



Article Info/Makale Bilgisi

√Received/Geliş: 01.01.2024 √Accepted/Kabul: 18.11.2024

DOI:10.30794/pausbed.1413214

Research Article/Araştırma Makalesi

Gökkaya, D., Cansever, İ. H., Karaman, M. and Şenol, O. (2025). "Research on the Relationship Between Health Literacy and Organ Donation", *Pamukkale University Journal of Social Sciences Institute*, issue 66, pp. 83-96.

RESEARCH ON THE RELATIONSHIP BETWEEN HEALTH LITERACY AND ORGAN DONATION

Durmuş GÖKKAYA*, İbrahim Hüseyin CANSEVER**, Mesut KARAMAN***, Osman ŞENOL****

Abstract

Thousands of patients who could be saved lose their lives every year due to insufficient organ donation. One of the most important barriers to organ donation is lack of knowledge. Lack of knowledge is directly related to health literacy. Low health literacy has negative effects on individuals and society. This study aims to examine the effect of health literacy on organ donation attitude. Health Literacy Scale and Organ Transplantation and Donation Attitude Scale were used in the study. Of the participants (N=652), 69.3% were female and 51.2% were married. The age distribution of the participants was 58.1% between 20-30 years and 49.8% were undergraduate graduates. Significant differences were found between genders, age groups and marital status in terms of health literacy and organ donation attitudes. A significant difference was found between education level and organ donation attitude. Finally, the study showed that participants' health literacy significantly and positively affected their attitudes towards organ donation, positive attitudes towards organ donation and negative attitudes towards organ donation.

Keywords: Health Literacy, Organ Donation, Organ Transplantation, Health Policy.

SAĞLIK OKURYAZARLIĞI İLE ORGAN BAĞIŞI ARASINDAKİ İLİŞKİNİN ARAŞTIRILMASI

Öz

Yetersiz organ bağışısı nedeniyle her yıl kurtarılabilecek binlerce hasta hayatını kaybetmektedir. Organ bağışısının önündeki en önemli engellerden biri de bilgi eksikliğidir. Bilgi eksikliği sağlık okuryazarlığıyla doğrudan ilişkilidir. Düşük sağlık okuryazarlığının bireylere ve topluma yönelik olumsuz etkileri vardır. Bu araştırma, sağlık okuryazarlığının organ bağışısı tutumu üzerindeki etkisini incelemeyi amaçlamaktadır. Araştırmada Sağlık Okuryazarlığı Ölçeği ve Organ Nakli ve Bağışısı Tutum Ölçeği kullanılmıştır. Katılımcıların (N=652) %69,3'ü kadın, %51,2'si evlidir. Katılımcıların yaş dağılımında %58,1'i 20-30 yaş aralığında olup, %49,8'i lisans mezunudur. Cinsiyetler, yaş grupları ve medeni durumlar arasında sağlık okuryazarlığı ve organ bağışısı tutumları bakımından anlamlı fark bulunmuştur. Eğitim düzeyi ile organ bağışısı tutumu arasında anlamlı bir fark bulunmuştur. Araştırma, katılımcıların sağlık okuryazarlığının organ bağışısına yönelik tutumlarını, organ bağışısına yönelik olumlu tutumu ve organ bağışısına yönelik olumsuz tutumu anlamlı ve olumlu yönde etkilediğini göstermektedir.

Anahtar kelimeler: Sağlık Okuryazarlığı, Organ Bağışısı, Organ Nakli, Sağlık Politikası.

*Asst. Prof. Dr., Yozgat Bozok University, Faculty of Economics and Administrative Sciences, YOZGAT.

e-mail: durmusgokkaya@gmail.com, (<https://orcid.org/0000-0002-6713-1748>)

**Asst. Prof. Dr., Süleyman Demirel University, ISPARTA.

e-mail: ihcansever@hotmail.com (<https://orcid.org/0000-0002-9999-6789>)

*** PhD Student, Sivas Cumhuriyet University, Faculty of Economics and Administrative Sciences, SİVAS.

e-mail: mesut_karaman66@hotmail.com (<https://orcid.org/0000-0002-7584-0800>)

****Asst. Prof. Dr., Karadeniz Technical University, Faculty of Economics and Administrative Sciences, TRABZON.

e-mail: osmansenol32@hotmail.com, (<https://orcid.org/0000-0001-5626-2921>)

