

## Awareness of and attitude towards blood donation in students at the Semnan University of Medical Sciences

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### Abstract

**Background:** Despite the increasing demands for blood and its products, some people, especially the youth, have little interest in donating blood.

**Objective:** This study aimed to assess the university students' awareness of and attitude towards blood donation.

**Methods:** In this cross-sectional study, a descriptive analytical approach was used to examine awareness of and attitude towards blood donation among students in Semnan University of Medical Sciences, Semnan, Iran. The study was performed in 2015-2016. A total of 749 university students participated in this study. A special questionnaire was used to collect demographic information and the participants' awareness of and attitude towards blood donation. Before beginning the main phase of the study, the reliability and validity of the questionnaire were examined and verified. The SPSS software, version 16, was used for statistical analysis. We used descriptive statistics, specifically chi-square and Friedman tests, to analyze the data. A p-value of <0.05 was considered significant.

**Results:** 63.55% of the participants were female. Only 9.74% of the participants had a history of blood donation. Based on the results, 253 participants (35.33%) had low awareness, 352 participants (49.16%) had moderate awareness, and 111 participants (15.5%) had good awareness of blood donation. In addition, 176 participants (23.59%) had negative attitude, 438 participants (58.71%) had moderate attitude, and only 132 participants (17.69%) had good attitude towards blood donation. Results also showed a statistically significant relationship between gender and awareness of the history of blood donation ( $p=0.047$ ). However, there was no significant relationship between gender and attitude towards blood donation ( $p=0.27$ ). When asked about their favorite method of receiving information about blood donation, 376 participants (50.2%) preferred social media.

**Conclusion:** A considerable percentage of students have low awareness of and negative attitude towards blood donation. The low awareness and negative attitude towards blood donation can be considered as important factors contributing to the lack of interest and poor participation in blood donation among this population. Therefore, there is a critical need for training and culture building activities and programs in order to increase university students' awareness and improve their attitude towards blood donation.

**Keywords:** Blood, Blood donation, Awareness, Attitude, University students

### 1. Introduction

Safe blood is critical for proper medical care. Access to safe blood is an important factor in preventing the spread of infectious diseases at a global level (1). Transfusion of blood and its related products is still one of the major medical interventions utilized in treatment of serious conditions such as trauma, surgery and chemotherapy (2). There is almost always an urgent need for blood to save a life; therefore, it is imperative that hospitals and urgent

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clinics always have immediate access to a certain amount of blood and its related products. The aforementioned underscores the importance of recruitment of safe blood donors. To ensure the best clinical outcomes, appropriate and safe blood and blood products should be collected and readily available to be used in special medical conditions (3). Despite significant progress in the field of clinical sciences, recruitment of safe blood donors and maintaining a sufficient supply of safe blood remains a challenge (4). The best and safest method of blood donation is voluntary non-remunerated donation (5, 6). Voluntary blood donation is practiced more in countries with higher income (7). It has been reported that the rate of blood donation in developed countries is 18 times higher than in developing countries (8). The need for blood and blood products is increasing throughout the world, and proper medical care is only possible if this growing need is met by a higher rate of donations. In general, if safe and adequate blood is not collected through voluntary blood donation, blood safety, and in turn, people's health will be threatened (9). The increased demand for safe blood and its availability in Iran can only be met by promoting voluntary blood donation. However, according to several different studies, different groups of people and different age groups have various levels of awareness of and attitude towards blood donation (10). As a result, increasing people's awareness of blood donation and promoting a positive attitude towards blood donation are among the top priorities of national blood transfusion centers. One of the first steps in achieving these goals is to conduct comprehensive studies on people's awareness of and attitude towards blood donation. Such studies should examine people's awareness, knowledge, attitude, and beliefs towards blood donation and the impact of the aforementioned factors on the current status of blood donation practice in the community. Previous studies have investigated different aspects of blood donation. For instance, some studies have focused on the altruistic aspects of blood donation and recommended that in order to increase voluntary blood donation we should promote social responsibility (11-13). On the other hand, some studies suggest that emphasizing on the health benefits of blood donation can play a major role in motivating people to practice blood donation (14). For instance, Bednall and Bove (15) studied self-reported motivators and deterrents of blood donation, and reported that blood donors who were aware of the health benefits of blood donation were more willing to donate blood in the future. Other studies have also examined the factors influencing and predicting blood donation and even developed tools (questionnaires) to investigate these factors (16). Many of these studies have focused on general population or just the blood donors. University students' attitude, knowledge, and behavior towards blood donation have been studied to a less extent (16).

