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Original Article

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Analysis of the Relationship between Blood Donation and Organ Donation

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Abstract

Objective: Blood and organ transplantation treatment cannot be performed at the desired level, although it has life-saving characteristics. This study was aimed to analyze the relationship between blood donation and organ donation.
Materials and Methods: This cross-sectional study was conducted with healthcare personnel working in a education and research hospital in Ankara. 1012 (84.3% of total) health personnels participated in the study. Data was collected using the survey method. SPSS 22.0 program was used in evaluation of the data.
Results: 51.4% of the participants were blood donors, 32.5% were willing but not yet donated, 4.1% did not consider to donate, and 12.0% could not forgive due to medical reasons. Additionally, It was found that 52.8% of health personnel were volunteer for organ donation, however, 16.7% of them had organ donation card.
Conclusion: There is a significant relationship between blood donation and organ donation. Volunteers who donate organs also show a positive attitude towards blood donation. It is evaluated that positive behavior towards blood donation is higher and it should be provided also in organ donation.
Keywords: Blood donation, organ donation, health personnel

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INTRODUCTION

Throughout their lives, human beings can be exposed to injuries, accidents, and diseases but are treated to the extent that medicine and technology are developed to sustain life, prevent disability, and lead a higher quality of life. Despite the current progress of medicine and technology, blood and organs that are vital for living can only be obtained from human beings, leading to a shortage of supply (1-3).

Blood transfusion is the delivery of blood or blood products directly to the circulatory system of the person in need. The idea of blood transfusion first appeared in the 15th century when it was thought that giving the blood of young and healthy people to the elderly and the sick would bring health. The first blood transfusion from animal to animal was performed by Lover in 1665 and from person to person by Blundell in 1881. The discovery of A, B, and O blood groups by Landsteiner in 1902, AB blood group by Decastrello and Sturli in 1939, and Rh factor by Levine in 1939 enabled systematic and successful blood transfusion. In Turkey, Burhanettin Toker started blood transfusion studies in 1921, and the first blood centers were opened in Istanbul and Ankara in 1957 within the body of the Red Crescent (1-5).

Organ transplantation is the transplantation of an intact organ in place of an organ that cannot maintain its function and is the most effective treatment method preferred in organ failure (6-7). The first successful transplantations in the cornea, kidney, liver, and heart were performed by Zirm (1905), Murray (1954), Starzl (1967),

and Barnard (1967), respectively. In our country, although there were some interventions before, the first successful kidney and liver transplantations from live individuals (1975) and cadaver (1988) were performed by Haberal et al. (8-9).

Organs are provided from cadavers or live donors (10). The transplants performed with the organs obtained from cadaver donors cannot be performed in a sufficient number worldwide, especially in our country. In developed countries, transplants from cadavers are mostly dominant, whereas in developing countries, including Turkey, transmission from live donors is mainly performed due to the lack of donations. Transmission from cadavers is the preferred method of supplying; thus, it is important for healthy individuals to fill out an organ donation card while they are still alive. As of June 2018, 374,570 people have an organ donation card in our country. The donation rate is highest in the Aegean and Marmara regions and lowest in the Eastern and Southeastern Anatolia Regions. With respect to cities, the highest donations are from Izmir (52,310) and Istanbul (43,587) and the lowest donations are from Bayburt (64) and Hakkari (129) provinces (11).

Blood donation and organ donation are features that require social responsibility based on help and sacrifice for sick individuals. The desired state is adequate levels of blood and organ donations being done. The aim of the present study was to determine the approaches of the health care personnel about blood and organ donation, which are vital for human life but have difficulty in supplying, and also to analyze the relationship between blood donation and organ donation.

MATERIALS AND METHODS

This cross-sectional study was conducted with the health personnel working in a training and research hospital in Ankara Province between January 2017 and June 2017. Within the scope of the study, 1200 personnel were attempted, but only 1012 health personnel completed the study due to different reasons, such as leave, rest, assignment, and refusal to participate in the survey. Of the 1012 health personnel, 84.3% were reached. The majority of those who did not want to participate in the study consisted of nurses, and they stated that they did not want to participate because they were asked to fill out questionnaires very frequently for scientific research.

The questionnaire method was used in the research. Using the literature information, questions were asked about the ages, occupations, and blood and organ donation status of the participants. This study was approved by the Ankara Provincial Health Directorate, approval number: 2017/70629056/604.01.01. Informed consent was obtained from all participants included in the study.

Statistical Analysis

Data were analyzed by The Statistical Package for the Social Sciences (SPSS) 22.0 statistical program (IBM Corp.; Armonk, NY, USA). Frequency and chi-square test were used to analyze the data.

