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Quantitative assessment of prosocial behaviour and trends of transfusion transmitted infections among voluntary blood donors: a cross sectional study

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ABSTRACT

Background: Every country faces an ongoing challenge to collect blood from safe donors. Chronic blood shortages are common in developing countries. According to WHO Voluntary blood donation practices are encouraged to collect safe blood units. In India for donating the blood often they say prosocial reasons. The objectives of the present study was quantitative assessment of prosocial behaviour as well as trends of transfusion transmitted infections among (voluntary blood donors) VBD.

Methods: Cross-sectional study carried out between 1st January 2016 to 31st august 2016, at the field practice area of Institute of preventive medicine (IPM), Narayanaguda, Telangana state, India. The total sample size estimated was 41,356 (by Census survey method). Among which 25,641(62%) were current donors and 15,715 (38%) lapsed donors likewise 35,980 males and 5,376 females were enrolled.

Results: Among the participants majority (87%) were males compare to females (13%). out of 41,352 donors majority were current donors (62%) compare to lapsed donors (38%). Among current donors all the mean scores of prosocial behaviour components were high and The trends of All TTIs infection prevalence rates were declined progressively.

Conclusions: Sustainable motivational levels may increase the frequency of blood donation and by encouraging VBDs one can reduce the TTIs.

Keywords: Prosocial behaviour, Transfusion transmitted infections, Voluntary blood donors

INTRODUCTION

Blood is a nonpharmaceutical biological product has to come from human beings through donation. Blood donation is a process of giving safe blood to recipient on demand. Globally half of the blood units come from developed countries which serves only one fifth of world population only. According to world health organization (WHO) standards at least 1% of the total population of the country should donate blood in order to meet transfusion requirement. World Health Organization

(WHO) has adopted a policy aimed at 100% voluntary donor blood procurement by the year 2020.⁴

The concerted efforts by the government, non-governmental organizations and staff in the blood transfusion services have witnessed a progressive increase in voluntary blood donation (VBD) in India. The total annual collection has also shown an absolute increase 4.4 million blood units in 2007-08 to 9.3 million units in 2012-13. The target for the country is to achieve more than 90% VBD. Every year, our nation requires

about four crore units of blood, out of which only a meager 40 Lakh units of blood are available. India can meet all its need for blood if only one percentage to three percentage of its eligible population donate blood. India on an average has 50% of eligible donors. Transfusion of blood and its components are life saving as well as it has life threatening hazards. With every unit of blood there is a 1% chance of transfusion associated problems including transfusion transmitted diseases.7 Ône of the main components of the national blood transfusion council is to better understand the motivations and deterrents for giving blood. In many of Indian articles most common motivational factors were for a good cause, to save life, self-satisfaction, for the society and to stay healthy.8 Donation of blood basically depends on the behaviour of donor especially prosocial behaviours means selflessness or acts of benefiting others. 9 The main components of prosocial behaviour are altruistic behaviour, empathetic concern and social responsibility. With this goal in the mind we have attempted to objectively measure the characteristics of prosocial behaviour.

The present study was conducted to assess the altruistic behaviour, empathetic concern, social responsibility, among lapsed and current blood donors and assessment of trends in transfusion transmitted infections.

METHODS

This was a cross-sectional study carried out between 1st January 2016 to 31st august 2016, at the field practice area of Institute of preventive medicine (IPM), Narayanaguda, Telangana state, India. The participants were blood donors registered between 1st January 2008 to 31st august 2016 at IPM, Narayanaguda, Telangana state.

Inclusion criteria

Blood donors who registered with Blood bank at Institute of preventive medicine and donated blood and given consent

Exclusion criteria

Blood donors who has not given consent and not able to traced and donors who missed half of questions in each scale

Sample size and sampling

Figure 1 reveals that total numbers of blood donors enrolled with blood bank at IPM narayanaguda were 42,505 males and 6,150 females. So the total sampling frame was 48,655 among which 7,299 donors were not responded to current study it comes around 15% (non-responsive rate). After deducting the nonresponsive rate the total sample size estimated was 41,356 (by Census survey method). Among which 25,641(62%) were current donors and 15,715 (38%) lapsed donors likewise 35,980 males and 5,376 females were enrolled.

