

Attitude of the Kazakhstan population to blood donation: association of medical, social, and motivational aspects

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Abstract. The research targets studying medical, social, and motivational aspects of the attitude of the Kazakhstan population to blood donation. The research was carried out by interviewing donors between 18 and 65 years of age at the premises of the Scientific and Production Center of Transfusion Medicine in the City of Astana. 241 questionnaires were analyzed. The analysis showed that men donated blood more often (69.7%), and 55.2% of donors were in the 18-29 age group. The majority of responders were repetitive blood donors (68.9%). The main motivating reasons to donate blood were the intention to help relatives/friends/colleagues (48.5%) and the voluntary desire to help all people (42.3%). It was stated that the overwhelming majority of first time donors were family/substitution blood donors (60.0%). Only 56.4% of the responders to the question about motivating factors for the voluntary blood donation answered that they did it out of the altruistic desire to help people. The obtained results will be used at development of recommendations for attracting the population to blood donation.

[Kulmirzayeva D., Igissinov N. **Attitude of the Kazakhstan population to blood donation: association of medical, social, and motivational aspects.** *Life Sci J* 2014;11(6s):531-536] (ISSN:1097-8135). <http://www.lifesciencesite.com>. 111

Keywords: blood donation, questionnaire survey of donors, motivation, Kazakhstan

Introduction

The blood transfusion service daily faces the task to sufficient provisioning with blood and blood products [1]. Adequate provisioning with blood depends on the number of donors and the frequency of donations [2]. Though the majority of people are able to donate blood, only a small part of them donate blood, and even lesser part of them does it on a regular basis [3]. The research shows that only 6% of the first-time donors become regular donors, and 62% never come again for another donation [4]. Thus, the main policy of the blood transfusion service is motivation, attraction, and retention of regular blood donors [5].

The main factors influencing blood donation are altruism, empathy, and various social reasons. Regular voluntary non-remunerated donors often donate blood altruistically, but at that, they feel great responsibility to the recipients [6]. The knowledge of factors that can encourage the population to blood donation, the analysis of the deterrents and altruistic mindset of people are greatly important for attraction and retention of donors [7], and, consequently, improvement of the blood provisioning of the country. The main objective of this research was to study the medical, social, and motivational aspects of the attitude of the Kazakhstan population to blood donation.

Materials and methods of the research

The research was carried out at the premises

of the Scientific and Production Center of Transfusion Medicine in the City of Astana by interviewing donors of the age between 18 and 65 who came for blood donation during the period between January 14 and 25, 2013. The interviewing was of the screening type. The interviews were held on anonymous and exclusively voluntary basis. The questionnaire was prepared in Kazakh and Russian languages. 241 questionnaires were analyzed.

During the research, such socio-demographic characteristics of the responders were taken into account as the sex, the age, and the status of the donor (a first-time or repetitive donor).

According to the common methods of medical and biological statistics [8], the extensive indicators were calculated, the average value, the average error, and the 95% confidence interval (95% CI) were determined. Significance of differences of between several values correlating with each other with a certain attribute, verification of the assumption about existence (absence) of any correlation between phenomena were determined by means of calculation of the coefficient of agreement – χ^2 (xi-squared), which is determined as follows: χ^2 , where O is the observed number in the contingency table cell, and E is the expected number in the same cell.

Statistic processing and analysis of the data were carried out using the Epiinfo and Biostat programs.

Research results

During the research, 241 responders were interviewed, 69.7% of which were men and 30.3% were women. The majority of the responders (55.2%) were the donors of 18-29 years of age, the share of 30-39 years old donors was equal to 34.4%, 40-49 years old – 7.1%, 50-59 years old – 2.9%, 60-69 years old – 0.4%. At classification of men and women by the age, it was found out that the share of 18-29 years old women prevails over the men's share (61.6 and 52.4 accordingly), in the elder group of donors (30-65 years of age), the majority consisted of men (47.6 and 38.4 accordingly). The average age of the responders was 30.2 ± 0.4 years of age (95% CI = 29.4-30.9 years of age). The average age of men was 30.5 ± 0.3 years of age (95% CI = 30.0-31.0 years of age), and of women – 29.3 ± 0.1 years of age (95% CI = 29.1-29.6 years of age).