Proper selection of donors is an important means to improve the overall safety of blood supply (17). Young and educated people are considered safer blood donors since the residual risk of transfusion-transmissible infections is assumed to be lower in this population. Despite the fact that the donated blood always undergoes extensive appropriate testing as per recommendations by the World Health Organization, the residual risk of transfusion-transmissible infections is always present. This is mainly due to the window period, i.e., the period between infection and detection of the virus by laboratory tests. For example, Human Immunodeficiency Virus (HIV) can be transmitted by transfusion of blood even if the blood unit is test-negative for HIV. This is largely due to a window period during which antibodies against HIV are not detectable (18). University students, whose educational background and socioeconomic status are usually higher than the general population, are generally considered safer donors. Specifically, those who study in the medical and paramedical fields are considered safer donors because of their background knowledge and healthier lifestyle, which make them much less likely to transmit infectious diseases. Furthermore, university students, especially those in the medical and paramedical fields, are expected to be more knowledgeable about the significance of blood donation, donate blood more frequently, and have a better attitude towards it. Thus, the aim of the present study was to determine university students' awareness of and attitude towards voluntary blood donation.

## **2. Material and Methods**

This cross-sectional descriptive analytical study was conducted among students in Semnan University of Medical Sciences, Semnan, Iran in 2015-2016. A total of 749 university students participated in this study. Using census sampling method, participants were selected from among all students who were studying medicine, nursing, operating room technology, radiology, information technology, anesthesia, physical therapy, and speech therapy at the Semnan University of Medical Sciences. Two of the authors distributed study questionnaires among all the students studying in the medical and paramedical fields; however, only 749 questionnaires were completed and returned (response rate = 71%). Each questionnaire had the following four sections: demographic information, knowledge, attitude, and performance. Demographic data included age, gender, blood type, history of blood donation, and the number of blood donations in the previous year. The questionnaire also included six items on attitude and six items on knowledge. The items on attitude were five-point Likert-type scale questions. Each question could have been scored from one to five; therefore, the total score for the items on attitude ranged between

6 and 30. An attitude score  $\leq 15$  indicated a negative attitude, a score between 16 and 20 was considered as neither negative nor positive, and a score  $> 20$  was considered as a positive attitude. The knowledge section consisted of multiple-choice items, each with four choices for the answer. The correct answer was given a score of one, and the wrong answers were given a score of zero. Thus, the total knowledge score ranged between zero and six. A knowledge score of  $\leq 2$  was considered as low knowledge, 3 and 4 were considered as moderate, and a score  $> 5$  was considered as a good knowledge. To ensure the validity of the questionnaire, we presented the questionnaire to eight experts who were completely familiar with the topic of the study. Their comments were collected and the necessary revisions were made. After final validation of the questionnaire by the experts, its reliability was tested and approved using an internal consistency test (Cronbach's alpha coefficient). Cronbach's alpha coefficient was 0.84 for the total items of the questionnaire, 0.79 for questions on awareness, and 0.83 for questions on attitude. The study was approved by the ethics committee of Semnan University of Medical Sciences (Reg. No 773), and a written consent was obtained from all participants. In addition, the participants completed questionnaires anonymously. The SPSS version 16 (SPSS Inc., Chicago, Illinois, USA) was used for statistical analysis. We used descriptive statistics, specifically chi-square and Friedman tests, to analyze the data. A p-value of  $<0.05$  was considered significant.