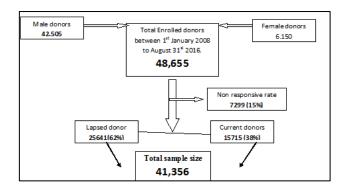


Figure 1: Total numbers of blood donors enrolled with blood bank.

Definitions

Altruism-Unselfish concern for the welfare of others; selflessness. ¹⁰

Empathic concern-Refers to other-oriented emotions elicited by and congruent with the perceived welfare of someone in need.¹¹

Social responsibility-sense of responsibility towards the community and environment.

Current donor-Who has donated blood at least once in two years

Lapsed donor- whose last blood donation occurred two or more years ago

Altruistic behaviour scale¹⁰

A questionnaire is prepared from self-reported altruism (SRA) scale to assess altruistic behaviour. Rushton & colleagues used SRA scale based on frequency of self-reported helping behaviours. 13 from 20 original questions were taken excluding less relevant ones for present study. These are listed in questionnaire. Respondents were graded by marking the questions from Never (1) to very often (5). These responses were added to give score to each donor (Minimum 13 to maximum 65).

Empathetic concern scale¹¹

Empathetic concern subscale of prosocial personality battery (PSB) was used to assess empathetic concern behaviour among blood donors. The four questions can be found in the Questionnaire. The donor level agreement was measured by using four statements as i mentioned in the Questionnaire of PSB ranges from strongly disagree (1) to strongly agree (5) and the score ranges from four to twenty. Statement 3 & 4 were reversely scored.

Social responsibility motivation measure scale

It is four point scale to measure the social responsibility among donors and score ranges from four to twenty. The decision to donate blood measuring range was from not at all important (1) to very important (5).the highest score denote highly motivated to donate blood.

Data collection

After obtaining the consent from each donor a scheduled interview was conducted by semi structures questionnaire. For this interview two people have trained to execute the questionnaire in the camps organized by IPM narayanaguda. For obtaining the transfusion transmitted infection (TTIs) the investigator cross checked the data base.

Data analysis

The collected data was first entered in Microsoft excel sheet and calculated mean and standard deviations. ANOVA test was executed for comparison of means by using SPSS version 16. And statistical significance set at the level of less or equal to 0.05.

RESULTS

Table 1 shows that during the eight years and eight months period five hundred and sixty two camps were conducted by IPM Narayanaguda as a part of National blood donation programme to meet the objective of National blood transfusion council (NBTC). A total of 41,352 blood donors of various age groups got registered among which majority (36%) were between 26 years to 35 years of age group. Among the participants majority (87%) were males compare to females (13%). All the participants were well educated since the all the camps were conducted in around the urban area among the literates majority were graduates (40%).out of 41,352 donors majority were current donors (62%) compare to lapsed donors (38%).

Table 1: Socio demographic characteristics of donors: n=41352.

| Characteristics | n (%) |
|----------------------|-----------|
| Current donor | 25641(62) |
| Lapsed donor | 15715(38) |
| Male donor | 35979(87) |
| Female donor | 5376(13) |
| Age(yrs) | |
| 18-25 | 7444(18) |
| 26-35 | 14888(36) |
| 36-45 | 14475(35) |
| 46-55 | 4549(11) |
| Education | |
| Intermediate or less | 14474(35) |
| Graduate | 16542(40) |
| Post graduate | 10340(25) |

Altruistic behaviour

All the independent variables mentioned in the Table 2 significantly associated with altruistic behaviour. Among

the participants current donors scored the highest mean score (45.1) compare to lapsed donors (40.2) and the gender wise unexpectedly females scored the highest mean score (40) compare to males. Altruistic prosocial behaviour mean score is increasing as age advances and the highest score was seen between 46years to 55 years of age group compare to younger age group (39.1). This type of prosocial behaviour is directly proportional to literacy rate as high altruistic behaviour seen among post graduates group(42) compare to intermediate or less group.