The share of first-time donors equaled to 31.1% and of repetitive donors – 68.9%. The average age of donors depending on the number of donations is provided in Table 1. The difference in the donors' age is statistically significant ($p < 0.05$), as their 95% CI did not superimpose on one another.

Table 1: Classification of blood donors by the number of donations depending on the socio-demographic characteristics

Indicators	Total	Number of donations				
		First-time donor				
		1-5	6-10	11-20	More than 20 times	
	abs. (%)	abs. (%)	abs. (%)	abs. (%)	abs. (%)	
Donors:	241 (100)	75 (31.1)	89 (36.9)	34 (14.1)	20 (8.3)	23 (9.5)
Av. age	30.2	26.5	28.6	34.5	33.4	35.2
m	0.4	0.3	0.3	0.2	0.2	0.1
Me±1.96*m	29.4-30.9	25.9-27.1	28.0-29.2	34.1-34.9	33.0-33.8	34.9-35.5
Sex:						
Male	168 (100)	42 (25.0)	57 (33.9)	28 (16.7)	19 (11.3)	22 (13.1)
Female	73 (100)	33 (45.2)	32 (43.8)	6 (8.2)	1 (1.4)	1 (1.4)
		$\chi^2=23.9; p<0.0001$				
Age:						
18-29	133 (100)	59 (44.4)	55 (41.4)	12 (9.0)	4 (3.0)	3 (2.3)
30-65	108 (100)	16 (14.8)	34 (31.5)	22 (20.4)	16 (14.8)	20 (18.5)
		$\chi^2=50.3; p<0.0001$				
Occupation:						
Employed	180 (100)	42 (23.3)	70 (38.9)	30 (16.7)	17 (9.4)	21 (11.7)
Unemployed	61 (100)	33 (54.1)	19 (31.1)	4 (6.6)	3 (4.9)	2 (3.3)
		$\chi^2=22.4; p<0.0001$				

At classification of the donation frequency by the sex, it was revealed that 45.2% of women were the first-time donors, and 43.8% had donated blood 1-5 times. Men donate blood more regularly. At that, the statistically significant difference was revealed at comparison ($\chi^2=23.9; p<0.0001$) (Table 1).

Comparing the number of blood donations in groups between donors in the 18-29 and 30-65 age groups, it was revealed that people in the younger group more often were first-time donors (44.4%) or had donated blood 1-5 times (41.4%), where the elder group had a vast donor experience. The difference in

replies between the studied groups was statistically significant ($\chi^2=50.3; p<0.0001$) (Table 1).

Analysis of contingency tables (2x5) by the occupation showed that the major part of the first-time donors (54.1%) consisted of unemployed persons including students, housewives, temporarily unemployed and retired persons, where the employed people's share among the first-time donors was equal to just 23.3%. There is a statistically significant difference between the answers in the given groups ($\chi^2=22.4; p<0.0001$) (Table 1).

The question about the reasons encouraging donors to donate their blood was answered as follows: intention to help relatives/friends (48.5%), intention to render voluntary non-remunerated help all people (42.3%), a method of additional earning (4.6%), a method to find out one's health condition (4.6%). At that, women's altruistic intention to help all people prevailed over the men's one (Figure 1).

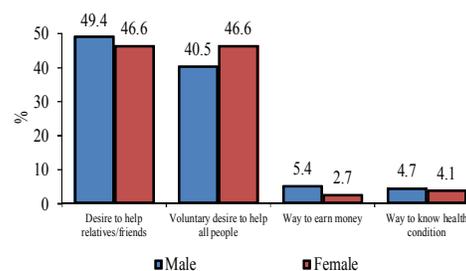


Figure 1: Classification of responders by the reasons of blood donation, by sex (%).

