Knowledge, attitude and beliefs of people in North India regarding blood donation

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Background. To develop targeted interventions in the field of donor recruitment, an understanding of existing knowledge, attitudes and beliefs regarding blood donation is required. Recruiters should be aware of variability in different demographic strata when implementing interventions.

Material and methods. A self-administered questionnaire along with a face-to-face interview was conducted in 400 each of voluntary donors, replacement donors and non-donors to assess their knowledge, attitude and beliefs regarding blood donation and their motivations for giving blood. Data were analysed using ANOVA and the c^2 test.

Results. The most common reason given by non-donors (40.75%) for not donating blood was "no one asked them to give blood". Voluntary donors had a more pleasant blood donation experience compared to replacement donors and, therefore, more of them were willing to donate again (89.5%). The knowledge scores of non-donors were lower than those of donors and, among the latter, voluntary donors had better scores compared to replacement donors. Expectedly, the frequency of false beliefs was highest among non-donors (22.75%), with the most prevalent misbelief being that blood donation is associated with infertility. Television was found to be the most effective medium of communication for raising awareness about blood donation.

Conclusion. It is recommended that extensive blood donation campaigning should be initiated, targeting the campaigns to eliminate specific misbeliefs and reinforce motivational perceptions. Blood centres should implement strategies to improve donor retention and should aim to provide a pleasant donation experience, regardless of the donor type. The idea of voluntary blood donation needs to be intensively promoted.

Keywords: voluntary donors, replacement donors, knowledge, attitude, beliefs.

Introduction

Access to safe blood is a key component of effective health care and voluntary donors are the basis of a safe blood supply. Developed countries with well-structured health systems and blood transfusion services based on voluntary blood donation are generally able to meet the demand for blood and blood products. Guidelines have reported significantly lower prevalences of markers of transfusion-transmissible infections among voluntary donors than among other types of donors, with the lowest rates being found among regular donors[1]. As voluntary donors are motivated by altruism rather than by financial or social pressure, they are more likely to meet the medical selection criteria for safe donors, to disclose any known possibility of risk exposure, and to donate blood regularly and at properly spaced intervals. However, many people in developing countries are faced with ignorance, misperceptions and fears about the blood donation process, which result in a limited number of voluntary donors. Such countries are challenged to find creative recruitment methods to combat misconceptions about blood donation and to motivate the public to donate.

It is an irony that despite being a nation with a population of more than one billion and an annual requirement of 8.5 million units of blood, India is able to collect only 4.4 million units of which only about 52% are from voluntary blood donors[2].

At present, the source of donated blood is a combination of voluntary donors, replacement donors, and a number of professional donors, although professional blood donation is forbidden by law. To sustain self-sufficiency, ensure safety and match the ever increasing clinical demand for various blood components, continuous efforts are required to ensure that donor recruitment campaigns are based on donor inputs. In this context, studies have emerged from both developed[3-8] and developing countries[9-15].

It has been seen that lack of knowledge, fear, facilities, convenience and the quality of service are common factors in people's decisions on whether to donate blood repeatedly on a voluntary basis[16]. Indeed, understanding blood donors' motivations is crucial to improve the

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effectiveness of donor recruitment and retention programmes[17]. This information would be helpful for tailoring targeted programmes and campaigns more precisely in the future in order to recruit more people as regular, non-remunerated, voluntary donors.

In the present study, the existing level of knowledge in different demographic groups among donors and non-donors was compared, and factors that motivate or discourage individuals from donating blood were explored. We also ascertained the experience of blood donors with regards to their previous donation, opinions regarding the services provided by blood banks and effectiveness of various communication media in motivating people.

Material and methods

This was a pilot study conducted in the Transfusion Medicine department of a tertiary care hospital in North India.

A random sampling technique was used to choose the participants from among those visiting the department or blood donation camps as donors, accompanying persons and people from offices and colleges in the surrounding area. Donors were those people who had previously donated blood either on a voluntary basis (n=400) or as a replacement donor (n=400); the non-donors (n=400) were people who had never given blood at any time in the past.