Table 2: Altruistic behaviour.

| Variable | Mean | | _ ~# | p-value* | |
|----------------------|-------|-----------------|-----------------|----------|--|
| | score | SD [®] | Df [#] | 1 | |
| Type of donor | | | | | |
| Lapsed | 40.2 | 6.1 | 1 | < 0.000* | |
| Current | 45.1 | 5.5 | | | |
| Gender | | | | | |
| Male | 35 | 5.1 | 1 | < 0.000* | |
| Female | 40 | 4.2 | | | |
| Age group(yrs) | | | | | |
| 18-25 | 39.1 | 5.2 | 3 | < 0.000* | |
| 26-35 | 41.2 | 5.5 | | | |
| 36-45 | 42 | 5.8 | | | |
| 46-55 | 43.2 | 7 | | | |
| Education | | | | | |
| Intermediate or less | 38 | 4.8 | 2 | <0.000* | |
| Graduate | 40 | 4.2 | | | |
| Post graduate | 42 | 4.1 | | | |

@=Standard deviation,#=Degree of freedom,*=p-value less than 0.05 significant.

Table 3: Empathetic concern.

| Variable | Mean score | SD [@] | Df [#] | p-value* |
|----------------------|---------------|-----------------|-----------------|----------|
| Type of donor | | | | |
| Lapsed | 13.2 | 2.1 | 1 | < 0.000* |
| Current | 14 | 2.3 | | |
| Gender | | | | |
| Male | 13.5 | 2.3 | 1 | <0.000* |
| Female | 13.9 | 2.1 | | |
| Age group(yrs) | | | | |
| 18-25 | 11 | 2.1 | 3 | <0.000* |
| 26-35 | 13 | 2 | | |
| 36-45 | 12 | 1.2 | | |
| 46-55 | 13.1 | 2 | | |
| Education | | | | |
| Intermediate or less | 11 | 1.5 | 2 | <0.000* |
| Graduate | 13.5 | 2.1 | | |
| Post graduate | 13 | 2.2 | | |

@=Standard deviation,#=Degree of freedom,*=p-value less than 0.05 significant.

Empathetic concern

In this unadjusted prosocial model all the mean scores were significantly associated with empathetic concern behaviour. Table 3 shows Among the blood donors highest mean empathetic concern scored by females (13.9) compare to males and the actual difference among them also very less like wise current type of blood donor scored highest mean score (14). On comparison of age group the highest mean score seen among older age group (13.1) compare to younger age group (11). Unexpectedly the empathetic concern not directly proportional to increased literacy as graduates scored highest (13.5) compare to other two groups.

Social responsibility motivation

In the unadjusted analysis of social responsibility motivational Table 4 revealed that all the independent variables were significantly associated with social responsibility motivation among which females got the highest mean (15.2) compare to males (15),likewise current type of donors scored highest mean score(16.4) compare to lapsed donor. Middle age group donors scored highest mean score compare to younger and older age group donors respectively. Social responsibility of mean scores were directly proportional to educational qualifications as postgraduate group scored highest mean score (15.9) compare to intermediate or less group.

Table 4: Social responsibility motivation.

| Variable | Mean score | SD [@] | $\mathbf{Df}^{\#}$ | p-value |
|----------------------|------------|-----------------|--------------------|---------|
| Type of donor | | | | |
| Lapsed | 15.5 | 3.1 | 1 | <0.000* |
| Current | 16.4 | 3.5 | | |
| Gender | | | | |
| Male | 15 | 3 | 1 | <0.000* |
| Female | 15.2 | 2.9 | | |
| Age group(yrs) | | | | |
| 18-25 | 14.2 | 3 | 3 | <0.000* |
| 26-35 | 15.1 | 3.1 | | |
| 36-45 | 15.5 | 3.2 | | |
| 46-55 | 15 | 3.1 | | |
| Education | | | | |
| Intermediate or less | 15.1 | 3.2 | 2 | <0.000* |
| Graduate | 15.5 | 3.3 | | |
| Post graduate | 15.9 | 3.4 | | |

^{@=}Standard deviation,#=Degree of freedom,*=p-value less than 0.05 significant.