When determining the motivating reasons among the repetitive and first-time donors, it was found out that the overwhelming majority of the latter were family/substitute blood donors (60.0%). Among the repetitive donors, the percentage of voluntary non-remunerated and family/substitute donors was equal to 47.0% and 43.4% accordingly (Table 2).

Table 2: Classification of blood donors by the reasons of donations depending on the donation experience

Donation experience	Total	Reasons of donation			
		Family/substitute donor	Voluntary unpaid donor	A method of additional earning	A method of finding out one's health condition
		abs. (%)	abs. (%)	abs. (%)	abs. (%)
First-time donor	75 (100)	45 (60.0)	24 (32.0)	2 (2.7)	4 (5.3)
Repetitive donor	166 (100)	72 (43.4)	78 (47.0)	9 (5.4)	7 (4.2)

Analyzing the main sources of obtaining information about blood donation by the population,

we found out that the prevailing source was relatives/friends/colleagues (78.7% of men and 69.9% of women). At schools and higher educational institutions, women more often exchange this information (19.2%) if compared to men (7.7%). The latter prefer to consult specialists and health workers (3.0% and 1.4% accordingly). Both men and women learn the information on blood donation from mass media equally (9.5% and 9.6% accordingly). Analysis of the correlation between the information sources on the one hand and the sex and the age on the other hand showed that there was no statistically significant difference between the answers in the given groups ($p>0.05$).

Evaluating the sources of information by occupation, we found out that the sources of information for the occupied population in 81.7% of cases were their friends/relatives/colleagues. Among the unemployed ones, the share of the latter as the source of information equaled to 60.7%. Educational institutions also played a big role for them (23.0%). Analysis of the contingency tables (2x4) showed that there was a statistically significant difference between the answers in the mentioned groups ($\chi^2=15.0$; and $p=0.002$) (Table 3).

Table 3: Analysis of sources of information about blood donation depending on the occupation

Occupation	Totally interviewed	Information sources			
		Friends/Relatives	Mass media	School /Higher educational institution	Health workers
		abs.	abs. (%)	abs. (%)	abs. (%)
Employed	180	147 (81.7)	14 (7.8)	13 (7.2)	4 (2.2)
Unemployed	61	37 (60.7)	9 (14.8)	14 (23.0)	1 (1.6)
$\chi^2=15.0$; $p=0.002$					

An interesting question is about the change of the person's organism state after blood donation. The majority of responders (80.9%) said that their state did not change after blood donation, 18.7% noticed positive effect on the organism, and 0.4% said it was negative.

Evaluation of the organism state depending on the sex showed that the process of blood donation also positively influences on the men's organisms (24.4%). At the comparison, a statistical significance was stated: the difference coefficient – OR=0.17; the relative risk – RR=0.79; $\chi^2=10.7$ ($p=0.001$) (Table 4).

Analysis of the organism state depending on the number of donations showed that there was statistically significant difference between the answers in the given groups ($\chi^2=24.5$; $p<0.0001$). The most positive health values were noticed with the regular donors who had donated blood more than

six times (Table 4). At evaluation of a donor's organism state depending on the age, there was no statistically significant difference in the values revealed ($p>0.05$).

Table 4. Evaluation of the state of responders' organism depending on the sex, the donation experience, and the number of blood donations

Index	Total abs. (%)	Organism state	
		The health has not changed (worsened)	The health has become better
		abs. (%)	abs. (%)
Sex:			
Male	168 (100)	127 (75.6)	41 (24.4)
Female	73 (100)	69 (94.5)	4 (5.5)
$OR=0.17$; $RR=0.79$; $\chi^2=10.7$; $p=0.001$			
Age:			
18-29	133 (100)	114 (85.7)	19 (14.3)
30-65	108 (100)	82 (75.9)	26 (24.1)
$p>0.05$			
Number of donations:			
First-time donor	75 (100)	69 (92.0)	6 (8.0)
1-5	89 (100)	77 (86.5)	12 (13.5)
6-10	34 (100)	22 (64.7)	12 (35.3)
11-20	20 (100)	12 (60.0)	8 (40.0)
More than 20	23 (100)	10 (69.6)	7 (30.4)
$\chi^2=24.5$; $p<0.0001$			

To the question whether the respondent was planning to donate blood in the future, 85.9% answered positively, 12.0% found it difficult to answer, and 2.1% replied negatively. The share of positive answers among repetitive blood donors was greater (90.0%) than among first-time donors (74.0%). At that, 8.0% of first-time donors said they did not have any desire to donate blood again.