### 3. Results

A total of 749 students completed the questionnaire. 476 participants (63.55%) were female. The majority of participants (642 or 85.71%) were between 18 to 22 years old. Only 73 participants (9.74%) had a history of blood donation (Table 1). We investigated the relationship between gender and the history of blood donation. Of all the students participating in the study, 17 females (2.26%) and 56 males (7.47%) had a history of blood donation. The relationship between gender and history of blood donation was significant ( $p<0.05$ ) (Table 2). We also investigated the frequency of blood donation within the preceding year. Of the 73 students with history of blood donation, 70 had donated blood in the preceding year. As shown in Table 3, from the 476 female participants, only 14 (1.86%) had donated blood in the previous year. In addition, from the 273 male participants, only 56 (7.47%) had donated blood in the previous year. Furthermore, from those who had donated blood in the previous year, 12 female students (1.6%) and 38 male students (5.07%) had donated blood only once. The relationship between the frequency of blood donation in the previous year and gender was not statistically significant ( $p=0.35$ ). 716 participants answered the questions related to awareness of blood donation. Results revealed that 253 participants (35.3%) had low awareness, 352 participants (49.2%) had moderate awareness, and 111 participants (15.5%) had good awareness of blood donation. Further examination revealed that 13.2% of female participants and 19.5% of male participants had a good awareness of blood donation. Furthermore, the relationship between gender and awareness of blood donation was statistically significant ( $p=0.047$ ). In addition, there was a statistically significant relationship between awareness and history of blood donation ( $p=0.34$ ) (Table 4). In all, 746 participants answered the questions related to their attitude towards blood donation. We found that 176 participants (23.6%) had a negative attitude and 438 participants (58.7%) were indifferent, i.e., had neither a negative nor a positive attitude towards blood donation. Only 132 participants (17.7%) had a positive attitude towards blood donation. Moreover, the relationship between gender and attitude towards blood donation was not statistically significant ( $p=0.27$ ). However, the results showed a significant relationship between attitude and history of blood donation; those who had donated blood in the past year had a good attitude towards blood donation ( $p=0.03$ ) (Table 5). We also asked the students about their favorite method of receiving information about blood donation. It was revealed that 376 participants (50.20%) preferred receiving information via text messages while 334 participants (44.59%) preferred individual training. Other less frequently noted preferred methods for receiving information about blood donation were by movies, reminder cards, television, internet, group training, phone calls, books and journals, and brochures.

**Table 1.** Demographic data of the participants

Characteristics	n	%	Total	
Gender	Female	476	63.55	749
	Male	273	36.44	
Age groups (year)	18-22	642	85.71	749
	23-28	85	11.34	
	29-33	7	0.93	
	Unknown	15	2.00	
History of blood donation	Yes	73	9.74	749
	No	671	89.58	
	Unknown	5	0.66	

**Table 2.** Frequency distribution of overall history of blood donations for female and male participants

Gender	History of blood donation				Total
		Yes	No	Unknown	
Female	Frequency	17	458	1	476
	Percentage	2.26	61.14	0.13	63.55
Male	Frequency	56	213	4	273
	Percentage	7.48	28.43	0.53	36.45
Total	Frequency	73	671	5	749
	Percentage	9.74	89.58	0.66	100

P-value=0.001, X<sup>2</sup>(Chi-square test) =57.67

**Table 3.** Frequency distribution of blood donations in the preceding year for female and male participants

Gender	Frequency of blood donation in the previous year				Total number (percentage) of blood donors
		Once	Twice	Three times	
Female	n	12	2	0	14
	%	1.60	0.26	0	1.86
Male	n	38	14	4	56
	%	5.07	1.86	0.53	7.47
Total	n	50	16	4	70
	%	6.67	2.13	0.53	9.34