A self-administered questionnaire and face-to-face interview on various aspects of blood donation were used to collect data. The questionnaire was prepared after review of the literature on similar studies and the framework was derived from the World Health Organisation (WHO) manual *Methodological guidelines for socio-cultural studies on issues related to blood donation*, 2005[18]. Briefly, the questionnaire contained five sections with 25 multiple choice questions regarding donor demographics, opinion about the blood centre, knowledge about various aspects of the blood donation process and blood transfusion, efficiency of mass communication media, *etc*. One point was awarded for each correct answer and zero for each incorrect answer for questions assessing the knowledge of participants. The total knowledge score ranged 0-13.

Collected data were analysed using ANOVA and the c^2 test with the SPSS 17.0 programme. The test at a level of significance of 0.05 was used as a test for independence.

Results

The study population consisted of 1,200 participants, comprising 400 each of voluntary donors, replacement donors and non-donors. Overall, there were 881 (73.41%) males and 319 females (26.59%). The categorisation of participants according to demographic features is shown in Table I.

Table I - Demographic characteristics of participants.

Characteristics	Voluntary donors (%) n=400	Replacement donors (%) n=400	Non-donors (%) n=400	Total (%) n=1,200
Age (years)				
18-30	207 (51.75)	211 (52.75)	206 (51.50)	624 (52.0)
31-40	125 (31.25)	127 (31.75)	101 (25.25)	353 (29.42)
41-50	59 (14.75)	40 (10.0)	71 (17.75)	170 (14.16)
>50	09 (2.25)	22 (5.50)	22 (5.50)	53 (4.42)
Gender				
Male	300 (75.0)	289 (72.25)	292 (73)	881 (73.41)
Female	100 (25.0)	111 (27.75)	108 (27)	319 (26.59)
Marital status				
Unmarried	164 (41.0)	142 (35.50)	130 (32.50)	436 (36.33)
Married	236 (59.0)	258 (64.50)	270 (67.50)	764 (63.67)
Residence				
Urban	297 (74.25)	293 (73.25)	295 (73.75)	885 (73.75)
Rural	103 (25.75)	107 (26.75)	105 (26.25)	315 (26.25)
Education				
Elementary	30 (7.50)	24 (6.0)	44 (11.0)	98 (8.17)
Higher Sec.	57 (14.25)	71 (17.75)	84 (21.0)	212 (17.67)
Intermediate	95 (23.75)	97 (24.25)	81 (20.25)	273 (22.75)
Graduate	166 (41.50)	187 (46.75)	170 (42.50)	523 (43.58)
Postgraduate	52 (13.0)	21 (5.25)	21 (5.25)	94 (7.83)
Occupation				
None	49 (12.25)	46 (11.5)	33 (8.25)	128 (10.67)
Service	170 (42.50)	192 (48.0)	225 (56.25)	587 (48.92)
Self-employed	108 (27.0)	127 (31.75)	114 (28.50)	349 (29.08)
Student	73 (18.25)	35 (8.75)	28 (7.0)	136 (11.33)

Table II - Non-donors' attitude towards blood donation (n=400).

Reasons for not donating:	Males (n=289)	Females (n=111)	Total (%)
Donation is painful	13 (4.49)	9 (8.10)	22 (5.50)
Afraid of needle or sight of blood	10 (3.46)	05 (4.50)	15 (3.75)
Donation is harmful to health	43 (14.87)	18 (16.21)	61 (15.25)
Never had opportunity to donate	114 (39.44)	49 (44.14)	163 (40.75)
My blood is not safe	17 (5.88)	03 (2.70)	20 (5.0)
Donation process is long & boring	23 (7.95)	03 (2.70)	46 (6.50)
My blood will be misused by blood bank	21 (7.26)	03 (2.70)	23 (5.75)
My blood will be wasted	14 (4.84)	03 (2.70)	17 (4.25)
Blood bank is too far from my place	15 (5.19)	10 (9.00)	25 (6.25)
I am not fit to donate	19 (6.57)	08 (7.20)	27 (6.75)
Would donate in future:			
No	34 (11.76)	19 (17.11)	53 (13.25)
Only if family/friends require	162 (56.05)	67 (60.36)	229 (57.25)
Only if paid	21 (7.26)	02 (1.80)	23 (5.75)
To know HIV status	25 (8.64)	06 (5.40)	31 (7.75)
As a voluntary donor	47 (16.26)	17 (15.31)	64 (16.0)

The attitude of non-donors towards blood donation is summarised in Table II. The most common reason for having not donated blood among both males and females was that they never got an opportunity to donate (40.75%), followed by their belief that it could be harmful to their health (22.75%). When asked about future prospects, the majority (57.25%) said that they would donate only if a need arose in their family or friends. However, 13.25% people said that they would not like to donate ever in their lifetime.