Table 5: Percentage of donors by number of donations.

| | Number | Number of donations from 1 st January 2008 to 31 st august 2016 | | | | | | | |
|---------------|--------|---|------|--------|---------|----------|-----|--|--|
| All donors | 1 | 2 | 3 | 4 to 5 | 6 to 10 | 11 to 20 | >20 | | |
| | 20.3 | 16.2 | 12.2 | 19.3 | 16.3 | 11.1 | 4.6 | | |
| Age group | | | | | | | | | |
| 18-25 | 32 | 21 | 15.2 | 18.2 | 8.5 | 4.3 | 0.8 | | |
| 26-35 | 24 | 18.5 | 16 | 19 | 13.5 | 7.5 | 1.5 | | |
| 36-45 | 22 | 14 | 13 | 16 | 19.5 | 11.4 | 4.1 | | |
| 46-55 | 16 | 12.5 | 12.3 | 19.3 | 21.4 | 17.5 | 1 | | |
| Gender | | | | | | | | | |
| Male | 25.5 | 18.5 | 12.3 | 18.7 | 15.7 | 5.8 | 3.5 | | |
| Female | 20 | 14.5 | 13.3 | 16.3 | 17.3 | 16.3 | 2.3 | | |
| Education | | | | | | | | | |
| Inter | 30 | 19.5 | 13 | 17 | 11.5 | 6.5 | 2.5 | | |
| Graduate | 26.5 | 18.2 | 14.3 | 17.3 | 12.3 | 8 | 3.4 | | |
| Post graduate | 20.3 | 15.2 | 14.3 | 18.3 | 17.5 | 10.7 | 3.7 | | |

Table 5 reveals among all registered donors the frequency of blood donation ranges from one time to twenty times.

Majority male donors donated blood once (25.5%) and next highest percentage was 18.7% males donated blood

four to five times. Among all highest younger donors gave once and highest older donors gave six to ten times. Among the literate donors intermediate or less group given one time donation and that was highest percentage among all literate groups.

Table 6 Reveals that Among all the donors the overall TTIs prevalence was 1.5%. Among which Hepatitis B

prevalence was 1.01% and the least was malaria (0.002%). Among voluntary donors male participation was i.e more than 80% and female participation was less than 12%. Overall male participation was high. Highest prevailing TTI was hepatitis B and least prevailing TTI was Malaria but the Figure 2 shows progressive falling of Hepatitis-B.

Table 6: Prevalence of transfusion transmitted infections (TTIs) among voluntary blood donors (VBDs) from January 2008 to August 2016. n=48655.

| Years | Total No. Of VBD (n) | Males N (%) | Females N (%) | HIV N (%) | HBSAg N (%) | HCV N (%) | VDRL N (%) | Malaria N (%) |
|-------------|-------------------------|----------------|------------------|--------------|----------------|--------------|---------------|------------------|
| 2008 | 5429 | 4868(89.66) | 561(10.33) | 16(0.29) | 78(1.43) | 24(0.44) | 12(0.22) | 0 |
| 2009 | 5021 | 4330(86.23) | 691(13.76) | 13(0.25) | 89(1.77) | 23(0.45) | 2(0.03) | 0 |
| 2010 | 5937 | 5158(86.87) | 779(13.12) | 11(0.18) | 72(1.21) | 25(0.42) | 2(0.03) | 0 |
| 2011 | 7249 | 6213(85.7) | 1036(14.29) | 8(0.11) | 104(1.43) | 9(0.12) | 10(0.13) | 0 |
| 2012 | 9006 | 7778(86.36) | 1228(13.63) | 19(0.21) | 54(0.59) | 14(0.15) | 7(0.07) | 0 |
| 2013 | 5798 | 5208(89.82) | 590(10.17) | 11(0.18) | 52(0.89) | 19(0.32) | 3(0.05) | 1(0.01) |
| 2014 | 4441 | 3904(87.9) | 537(12.09) | 5(0.11) | 24(0.54) | 7(0.15) | 0 | 0 |
| 2015 | 4175 | 3621(86.73) | 554(13.26) | 3(0.07) | 17(0.40) | 9(0.21) | 0 | 0 |
| January2016 | | | | | | | | |
| to | 1599 | 1425(89.11) | 174(10.88) | 0 | 5(0.31) | 0 | 0 | 0 |
| August2016 | | | | | | | | |
| Total | 48655 | 42505(87.35) | 6150(12.64) | 86(0.17) | 495(1.01) | 130(0.26) | 36(0.07) | 1(0.002) |