At determination of the satisfaction with the place and the time of the procedures, the service, the personnel, and the attitude to the donor, 96.3% of the responders replied positively, 2.5% had complaints against the rude attitude of health workers, and 1.2% of them were not satisfied with the service quality.

Satisfaction with the current process of blood donation was mainly associated with the intention to donate blood in the future (97.6%) (Table 5). At the comparison, a statistical significance was stated: OR=5.38; RR=1.10 and $\chi^2=4.7$ ($p=0.03$).

Table 5. The extent of satisfaction with the process of donation depending on whether the responder was going to donate blood in the future or not.

Further plans with respect to blood donation	Total	Satisfied with the process of donation	Not satisfied with the process of donation
	abs. (%)	abs. (%)	abs. (%)
Will donate again	207 (100)	202 (97.6)	5 (2.4)
Will not donate again	34 (100)	30 (88.2)	4 (11.8)

To the question about agitation of donorship among the people around, two thirds (63.1%) of the responders replied positively, 24.5% of them found it difficult to answer, and 12.4% replied negatively. At

comparing the level of agitational activeness among first-time and repetitive donors, it was found out that repetitive donors more often encouraged other people to donate blood (69.9%). The differences at the comparison are validly significant ($\chi^2=14.1$; $p<0.0001$) (Table 6).

Table 6: Activeness of agitation for blood donation depending on the donation experience

Experience in donation	Totally interviewed		Agitation activity	
	abs. (%)	abs. (%)	Do not agitate	Difficult to say
			abs. (%)	abs. (%)
First-time donor	75 (100)	36 (48.0)	17 (22.7)	22 (29.3)
Repetitive donor	166 (100)	116 (69.9)	13 (7.8)	37 (22.3)

$\chi^2=14.1$; $p<0.0001$

At determination of the responders' attitude to voluntary non-remunerated blood donation, it was found out that 92.1% of the responders had positive attitude to it, 7.5% found it difficult to answer, and 0.4% replied negatively. At that, we did not reveal any statistically significant difference between the attitude to this type of blood donation and sex, age, and donation experience ($p>0.05$).

To the request to point out the factors motivating for voluntary non-remunerated blood donation, 56.4% of the responders highlighted the altruistic desire to help other people, and 12.0% – the desire to help their relatives/friends/colleagues. 5.4% of the responders mentioned privileges and preferences for donors, free medical services, 10% discounts for paid medical services, free blood analysis. 2.1% of them also mentioned the financial rationale, 1.7% – moral methods of motivation (letters of gratitude, diplomas, badges). 0.8% of the responders voted for supplementary pension, 0.4% – for additional day-off from the work, 21.2% of the donors found it difficult to answer.

Discussion

The performed analysis showed that men donated blood more often than women. The obtained results conform to the data of the World Health Organization (WHO), according to which 70% of all blood donations are made by male donors [9].

According to WHO, in the countries with high incomes, the majority of donors (40%) are the donors older than 44 years of age, and in the countries with low and medium incomes, on the contrary, 45% of all donations are made by people below 25 years of age [9]. According to the results of our research, 55.2% of the responders were donors between 18 and 29 years of age, which correlates with the values of countries with medium level of incomes. At that, the share of 18-29 years old women prevails over the share of men (61.6% and 52.4%

accordingly); in the elder group of donors (30-65 years of age), the majority consists of men (47.6% and 38.4% accordingly). The obtained results correspond to the research carried out by Bonomo *et al.*, in which the share of women at the age of 21-30 equaled to 58%, but over age, their share decreased to 44% [10].