The comparison of experiences and opinions of replacement and voluntary donors are shown in Table III. Only 19.75% of replacement donors had donated more than once, compared to 47% of voluntary donors. More voluntary donors (45.25%) than replacement donors (27.25%) said that they were given complete information (both printed and verbal) about the blood donation process. However, comparatively more replacement donors were asked health-related questions (87.75% *vs* 82.25%) and underwent a medical examination (74.5% *vs* 59%). Voluntary donors were more honest compared to replacement donors (81.75%

Table III - Blood donors' experience about prior donation.

Characteristics	Voluntary donors (%) n=400	Replacement donors (%) n=400	Total (%) n=800
Frequency of donation			
Once	212 (53.0)	321 (80.25)	533 (66.62)
Repeat	188 (47.0)	79 (19.75)	267 (33.38)
Site of donation			
Private blood bank	34 (8.51)	198 (49.5)	232 (29.0)
Government blood bank	159 (39.75)	202 (50.5)	361 (45.13)
Blood donation camp	207 (51.75)	----	207 (25.87)
Opinion about blood bank service			
Good	107 (26.75)	52 (13.0)	159 (19.88)
Satisfactory	266 (66.50)	253 (63.25)	519 (64.87)
Bad	27 (6.75)	95 (23.75)	122 (15.25)
Information provided before donation			
No	45 (11.25)	137 (34.25)	182 (22.75)
Only verbal	174 (43.50)	154 (38.5)	328 (41.0)
Verbal and printed	181 (45.25)	109 (27.25)	290 (36.25)
Medical examination done before donation	236 (59.0)	298 (74.50)	534 (66.75)
Health-related questions asked before donation	329 (82.25)	351 (87.75)	680 (85.0)
Honestly answered all the questions asked	327 (81.75)	245 (61.25)	572 (71.5)
Refreshment provided after blood donation	297 (74.25)	261 (65.25)	558 (69.75)
Disliked which aspect			
None	213 (53.25)	166 (41.50)	379 (47.38)
Attitude of staff	51 (12.75)	77 (19.25)	128 (16.0)
Donor room environment	44 (11.0)	65 (16.25)	109 (13.62)
Long waiting period	48 (12.0)	45 (11.25)	93 (11.63)
Unpleasant process of donation	44 (11.0)	47 (11.75)	91 (11.37)
Would like to donate willingly again	358 (89.50)	229 (57.25)	587 (73.37)

vs 61.25%) in answering the questions regarding their medical status. Refreshment after blood donation was provided to 74.25% of voluntary donors and to 65.25% of replacement donors. The aspect disliked most by both groups was the attitude of the staff (16%).

All the participants were questioned to assess their knowledge about various aspects of blood donation and blood transfusion. The sum of responses was summarised as a knowledge score and a comparative analysis was done for voluntary, replacement and non-donors, according to their demographic categorisation (Table IV). The score was greatest for voluntary donors and least for non donors in all the categories. All the participants in the age groups of 18-30 years and 31-40 years had significantly greater knowledge (P <0.05). Among replacement and non-donors, the knowledge score of males was significantly higher than that of females (P <0.05). Similarly, the knowledge scores of participants from an urban background, with higher education levels and students were significantly higher in their individual categories (P <0.001).

Table V shows the frequency of misbeliefs about blood donation. Among participants in all the groups, the most common misbelief was that blood donation is associated with a loss of fertility (4.66%), followed by the frequent misbelief of its association with permanent weakness (4.25%). As expected, the prevalence of misperceptions was highest in non-donor group

Table IV - Comparison of knowledge scores of the participants according to demographic characteristics.