1. INTRODUCTION

After brain death, organ donation is a process of using an organ or tissue in a documented manner (Sipkin et al., 2010: 20). Despite numerous medical advances, organ transplants remain the only treatment option for people with end-stage organ failure (Cho et al., 2018: 1324; Janatolmakan et al., 2020: 1; Krupic et al., 2019: 847). Organ donation is an important development in managing organ failure, which can significantly improve the quality of life (Bedi et al., 2015: 248) and life expectancy (Sadat Hejazi et al., 2017: 4748) in patients awaiting life-saving organ transplantation. After natural death, only a few tissues can be donated, such as cornea, bone, skin and blood vessels. After brain death, about 37 different organs and tissues can be donated, including critical organs such as the kidneys, heart, liver and lungs (Ghose et al., 2021: 5399)percentage, and chi square test Chi-square test for linear trend and was used to find associationResults: The 308 (77%. Transplantable organs and tissues can come from living or deceased donors (Sağiroğlu et al., 2015: 1), but donor shortages are a global problem, and many organ failure patients die on transplant waiting lists each year (Chakradhar et al., 2016: 28; Krupic et al., 2019: 849). Data from the World Health Organisation (WHO) Global Observatory on Donation and Transplantation (GODT) (Global Observatory on Donation and Transplantation, 2022) show that 157,490 organ transplants were reported worldwide in 2019, 129,791 in 2020, and 169,902 in 2021 (Chart 1). However, according to the United Network for Organ Sharing (UNOS) and the Organ Procurement and Transplantation Network (OPTN), in the US alone, around 1200 people have joined the organ waiting list every week since early 2020, and as of December 2022, 105,309 people are waiting (Organ Procurement and Transplantation Network; United Network for Organ Sharing, 2022).

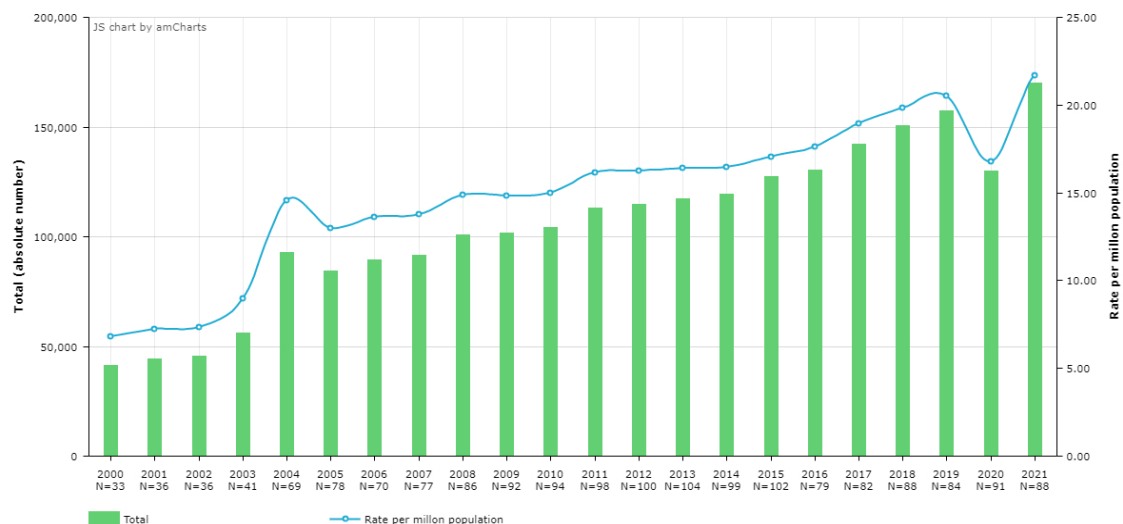


Chart 1. Total Transplantation in the World (Kidney, Heart, Lung, Liver, Pancreas, and Small Bowel) (2000-2021)

Source: Global Observatory on Donation and Transplantation (2022)

As can be seen, there is a big difference between the number of patients waiting for organs and the actual organ transplantation, which is increasing daily. Closing this gap and saving more people will only be possible with an increase in organ donation. Lack of information, social and economic status, educational, cultural and religious attitudes are some of several factors that contribute to resistance to organ donation and transplantation (Akbulut et al., 2020: 2236; Eylem, 2016: 77; Ríos et al., 2018: 348; Uskun and Ozturk, 2013: 38; Vijayalakshmi et al., 2016: 259)attitude and willingness to donate organs among the general population. METHODS We carried out a cross-sectional descriptive study among 193 randomly selected relatives of patients (not of those seeking organ donation. Organ donation is not only an individual matter but also an essential process with medical, legal, ethical, social, social, and organizational dimensions (Eslamnik et al., 2018: 179; Hamid and Khan, 2019: 1113). There is a direct correlation between a person's level of knowledge and their willingness and positive attitude towards organ donation. Concerns about organ donation include the success rate of transplants, relating to the person receiving the transplant, and concerns about life after the transplant (Kapikiran et al., 2021: 26).