P-value =0.35, X<sup>2</sup>(Chi-square test) =2.06

**Table 4.** Relationship between gender and awareness of blood donation, and also between history of donating blood and awareness of blood donation

Variable			Awareness (percentage)			Statistic*	p-value
			Low	Moderate	Good		
Gender	Female	n	161	234	60	6.12	0.047
		%	35.4	51.4	13.2		
	Male	n	92	118	51		
		%	35.2	45.2	19.5		
History of blood donation	Yes	n	25	28	18	6.74	0.034
		%	35.2	39.4	25.4		
	No	n	226	323	91		
		%	35.3	50.5	14.2		

\* Chi-square test

**Table 5.** Relationship between gender and attitude towards blood donation, and also between history of donating blood and attitude towards blood donation

Variable			Attitude (percentage)			Statistic*	p-value
			Negative	Indifferent	Positive		
Gender	Female	n	107	288	78	2.61	0.27
		%	22.6	60.9	16.5		
	Male	n	69	150	54		
		%	25.3	54.9	19.8		
History of blood donation	Yes	n	9	48	16	6.56	0.037
		%	12.3	65.8	21.9		
	No	n	166	389	113		
		%	24.9	58.2	16.9		

\* Chi-square test

#### 4. Discussion

Our results showed that only 73 participants (9.74%) had a history of blood donation. In the studies by Shahshahani et al. (2, 19) and Hashemi Tayer et al. (2, 19) 15% and 6.4% of the participants, respectively, had a history of blood donation. In addition, in our study from those who had a history of blood donation (n=73), 17 persons (2.27% of all

the participants, 23.29% of the blood donors) were female and 56 persons (7.47% of all the participants, 76.71% of the blood donors) were male. These results are consistent with the reports by Montazeri et al. (20) who showed that the percentage of female blood donors was significantly lower than the percentage of male blood donors. In their study, 88.8% of blood donors were male, and the majority of female participants stated that anemia is one of the main factors that discourage women from blood donation (20). Similarly, in another study in Iran, only about 12% of blood donors were female (21). While in some countries, such as Italy, Greece, and Portugal, there are significant differences between the number of male and female blood donors, in other countries like Norway and Denmark there is no significant difference between the two genders in terms of blood donation (20). In a study performed in Saudi Arabia, Al-Drees has shown that men are more likely to donate blood than women (22). Nigatu et al. (7) showed that although the frequency of blood donation is higher among men, women have higher levels of awareness about blood donation; women's awareness was reported to be approximately 1.7 times higher than that of men. It is worth mentioning that, there are various reports on the rate of women's participation in blood donation in other parts of the world. For example, the rate of women's participation in blood donation has been reported to be 51.07% in China, 54% in the USA, 33.2% in Brazil, 16% in Nigeria, and 2.5% in Ghana (23).