Characteristics	Voluntary donors n=400		Replacement donors n=400		Non-donors n=400		
	Mean	SD	Mean	SD	Mean	SD	P-value
Age (years)							
18-30	10.16	2.59	9.87	2.12	7.93	2.50	
31-40	10.58	2.48	9.47	2.63	7.82	2.26	
41-50	09.86	2.79	9.05	2.96	7.07	2.58	<0.001
>50	08.22	2.58	7.68	2.90	6.32	2.25	
P-value	<0.05		<0.001		<0.05		
Gender							
Male	10.40	2.49	9.92	2.11	7.81	2.41	
Female	09.62	2.85	8.93	2.85	7.26	2.62	<0.001
P-value	>0.05		<0.001		<0.05		
Marital status							
Unmarried	10.23	2.59	9.80	2.11	7.78	2.47	
Married	10.18	2.62	9.40	2.65	7.60	2.48	<0.001
P-value	>0.05		>0.05		>0.05		
Residence							
Urban	10.81	2.30	10.10	2.10	08.25	2.33	
Rural	08.46	2.66	08.01	2.76	06.01	2.11	<0.05
P-value	<0.001		<0.001		<0.001		
Education							
Elementary	06.60	2.42	06.68	2.43	05.09	2.00	
Higher secondary	08.16	2.24	08.34	2.43	06.82	2.26	
Intermediate	10.42	2.26	09.69	2.28	08.00	2.01	<0.05
Graduate	11.00	2.48	10.12	2.15	08.35	2.47	
Postgraduate	11.58	2.27	11.14	2.26	09.52		
P-value	<0.001		<0.001		<0.001		
Occupation							
None	07.00	2.50	08.50	2.77	05.15	2.30	
Service	10.76	2.24	09.97	2.12	07.90	2.40	
Self-employed	10.06	2.32	08.94	2.65	07.75	2.36	<0.001
Student	11.26	2.19	10.77	2.21	08.29	2.19	
P-value	<0.001		<0.001		<0.001		

Table V - Frequency of false beliefs about blood donation.

Characteristics	Voluntary donors (%) n=400	Replacement donors (%) n=400	Non donors (%) n=400	Total (%) n=1,200
Can transmit HIV infection	00 (0)	03 (0.75)	18 (4.50)	21 (1.75)
Leads to permanent weakness/ anaemia	05 (1.25)	14 (3.50)	32 (8.0)	51 (4.25)
Leads to accelerated aging	03 (0.75)	9 (2.25)	13 (3.25)	25 (2.08)
Leads to infertility and loss of vitality	06 (1.50)	22 (5.50)	28 (7.0)	56 (4.66)
Total	14 (3.50)	48 (12.0)	91 (22.75)	153 (12.75)

(22.75%), intermediate in replacement donors (12%), and lowest in voluntary donors (3.50%). The overall prevalence of false beliefs was 12.75%.

Participants were also questioned about sources of communication which had contributed to their awareness about the blood donation process. Television was considered the most effective medium (45.2%), followed by newspapers (39.8%), radio (9.2%), banners (2.8%), pamphlets (2.2%) and SMS (0.8%).

Discussion

This study was conducted in order to obtain information and inputs from people which can be useful in implementing relevant donor recruitment and to introduce strategies for maintaining an adequate and safe blood supply. On analysing the demographic data, it was seen that females accounted for only 26.37% of our blood donors, whereas an equal participation is reported from the western countries[19]. Factors such as anaemia, prevalent beliefs, customs, lifestyle and multiple pregnancies could be some of the reasons for lack of participation in blood donation by women in developing countries.

Numerous reasons were given by non-donor participants for not having donated blood. The most common reason cited by both males and females was that no one ever asked them to give blood. This is an indicator of a lack of a blood donation drive in the general public due to scarcity of motivational forces in their surroundings. This factor can be overcome by an increase in advertising and by using media to promote knowledge and awareness and to keep the topic of blood donation alive in the minds of the general public. A national campaign could be targeted to make people aware about the existing shortage of blood. Fostering such awareness was a major motivating factor among US blood donors[17]. Increasing awareness was also identified as a potential motivator for blood donation among young African-American women[20]. In another similar study from India done among the residents of a slum area, the most common reason for not donating was the perception of a harmful effect of donation on the body (50%) and 25% said that they had never felt a reason to give blood[21]. The other reasons given for refraining from blood donation were concern about its effect on health, self-perception of being unwell, location of the blood bank, fear of needles, pain and distrust of the blood bank whereas various other studies have reported fear of complications, fear of hospitals, lack of awareness, false beliefs and religious traditions as main reasons for not donating blood[3,5,10,13]. Our gender comparison further verified physical risk and apprehensions as barriers to donation by females, findings similar to those in a study done among Canadian students[6].