The WHO (World Health Organization, 2022b) report cited limited public awareness and knowledge of the value of donation and transplantation and cultural resistance as reasons for insufficient growth and asymmetric development in organ donation worldwide. Lack of education and awareness creates a fear of the unknown, which reduces the rate of organ donation (The European Society for Organ Transplantation (ESOT), 2022). Research has shown that the availability of information about organ procurement is positively associated with the signing of an organ donor card (Tokalak et al., 2006: 493). In one study of organ donation and transplant training, Uzuntarla (2016: 298) found that before the training, 24.8% of participants believed that religious issues were not an issue, and after the training, that percentage increased to 80.5%. Abbasi et al. (2018: 296) also reported in their study that they needed religious support to donate organs.

On the other hand, health literacy has become very important today and is used as an influential variable in the complex structure of modern health systems. Health literacy (Yılmazel and Çetinkaya, 2016: 69) contributes to the individual's protection of his/her health level, easy access to health services when he/she gets sick, effective communication with health personnel, active participation in the treatment process and increasing years and quality of healthy life. Health literacy significantly improves health levels individually and in the social dimension. In this context, countries set targets in their policy documents to create an individual and society that are aware of the importance of their health, use the health system effectively, and have high health literacy (Ministry of Health, 2022).

Health literacy is interpreted as people making the right decision for their health, using the knowledge they have acquired in the field of health, and improving their health (Parnell et al., 2019: 316). Increasing public awareness is directly proportional to health literacy. Health literacy is the process of understanding, comprehending, appreciating, remembering, and using information about health and health services in the context of everyday life (World Health Organization, 2022a). A person who has sufficient health literacy knows how to take responsibility for their own and the community's health (Sørensen et al., 2012: 1). The research aims to examine the effect of health literacy on organ donation attitudes. In this context, it will be tried to reveal what kind of effect the level of health literacy in individuals has on organ donation.

2. MATERIAL AND METHOD

This research was planned as a cross-sectional study. This cross-sectional study has five hypotheses. The first hypothesis (H1) is that the health literacy of individuals significantly and positively affects organ donation attitudes. The study's second hypothesis (H2) is that individuals' health literacy significantly and positively affects their attitude toward organ donation. The third hypothesis of the study (H3) states that individuals' health literacy has a significant and positive effect on their negative attitude toward organ donation. The fourth hypothesis of the study (H4) is that individuals' attitude toward organ donation differs significantly according to demographic variables. The last hypothesis of the study (H5) is that the health literacy of individuals differs significantly according to demographic variables. The model in Figure 1 was developed in line with the purpose of the research.

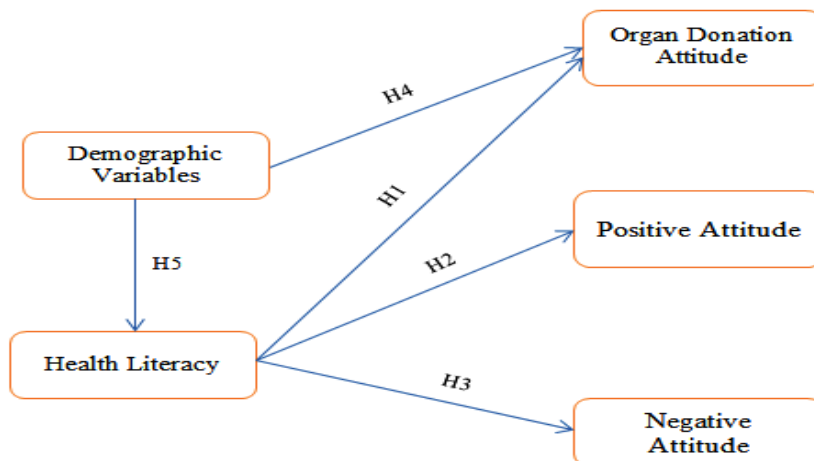


Figure 1. Research Model

The data of this research were collected in Yozgat province of Türkiye between Oct 15 and Dec 15, 2022, using an online survey. Only people residing in Yozgat province participated in the research. According to TURKSTAT data, the population of Yozgat in 2021 was 418,500, and the research population was determined as the entire population of Yozgat province. In order to collect data, an online survey link was sent to the participants, and they were asked to share it with their circles. Thus, 652 individuals were reached by utilizing the snowball method. Data were collected using the “Personal Information Form,” “Health Literacy Scale,” and “Organ Transplantation and Donation Attitude Scale.”