We also investigated the frequency of blood donation in the preceding year in male and female participants. From the 73 participants with a history of blood donation, 70 people had donated blood in the previous year. There was no significant difference between the frequency of blood donation in males and females ( $p=0.35$ ). Only 1.6% of female participants and 5.07% of male participants had a one-time history of blood donation. In a study by Hashemi Tayer et al. (19), 5.6% of female participants had a history of one-time blood donation and only 0.8% of females had donated blood more than once. A study of Kasraian and Negarestani donors (24), conducted in other provinces of Iran, showed that on average 30% to 60% of blood donors were first-time donors. In our study, the percentages of male and female participants who had donated blood more than once in the preceding year were 0.26% and 2.39%, respectively. Other studies however, have shown higher rates of blood donation in other countries. For example, the percentage of people who had donated blood more than once in a year was reported to be 30.8% in Brazil (25), and 64% in China (26). In our study, 253 participants (35.3%) had low awareness, 352 participants (49.2%) had moderate awareness, and 111 participants (15.5%) had good awareness of blood donation. These results are generally in line with the findings of other studies conducted in Iran. For instance, in the study by Hashemi Tayer et al. only 11.4% of the participants had a good level of awareness towards blood donation (19). On the contrary, the results of studies conducted in other countries show higher levels of awareness towards blood donation; for example, in a study conducted on university students in Thailand in 2001, 80% of the participants had a good level of awareness (27). The study by Nigatu et al. also showed that 40.4% of Ethiopian students had good awareness of blood donation (7). We propose that the low percentage of people with good awareness of blood donation in our study might be due to the inadequate educational programs at different levels of community. In a study conducted in Sistan Baluchestan, Hormozgan, and Khuzestan provinces in 2006, Rakhshani et al. found that lack of awareness was the most important barrier to blood donation (28). We concluded that lack of awareness might decrease people's interest towards blood donation. As the results of our study showed, 176 participants (23.6%) had negative attitude, 438 participants (58.7%) were indifferent, and only 132 participants (17.7%) had a positive attitude towards blood donation. This finding is inconsistent with the results of other studies conducted in other parts of the world. For instance, in a study by Hosain et al. on university students in Bangladesh, 82% of the participants showed a positive attitude towards blood donation (29). In addition, a survey conducted among students at a university in Chile showed that 87% of blood donors had a positive attitude towards blood donation (30). In another study conducted in southern India, the prevalence of positive attitude was 87.3% (31). Our study revealed statistically significant relationships between history of blood donation and university students' awareness of ( $p=0.034$ ) and attitude towards ( $p=0.37$ ) blood donation. Consistent with these results, Mishra et al. showed a statistically significant relationship between positive attitude and blood donation ( $p<0.05$ ) (32). Lack of sufficient information and knowledge about blood donation may reduce people's willingness to donate blood (23, 33). Kim and Yoon (34) suggest that poor knowledge, poor attitude, and lack of governmental support result in a lower rate of blood donations in developing countries than in developed countries. Thus, to promote blood donation, it is necessary to increase people's awareness and positive attitude towards blood donation.

In our study, 376 participants (50.20%) preferred social media (such as telegram & text message) and 334 participants (44.59%) preferred individual training as the best method of receiving information about blood donation. Moreover, brochures were identified as the least favorite method (10.9%). In a similar study by Dubey et al., TV was identified as the most influential media (45.2%) for encouraging people to donate blood (35). Wakefield et al. also showed that using mass media was effective in motivating people to donate blood (36). However, some

studies have shown that social networks and the new technologies (such as mobile applications) are more effective in increasing peoples' awareness and encouraging them to donate blood than traditional mass media tools such as newspapers or radio and TV programs (37, 38). The results obtained in this study and previous studies are indicative of the changes in the impact of different media and social networking tools; the new tools are more favored by youngsters and thus can have a greater impact on their behaviors.

### **5. Study limitation**

Using a questionnaire for data collection is a limitation of the current study. There is always a chance that some participants may not have provided factual and true answers to some of the questions and hence some of the results might be unrealistic. In addition, since the history of blood donation in the preceding year was collected by simply asking the participants to recall how many times they had donated blood in the previous year, recall bias might have threatened the accuracy of this data. Moreover, this study was conducted on university students, therefore, the results cannot be generalized to the whole community.

### **6. Conclusions**

A considerable percentage of students had low awareness of and negative attitude towards blood donation; hence these two factors can be considered as important reasons for lack of motivation for voluntary blood donation in this population. In other words, as young people are not properly informed about the benefits of blood donation and since no effort has been made so far to develop a good attitude towards blood donation in this age group, the youth continue to have little interest in donating blood. We conclude that there is a critical need for training and culture building activities and programs to increase people's awareness and improve their attitude towards blood donation.

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### **Conflict of Interest:**

There is no conflict of interest to be declared.

### **Authors' contributions:**

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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