The majority of donors (57.25%) agreed to donate in future only if it were to be required for family or friends, altruism being a lower priority (16%). However, 13.5% were potential non-donors, 7.75% agreed to donate in order to know their human immunodeficiency virus (HIV) status and 5.75% agreed to donate only *in lieu* of some incentive. Non-monetary incentives, if carefully targeted, can be useful to attract and retain donors. Nevertheless, the Food and Drug Administration continues to tighten restrictions on incentives that have cash value, although there is no substantial evidence that modest incentives to recognise or encourage donors have a negative impact on blood safety[22].

The donation experience is crucial for donor retention. It was seen that more of the voluntary donors than replacement donors had given blood repeatedly. In our study, it was surprisingly evident that voluntary donors were better informed about the blood donation process, underwent a less stringent medical examination and were given better post-donation care (in the form of refreshment), clearly indicating a biased attitude of donation services. This behaviour compromises the safety of the blood supply and may prove detrimental to converting the replacement donors of today into the voluntary donors of tomorrow. It was obvious that voluntary donors had an increased availability of correct information about blood donation and so were persuaded to donate again in future. However, voluntary donors were more honest (81.75%) whereas 38.75% of replacement donors confessed that they did not disclose all relevant facts during their medical assessment as these might have caused their deferral, depriving their dear ones of the blood they needed. Aspects disliked by most of the donors were impolite behaviour of the staff, an unpleasant atmosphere of the donation area, long waiting times and inconvenience caused during the process. Special attention should be directed to reducing the inconvenience posed by blood centres and to facilitating a problem-free donation process. The staff must be trained, courteous and proficient at interpersonal communication. They should attend the donors with a pleasant attitude, listen to their worries, complaints and suggestions and dispel their myths and fears, fostering better donor retention. It has been seen that a positive donation experience not only increases donors' intention to return but also their probability of donating again[23].

When comparing knowledge among the groups of subjects investigated, donors proved to be significantly more knowledgeable than non-donors and, among the former, voluntary donors had better scores than replacement donors. The experience of having donated blood previously explains more knowledge of donors in this area; voluntary donors had better knowledge

because of their inherent willingness and interest. The score was also correlated to demographic characteristics within groups: younger individuals (18-40 years), males, residents of urban areas, those with higher education and students had significantly better scores than their counterparts. Many previous studies have shown that, compared to general population, university students have a higher level of knowledge and a more positive attitude towards blood donation[10,12,15]. The health education system needs to improve knowledge about blood donation among people with a lower educational level. This could be done by improving educational instruments, preferably based on audio-visual techniques. The school curriculum could incorporate materials to allay fears related to voluntary blood donation[24].

The analysis of beliefs concerning blood donation is useful for understanding why some people give blood and others do not[25]. In the present study, the frequency of false beliefs was highest among non-donors (22.75%) and lowest among voluntary donors (3.5%). The most prevalent misbelief was that blood donation is associated with a loss of fertility; other frequent misbeliefs were that it causes permanent weakness, accelerated aging and transmission of HIV. The basis of most of these misconceptions is deep rooted in traditional Indian beliefs. In a study from Tanzania, fear that blood donation would transmit HIV infection and damage health were frequent worries expressed by both donors and non-donors[11]. In contrast, fear of developing AIDS was not a major issue to account for the declining number of donors in one Scottish study[7]. Correcting widespread misconceptions could be important in allaying the fears that prevent people from giving blood.

In our study, television was found to be most influential medium in encouraging people to give blood (45.2%). The mass media plays a crucial role in motivating people to donate blood. The content of the information and mode of presentation should be explicit to increase people's awareness, eliminate various false conceptions and foster trust in blood transfusion services.

Major limitations of our study were those inherent to most studies on knowledge, attitudes and practices. Firstly, the responses were influenced by socially desirable attributes and there is the possibility of both recall bias and interviewer bias. Secondly, since India is a multicultural country with a broad diversity of traditions, data from one region cannot be extrapolated to other populations. Thirdly, data on those who did not agree to participate in the study were not collected and analysed to exclude the possibility of a sampling bias.

In conclusion, the information collected in this study highlights the need for appropriate motivational campaigns based on the input provided by the participants. Convenience of approach to the blood centre and comfort during the process increase the chances of having a good donation experience and hence aid donor retention. Donor recruitment efforts should target groups less willing to donate and simultaneously seek to reinforce the positive behaviour of willing groups converting previous replacement donors into voluntary, non-remunerated donors.