In the *Personal Information Form*, the participants’ gender, marital status, age, education level and sector of employment, whether they had received information about organ donation before, whether they had good knowledge about organ donation, whether they had donated organs and whether they had an organ donation card were included.

Health Literacy Scale-Short Form; The Turkish validity and reliability study developed by Duong et al. (2019: 100) was carried out by Karahan Yılmaz and Eskici (2021: 23). The scale consists of 12 items and is a 4-point Likert type, and the scale is unidimensional, and there is no reverse coding. The scale scoring is between “4- Very easy, 3- Easy, 2- Difficult, and 1- Very difficult”. As the scores obtained from the scale increase, the health literacy levels of individuals increase. In the study of Karahan Yılmaz and Eskici (2021: 19), the Cronbach Alpha value of the scale was 0.85 and 0.84 in this study (Table 3).

Organ Transplantation and Donation Attitude Scale; The scale developed by Gürkan (2018: 182) is a 5-point Likert type. The scale consists of 20 items and two sub-dimensions: positive attitude and negative attitude towards organ transplantation and donation. Reverse coding was used in the negative attitude sub-dimension. Scoring of the scale is between “1- Strongly Disagree, 2- Disagree, 3- Moderately Agree, 4- Agree, and 5- Strongly Agree”. As the scores obtained from the scale increase, the knowledge level of individuals towards Organ Transplantation and Donation Attitude increases. In Gürkan’s (2018: 85) study, the Cronbach alpha value for the overall scale was 0.89 and 0.92 in this study (Table 3).

The online survey was shared on various social media platforms (WhatsApp, Instagram, Twitter,) used by individuals. The questionnaire was completed by individuals who voluntarily participated in the study and took approximately 10 minutes to complete. The completed questionnaires were received anonymously by the researchers, and no information indicating the e-mail addresses or identities of the respondents was collected.

2.1. Statistical Analysis

In this study, the data obtained from 652 participants were analyzed using IBM SPSS Statistics 26.0 (Statistical Package for the Social Sciences) package program. The Skewness and Kurtosis values distribution for the Health Literacy and Organ Transplantation and Donation Attitude Scale varied between -0.636 and 0.926 (Table 3). When the Skewness and Kurtosis values of the data are examined, it is seen that the normal distribution condition is met (Kim, 2013: 53). Descriptive statistics (mean, standard deviation, minimum, maximum frequencies (n) and percentages), Cronbach’s alpha coefficient to evaluate the internal consistency of the scales, and Pearson correlation analysis to determine the relationship between scale scores were used to define continuous and categorical variables, respectively. The regression analysis method was used to determine the effect of health literacy on organ donation attitude.

3. RESULTS

The socio-demographic characteristics of the participants are shown in Table 1.

Table 1. Socio-demographic characteristics of the participants (N: 652)

Variables	N	%
Sex		
Female	452	69.3
Male	200	30.7
Marital status		
Married	334	51.2
Single	318	48.8
Age		
20-30	379	58.1
31-40	166	25.5
41 and over	107	16.4
Education Level		
Under bachelor's	233	35.7
Bachelor's degree	325	49.8
Postgraduate	94	14.4
Work sector		
Public	314	48.2
Private	56	8.6
Not working	234	35.9
Other	48	7.4
Have you received information about organ donation before?		
Yes	306	46.9
No	346	53.1
Do you think your level of knowledge about organ donation is good?		
Yes	233	35.7
No	419	64.3
Have you donated an organ?		
Yes	42	6.4
No	610	93.6
Do you have an organ donation card?		
Yes	44	6.8
No	608	93.3

Among the participants, 69.3% were female, and 51.2% were married. Considering the age distribution of the participants, it is seen that 58.1% are between the ages of 20-30. In terms of education level, it was determined that 49.8% had a bachelor's degree and 48.2% worked in the public sector. It was determined that 53.1% of the participants had no previous knowledge about organ donation. It is seen that 64.3% of the participants think that their knowledge about organ donation is not at a good level. It is seen that 93.6% of the participants did not donate organs. Finally, 93.3% of the participants did not have an organ donor card.