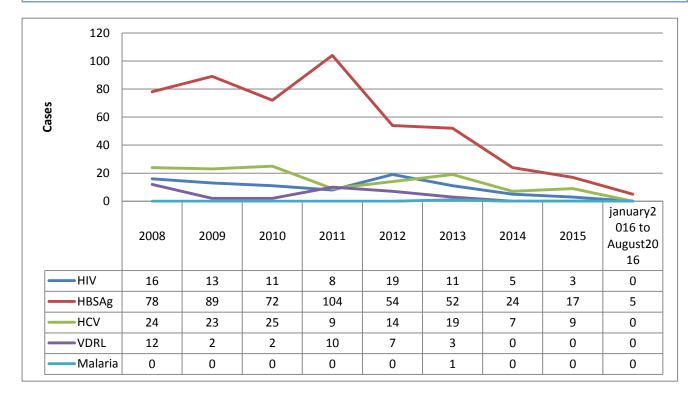


Figure 2: Trend in transfusion transmitted infections among infected voluntary blood donors n=748.

DISCUSSION

The dictionary meaning of altruism is the quality of unselfish concern for the welfare of others in simple terms selflessness. Older age group donors were

performing better altruistic activities compare to younger age group because of several reasons like common cultural activity among Asians, ample leisure time, less obligations from family and participation in devotional activities and there is evidence that older donors perform

better devotional activities with increased educational qualifications. 12 In addition to age this selflessness behaviour more common among females and current donors compare to males and lapsed donors because in Indian culture more females worship god compare to males and majority lapsed donors felt that they did not get an opportunity to perform altruistic activities because of busy at work. 13,14 Empathy means understanding and entering into another's feelings. Empathetic concern behaviour is more closely associated with altruistic behaviour. 15-17 Majority of blood donors influenced by descriptions of road traffic accidents. Females score a little bit high score compare to male because women have more tendency towards empathic concern which already established in research. 18,19 Social responsibility score little bit high among females, current donors and among post graduate qualifications and similar findings observed in other studies also. ^{20,21} Old age donors felt that they had greater responsibility toward community. The possible predictors for increased prior donation percentages among donors due to high current donors, younger age group, commitment and got opportunity to donate. High number of donation observed among older age group donors probably due to high social responsibility towards community and high altruistic behaviour. High male donors possibly due increased male participation compare to female gender. As the educational qualification increases participation decreasing possibly due to low frequency in the sample. Transfusion transmitted infections (TTIs) are one of the major risk for blood recipients in developing countries probable explanation maybe concealment of medical history. Similar findings also established in other studies.²² Majority were male donors compare to females because males are physically fit compare to females as well as the family members and community encourages the male predominantly and in India nutritional anaemia is very common among females hence female participation is less and many studies revealed similar findings.²³⁻²⁶ Overall prevalence of TTI was 1.53% with higher prevalence of Hepatitis B infection compare to other TTIs. Though the overall TTI infection shows declining trend but the declining trend is very slow between 2008 to 2012 the possible explanations due to reversal of HIV epidemic in the and greater awareness community programmes conducted by national aids control organization and in the year of 2012 the prevalence of Hepatitis B infection was very high probably due to total number of blood donors were high compare to other years. Many of Indian studies showed similar finding.²⁷⁻³⁰

CONCLUSION

The mean scores of prosocial behaviours were high among old age group compare to younger age group likewise among current donors, Females and higher education qualifications had high mean scores of prosocial behaviour. Among the TTIs Hepatitis B prevalence rate was high but the trend of all TTIs were in declining trend.