RESULTS

Of the 1,012 health personnel, 23.8% (n=241) were physicians, 20.0% (n=202) were nurses, 21.7% (n=220) were paramedics/technicians, and 34.5% (n=349) were technical and administrative staff. The mean age of the participants was 38.7±8.8 years.

It was found that 51.4% of the participants have already donated blood, 32.5% were willing but did not donate yet, 4.1% did not consider donation, and 12.0% could not donate due to medical reasons. Paramedics/technicians are the highest (58.6%) in blood donation, and nurses are the lowest (45.0%). There was a statistically significant difference between the groups (p=0.008).

It was found that 52.8% of the health personnel were volunteers for organ donation, 34.0% were hesitant, and 13.0% were not volunteers. With respect to the occupational groups, it was observed that doctors were more voluntary (72.6%), whereas paramedics/technicians were less voluntary (44.5%) (p<0.001). It was found that 16.7% of the participants had an organ donation card. With respect to the occupational groups, doctors had the most donation cards (24.5%), whereas technical/administrative personnel had the least (44.5%) (p<0.001) (Table 1).

In Table 2, the relationship between the status of the organ donation card and the blood donation was investigated, and it was found that the donors of the organ donation card were more positive about the donation of blood than the non-donors. It was found that approximately half of those with and without organ donation card donate blood, and that those who had organ donation cards and are willing to donate blood but have not done yet were higher in number than those who have donation cards but cannot donate due to medical reasons (p=0.035) (Table 2).

There was a statistically significant difference between blood donation status and volunteerism with organ donation (p=0.015). It was found that 50.1% of blood donors and 38% of individuals who have not donated blood were volunteers for organ donation (Table 3).

DISCUSSION

The present study was conducted to determine the approaches of the health care personnel about blood and organ donations, which are vital for human life but have difficulty in supplying, and also to analyze the relationship between blood donation and organ donation.

The blood donation rate in European countries has reached 5.0% of the eligible population, whereas this rate is 1.5%-2% in our country (12-13). The reasons for declining blood donations include negligent/postponer behavior, fear of contracting infectious disease, needle phobia, fainting, seeing blood, risk of infection, fears of pain and hematoma, dizziness, headache, and arm numbness (14-16). In addition to these fears and complications, there are also physiological benefits to the donor.

Table 1. Participants' blood and organ donation status

	Total (n=1012)	Doctor (n=241)	Nurse (n=202)	Paramedic (n=220)	Technical/administrative personnel (n=349)	
	n (%)	n (%)	n (%)	n (%)	n (%)	p
Status of blood donation						
Yes, I donated	520 (51.4)	121 (50.2)	91 (45.0)	129 (58.6)	179 (51.3)	0.008
I am willing to but have not donated yet	329 (32.5)	92 (38.2)	73 (36.1)	64 (29.1)	100 (28.7)	
I am not thinking of donating	42 (4.1)	7 (2.9)	9 (4.5)	11 (5.0)	15 (4.3)	
I cannot donate due to medical reasons	121 (12.0)	21 (8.7)	29 (14.4)	16 (7.3)	55 (15.8)	
Did you donate your organs by filling out the organ donation card?						
Yes	169 (16.7)	59 (24.5)	46 (22.8)	26 (11.8)	38 (10.9)	<0.001
No	843 (83.3)	182 (75.5)	156 (77.2)	194 (88.2)	311 (89.1)	
Are you willing to donate your organs?						
Yes	534 (52.8)	175 (72.6)	102 (50.5)	98 (44.5)	159 (45.6)	<0.001
No	134 (13.2)	20 (8.3)	17 (8.4)	34 (15.5)	63 (18.1)	
I am hesitant	344 (34.0)	46 (19.1)	83 (41.1)	88 (40.0)	127 (36.4)	

Pearson chi-square test

Table 2. Relationship between owning organ donation card and blood donation

Blood donation status	Owning organ donation card				χ^2	p
	Yes (n=169)		No (n=843)			
	n	%	n	%		
Yes, I donated	86	50.9	434	51.5	8.576	0.035
I am willing to but have not donated yet	65	38.5	264	31.3		
I am not thinking of donating	8	4.7	34	4.0		
I cannot donate due to medical reasons	10	5.9	111	13.2		

Pearson chi-square test, χ^2: chi-square test statistic

After blood donation, the body increases its resistance by reproducing blood (17-18). Moreover, before using blood, control of infectious diseases is performed, and otherwise the person is informed and treatment is initiated. For example, in a 10-year study conducted in a blood center in our country, 1450 (3%) individuals with hepatitis B surface antigen, anti-hepatitis C virus, anti-human immunodeficiency virus, and syphilis were detected (19). To increase the rate of blood donations in the society, fears should be eliminated by organizing trainings, and the physiological benefit of blood donation should be considered, as well as the social benefit.