The Authors declare no conflicts of interest.

References

1) WHO Blood Safety Indicators, 2007. Geneva, World Health Organization, 2009.
2) Available at http://www.nacoonline.org/National_AIDS_Control_Program/Services_for_Prevention/Access_to_Safe_blood. Accessed on 12/02/2012.
3) Boulware LE, Ratner LE, Ness PM, et al. The contribution of sociodemographic, medical, and attitudinal factors to blood donation among the general public. Transfusion 2002; **42**: 669-78.
4) Chliaoutakis J, Trakas DJ, Socrataki F, et al. Blood donor behavior in Greece: Implications for health policy. Soc Sci Med 1994; **38**: 1461-7.
5) Glynn SA, Williams AE, Nass CC, et al. Attitudes toward blood donation incentives in the United States: Implications for donor recruitment. Transfusion 2003; **43**: 7-16.
6) Hupfer ME, Taylor DW, Letwin JA. Understanding Canadian student motivations and beliefs about giving blood. Transfusion 2005; **45**: 149-61.
7) MacAskill SG, Hastings GB, McNeill RE, Gillon J. Scottish attitudes to blood donation and AIDS. BMJ 1989; **298**: 1012-4.
8) Nilsson Sojka B, Sojka P. The blood-donation experience: perceived physical, psychological and social impact of blood donation on the donor. Vox Sang 2003; **84**: 120-8.
9) Allain JP, Anokwa M, Casbard A, et al. Sociology and behavior of West African blood donors: The impact of religion on human immunodeficiency virus infection. Vox Sang 2004; **87**: 233-40.
10) Hosain GM, Anisuzzaman M, Begum A. Knowledge and attitude towards voluntary blood donation among Dhaka University students in Bangladesh. East Afr Med J 1997; **74**: 549-53.
11) Jacobs B, Berege ZA. Attitudes and beliefs about blood donation among adults in Mwanza Region, Tanzania. East Afr Med J 1995; **72**: 345-8.
12) Mwaba K, Keikelame MJ. Blood donation behavior and beliefs among a sample of high school students in Mmabatho. Curationis 1995; **18**: 2-3.
13) Olaiya MA, Alakija W, Ajala A, Olatunji RO. Knowledge, attitudes, beliefs and motivations towards blood donations among blood donors in Lagos, Nigeria. Transf Med 2004; **14**: 13-7.
14) Rajagopalan M, Pulimood R. Attitudes of medical and nursing students towards blood donation. Nat Med J India 1998; **11**: 12-3.
15) Wiwanitkit V. Knowledge about blood donation among a sample of Thai university students. Vox Sang 2002; **83**: 97-9.
16) GutiÈrrez MG, Tejada ES, Cruz JR. A study of socio-cultural factors related to voluntary blood donation in the Americas. Rev Panam Salud Publica 2003; **13**: 85-90.
17) Glynn SA, Kleinman SH, Schreiber GB, et al. Motivations to donate blood: demographic comparisons. Transfusion 2002; **42**: 216-25.

18) Methodological guidelines for socio-cultural studies on issues related to blood donation. Washington DC, Pan American Health Organization/WHO Regional Office for the Americas, 2005.
19) Thomson RA, Bethel J, Lo AY, et al. Retention of safe blood donors. Retrovirus Epidemiology donor study. Transfusion 1998; **38**: 359-67.
20) Grossman B, Watkins AR, Fleming F, Debaun MR. Barriers and motivators to blood and cord blood donations in young African-American women. Am J Hematol 2005; **78**: 198-202.
21) Singh B, Pandey RM, D'Souza N, et al. Knowledge, attitudes and socio-demographic factors differentiating blood donors from non-donors in an urban slum of Delhi. Indian J Commun Med 2002; **27**: 118.
22) Davey RJ. Recruiting blood donors: challenges and opportunities. Transfusion 2004; **44**: 597-600.
23) Schlumpf KS, Glynn SA, Schreiber GB, et al. Factors influencing donor return. Transfusion 2008; **48**: 264-72.
24) Shenga N, Pal R, Sengupta S. Behavior disparities towards blood donation in Sikkim, India. AJTS 2008; **2**: 56-60.
25) Giles M, Cairns E. Blood donation and Ajzen's theory of planned behaviour: an examination of perceived behavioural control. Br J Social Psychol 1995; **34**: 173-88.

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