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REFERENCES

- 1. Sanguinis V. WHO ExpertGroup, Expert consensus statement on achieving self-sufficiency in safe blood and blood products, based on voluntary non-remunerated blood donation . 2012; 103(4): 337–42.
- 2. WHO, WHO 10 Facts on Blood Transfusion, World Health Organization, 2014. Available at http://www.who.int/features/factfiles/blood-transfusion/en/. Accessed on 05 September 2015.
- 3. Salaudeen AG, Odeh E. Knowledge and behaviour towards voluntary blood donation among students of a tertiary institution in Nigeria. Nigerian J Clin Pract. 2011;14(3):303–7.
- Benedict N, Usimenahon A, Alexander NI, Isi A. Knowledge, attitude and practice of voluntary blood donation among physicians in a tertiary health facility of a developing country. IJBTI. 2012;2: 4-10.
- Marwaha N. Voluntary blood donation in India: Achievements, expectations and challenges. Asian J Transfusion Sci. 2015;9(1):1-2.
- 6. WHO. Facts about blood donation. 2008. Available at http://www.who.int/mediacentre/factsheets/fs279/en/. Accessed on 12 July 2016.
- Widman FK. Technical manual. American Association of Blood Banks. Arlington; 1985: 325– 344
- 8. Bhalodia Jignasa N, Patel Kinara A, Oza Hiren V. Psychosocial variables of highly motivated voluntary blood donors at blood bank of a medical college. Natl J Med Res. 2012; 2(1):39-41.
- 9. Dovidio JF, Penner LA. Helping and altruism. In: Brewer MB, Hewston M, editors. Emotion and motivation: perspectives in social psychology. Malden (MA): Blackwell; 2004: 247-280.
- Batson CD. The altruism question: Toward a socialpsychological answer. Hillsdale: Erlbaum Associates; 1991.
- 11. Batson CD. Prosocial motivation: Is it ever truly altruistic? In L. Berkowitz (Ed.), Advances in Experimental Social Psychology. Volume 20. New York: Academic Press; 1987: 65-122.
- 12. Lucas M, Wagner L. Born selfish? Rationality, altruism, and the initial state. Behav Brain Sci. 2005;28:829-30.

- 13. Rushton JP. Is altruism innate? Psychol Inq. 1991;2:141-3.
- 14. King MR, Mathew S, Glynn SA, Caswell SL, Schreiber G. To volunteer or not to volunteer: is blood donation perceived as a volunteer activity? Transfusion. 2004;44(9):184.
- 15. Batson CD, Ahmad N, Stocks ELA. Benefits and liabilities of empathy-induced altruism. In: Miller AG, editor. The social psychology of good and evil. New York: Guilford Press; 2004: 359-385.
- Cialdini RB, Schaller M, Houlihan D, Arps K, Fultz J, Beaman AL. Empathy-based helping: is it selflessly or selfishly motivated? J Pers Soc Psychol. 1987;52:749-58.
- 17. Brems C. Dimensionality of empathy and its correlates. J Psychol 1989;123:329-37.
- 18. Hupfer ME. Helping me, helping you: self-referencing and gender roles in donor advertising. Transfusion. 2006;46:996-1005.
- 19. Brunel F, Nelson M. Explaining gendered responses to "help-self" and "help-others" charity ad appeals: the mediating role of world-views. J Advert. 2000;29:15-28.
- Putnam RD. Bowling alone: the collapse and revival of American community. New York: Simon & Schuster; 2000.
- 21. Kolins J, Herron R. On bowling alone and donor recruitment: lessons to be learned. Transfusion. 2003;43:1634-8.
- 22. Gupta PK, Kumar H, Basannar DR, Jaiprakash M. Transfusion transmitted infections in armed forces: prevalence and trends. MJAFI. 2006;62:348–50.

- 23. Kakkar N, Kaur R, Dhanoa J. Voluntary donors—need for a second look. Indian J Pathol Microbiol. 2004;47:381–3.
- Garg S, Mathur DR, Garg DK. Comparison of seropositivity of HIV. HBV, HCV and syphilis in replacement and voluntary blood donors in western India. Indian J Pathol Microbiol. 2001;44:409–12.
- 25. Sing B, Verma M, Verma K. Markers for transfusion associated hepatitis in north Indian blood donors: prevalence and trends. Jpn J Infect Dis. 2004;57:49–51.
- Srikrishna A, Sitalaxmi S, Prema Damodar S. How safe are our safe donors? Indian J Pathol Microbiol. 1991;42:411–6.
- 27. Ekadashi R, Langer S. Seroprevalence of Human Immunodeficiency Virus and syphilis in blood donors of Delhi. Indian J Microbiol. 2009;27:167–8.
- 28. Makroo RN, Sahil P, Vashist RP, Lal S. Trends of HIV infection in blood donors of Delhi. Indian J Pathol Microbiol. 1996;39:139–42.
- 29. Choudhury N, Phadke S. Transfusion transmitted disease. Indian J Paediatr. 2001;68:951–8.
- 30. Sawke N, Sawke GK, Chawla S. Seroprevalence of common transfusion—transmitted infections among blood donors. People's J Sci Res. 2010;30:5–7.

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