
e. Cold/cough/breathing difficulty in a week.
f. If you had lied to other questions in the predonation questionnaire (please specify). _____
g. Never/Not applicable for me.

17) Have you been diagnosed with any of the diseases like diabetes mellitus, hypertension, asthma, hypothyroidism, allergic disorder, food allergy, etc?
a. Yes
b. No
c. If yes (please specify). _____

18) Have you ever indulged in any of the following?
a. Premarital sex/affair
b. Extra-marital sex/affair
c. Never/not applicable for me

19) Have/had you been indulging in any of the following behaviors?
a. Male-to-male sex

b. Multiple sex partners
c. Been paid for sex
d. Injected illicit drugs
e. Never/not applicable for me.

20) Do you have history of sexual contacts with any of the following in the preceding 12 months? (Multiple responses allowed).
a. Bisexual male
b. Sex worker
c. Someone who abused or injected illicit drugs
d. I'm not sure
e. Never/not applicable to me.

21) Are you aware that the above mentioned behaviors are contra-indications to blood donation?
a. Yes b. No

22) If you hadn't mentioned to the blood bank physician, what is the reason? (Multiple responses allowed).
a. Feeling of guilt/shame and not want to banned from blood donation.
b. Though there is no need to disclose such behaviors.
c. Not aware of the facts that the patient/recipient of my blood could get infected.
d. Disagreeing with the deferral mechanism.
e. Practiced such behaviors with safety precautions.
f. Seldom practice it or them now/practiced long time ago.
g. Other (please specify) _____
h. Not/never applicable for me.

23) You came to know that you cannot donate blood after reading the predonation questionnaire, but you still donated blood and reveal any deferrable behaviors. Why?
a. Out of compulsion from family/friends/attenders.
b. Not able to find another donors.
c. To check my disease status.
d. Never bothered about consequences.
e. Other (please specify) _____
f. Not/never applicable for me.

24) Please give rating and feedback to our services.
a. 1-bad
b. 2-not so good
c. 3-average
d. 4-good
e. 5-excellent