The majority of responders were repetitive blood donors (68.9%). The majority of first-time donors are women (45.2%), and men on the contrary actively and regularly donate blood (75.0%). This is partially explained with the fact that women are often given medical exemption due to anemia, low weight, or pregnancy [11, 12], as well as various diseases and bad veins as an obstacle to donation [13, 14]. The other cause of the lower share of women among the repetitive donors is the fact that men are allowed to donate blood more often within the year than women. For example, in Italy men can donate blood every three months, where women of reproductive age – only twice a year. In other European countries, women are allowed to donate blood 3-4 times and men – 4-6 times a year [15].

As for motivation of blood donors, the research carried out by Misje *et al.* provides the main five factors: altruism and compassion, social reasons (for example, influence of friends and the family), raising self-esteem, positive experience in blood donation, and moral obligation [16]. In our research, the main reasons encouraging donors to donate blood are the intention to help their relatives/friends/colleagues (48.5%) and the intention to render voluntary non-remunerated help to all people (42.3%). Female donors indicated more altruistic intention to help all people than the male ones. The results obtained by us coincide with the results of other authors' studies, which confirm that the altruistic desire more often occurs with women, and the desire to be remunerated was more often the men's reason to donate blood [17, 18].

It was stated that women attached greater importance to empathy as the main motivator for blood donation [19], and in the majority of cases, they took the donation process as the opportunity to save someone's life [17]. Whereas the research by Glynn *et al.* [18] stated that the percentage of men ready to donate blood due to positive influence on their own health was twice greater than the one of women.

The knowledge of main sources of information on blood donation among the population plays an important role in increasing the number of donors in the country. According to the results of our research, the dominating source of information on blood donation was relatives/friends/colleagues (78.6% of men and 69.9% of women); this was

probably caused by the reason that approximately half of the interviewed people in our research were donating blood for this category of people.

Repetitive and hired donors play an important role in maintaining the sufficient number of donors. Retaining this group of donors is an important task of the blood transfusion service. The research showed that the knowledge of the needs of patients, the positive experience of previous donations, and the feeling of safety in the course of blood donation contributed to the higher percentage of repetitive donations [20]. Such factors as fear of side effects, lack of time, inconvenient and remote location of blood transfusion centers, inconvenient donation hours, and negative experience of previous donations caused the low number of repetitive donations [11, 21, 22]. During our research, 96.3% of interviewed people were satisfied with the place and time of the donation procedures, the service quality, the personnel, and 85.9% of them replied positively to the question whether they were going to donate blood in the future. According to other researches [23], our research also showed that satisfaction with the current process of donation influences on the intention to donate blood in the future. Therefore, the strategy of the blood transfusion service must be as much as possible oriented to causing positive emotions with blood donors.

In order to improve the efficiency of attracting donors and to overcome blood insufficiency, some blood transfusion services offer various types of stimulation [24, 25]. The efficiency of incentives for attraction of blood donors has been emphasized by multiple researches [13, 16, 21]; however, the most important encouraging factor for blood donation is altruism [6, 26].

In our research, to the question about the stimulating factors for voluntary non-remunerated blood donation, 56.4% of responders replied that it was the desire of rendering voluntary non-remunerated help to other people, 21.2% of them found it difficult to answer, 1.7% emphasized the moral methods of stimulation (letters of gratitude, diplomas, badges), and the rest 20.7% turned out to be confusing the concept of voluntary donation with the concepts of family/substitute and remunerated donation.

Summary

Positive attitude and active participation of the population in blood donation has been noticed. The altruistic motives are widely spread among the population of Kazakhstan; however, the population does not rather clearly understand the purposes and the types of various types of donation, mainly the voluntary non-remunerated donation.

Family/substitute donation is widely spread. The obtained results of the research will be used at development of recommendations for attracting the population to blood donation and increasing the level of voluntary non-remunerated blood donation in the country.

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4/24/2014