A significant increase in the number of traffic accidents, diseases such as hemophilia and thalassemia, surgical procedures, and severe kidney damage cases, among others, increases the need for blood transfusions and causes blood to emerge as an urgent and continuous need. However, this need can only be met by voluntary blood donors (17, 18, 20). Voluntary blood donation is blood donation without any benefit. Since donations of voluntary blood donations are insufficient, donations in return of money or replacement donations (donations in return of blood) are also present (21). In a previous study, it was found that 48.0% of the doctors donated blood, 28.0% did not donate yet, 7.0% did not consider donation, and 17.0% could not due to medical reasons (22). In a study conducted with candidate teachers, it was found that 36.7% were positive, 59.4% were hesitant, and 3.9% were negative (17). In a study conducted with high school students, it was found that 12.0% of the students and 10.9% of the health technician students donated blood; the idea of saving a life with blood donation, as well as the idea that they might need one themselves one day, were found to be effective (23-24). When compared with other studies, it is seen that the blood donation rate of health workers is higher. It is thought that the high awareness due to their duties, ages, and education is effective.

In our study, it was found that the least blood donors were nurses. All of the nurses in the study are women, and the fact that women donate less blood is similar to the literature (4, 25). The frequent prevalence of iron deficiency anemia in women is considered to be the reason in the low rate of donation.

Table 3. Relationship between volunteerism in organ donation and blood donation

	Volunteerism in organ donation							
	Yes (n=534)		No (n=134)		Hesitant (n=344)			
Blood donation status	**n**	**%**	**n**	**%**	**n**	**%**	**χ^2**	**p**
Blood donation	261	48.9	73	54.5	186	54.1	15.828	0.015
Yes, I donated	198	37.1	32	23.9	99	28.8		a: 0.006
I am willing to but have not donated yet	16	3.0	10	7.5	16	4.7		b: 0.062
I am not thinking of donating	59	11.0	19	14.2	43	12.5		c: 0.483

Pearson chi-square test, χ^2: chi-square test statistic, a: yes-no, b: yes-hesitant, c: no-hesitant

In our study, approximately half of the participants were volunteering for organ donation, whereas only 16.7% had a donation card. In studies conducted with health workers in European countries, it was seen that the rate of volunteerism in organ donation was 50%-80%, whereas the rate of having a donation card was 30%-55% (26-28). The donation rates in our study are considered to be low compared with European countries. It is observed that we have lagged behind the studies comparing the donation rates in the society (29-30). This situation is also being reflected into practice; the rate of cadaveric donors per million population in 2017 was approximately 25-30 in European countries, whereas it was 6.9 in Turkey. In European countries, 75% of the transplants are obtained from cadaver donors, whereas in our country, 80% of the transplants are obtained from live donors due to the shortage of organ harvesting. As of June 2018, a total of 25,131 patients (22,134 for kidney, 2,114 for liver, 990 for heart, 285 for pancreas, and 52 for lungs) expect organ transplantation (7, 11). Trainings and campaigns should be organized to provide information and awareness for organ donation. The fact that the training given to participants in the study by Uzuntarla (31) greatly increased the level of knowledge and volunteering for organ donation supports our suggestion.

In our study, the percentage of paramedics/technicians and technical/administrative staff who do not want to donate blood is close to physicians and nurses, whereas the percentage of paramedics/technicians and technical/administrative staff who do not want to donate organs is higher than that of physicians and nurses. It is thought that the social awareness of organ donation is less than that of blood donation and that the physicians/nurses are more knowledgeable and sensitive about organ transplantation due to their education and professional experiences. In our study, it is seen that physicians experienced less hesitation with respect to being volunteers for organ donations than other occupational groups. The education, knowledge, and experience of physicians are considered to be more effective in organ donation.

In our study, a significant relationship was found between blood donation and organ donation, and 83.8% of those who volunteered for blood donation also showed positive attitudes to organ donation. The results are similar to the previous studies (32-35).

CONCLUSION

There is a significant relationship between blood donation and organ donation, and those who volunteer for blood donation also have a positive attitude toward organ donation. It is evaluated that positive behavior for blood donation is higher, and that this should also be provided in organ donation. Trainings, campaigns, and written/visual media advertisements, among others, that emphasize that blood and organ donations are a duty of citizenship based on sacrifice should be performed; thus, social awareness should be increased.

Our study has a limitation. The fact that the study was conducted with health personnel working only in a training and research hospital in Ankara is a limitation. Future studies with a larger sample group including different provinces and hospitals should be conducted.

Ethics Committee Approval: This study was approved by the Ankara Provincial Health Directorate, approval number: 2017/70629056/604.01.01.

Informed Consent: Informed consent was obtained from all participants included in the study.

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