Table 2 shows the evaluation of health literacy and organ donation attitude according to demographic variables. There was a significant difference between genders regarding health literacy ($p:0.045$). Health literacy was higher in female participants ($p:0.045$). There is a significant difference between health literacy and marital status ($p:0.015$). Health literacy is significantly higher in single participants ($p:0.015$).

Table 2. Evaluation of health literacy and organ donation attitude according to demographic variables (N: 652)

Variables	N	Health Literacy		Organ Donation Attitude	
Sex**					
Female	452	3.06±0.41	T:2.004	3.76±0.60	T:3.509
Male	200	3.00±0.37	P:0.045*	3.58±0.64	P:0.000*
Marital status**					
Married	334	3.01±0.39	T:-2.442	3.66±0.61	T:-2.002
Single	318	3.08±0.40	P:0.015*	3.76±0.62	P:0.046*
Age***					
20-30 ¹	379	3.08±0.40		3.76±0.61	
31-40 ²	166	3.03±0.42	F:6.562	3.70±0.63	F:4.708
41 and over ³	107	2.92±0.32	P:0.002*	3.55±0.61	P:0.009*
Difference between groups		1>3		1>3	
Education level***					
Under bachelor's ¹	233	3.03±0.41	F:0.594	3.62±0.64	F:3.903
Bachelor's degree ²	325	3.04±0.38	P:0.553	3.75±0.60	P:0.021*
Postgraduate ³	94	3.08±0.42		3.79±0.61	
Difference between groups				2>1	
Work sector***					
Public ¹	314	3.02±0.39		3.70±0.64	
Private ²	56	3.14±0.40	F:4.440	3.81±0.55	F:1.026
Not working ³	234	3.08±0.42	P:0.004*	3.72±0.63	P:0.381
Other ⁴	48	2.89±0.35		3.60±0.47	
Difference between groups		2,3>4			
Have you received information about organ donation before? **					
Yes	306	3.03±0.39	T:-1.117	3.70±0.62	T:-0.179
No	346	3.06±0.41	P:0.265	3.71±0.62	P:0.858
Do you think your level of knowledge about organ donation is good? **					
Yes	233	3.03±0.41	T:-0.763	3.68±0.60	T:-0.897
No	419	3.05±0.39	P:0.446	3.72±0.63	P:0.370
Have you donated an organ? **					
Yes	42	3.08±0.38	T:0.608	3.76±0.58	T:0.607
No	610	3.04±0.40	P:0.543	3.70±0.62	P:0.544
Do you have an organ donation card? **					
Yes	44	3.07±0.42	T:0.525	3.73±0.59	T:0.256
No	608	3.04±0.40	P:0.599	3.71±0.62	P:0.798

*p<0.05 **Independent sample t-test *** One-way analysis of variance (ANOVA) was applied.

There is a significant difference between health literacy and age distribution (p:0.002). Health literacy is significantly higher in those aged between 20-30 years. When age distributions were examined in the Tukey test, the mean score difference between 20-30 years old and 41 years old and above was significant in favor of the first group. It is seen that there is a significant difference between the sector in which one works and health literacy (p:0.004), and it is determined that health literacy is significantly higher in those working in the private

sector. In the Tukey test, the mean score difference between those working in the private sector, those not working, and those working in other occupational groups was significant in favor of the first group ($p < 0.05$).

It was found that there was no significant difference between health literacy and education level, having an organ donation card, thinking that the level of knowledge about organ donation is good, organ donation and having received information about organ donation before ($p > 0.05$; Table 2).

A significant difference was found between gender and attitude towards organ donation ($p:0.000$). This difference was found to be significantly higher in female participants. It is seen that there is a significant difference between marital status and attitude towards organ donation ($p:0.046$) and the attitude towards organ donation of single participants is significantly higher. A significant difference was found between organ donation attitude and age ($p:0.009$). Attitudes towards organ donation are significantly higher among participants aged 20-30 who participated in the study. In the post hoc Tukey test, it was found that the difference in mean scores between 20-30 years old and 41 years and older was significant in favor of the first group. There was a significant difference between the level of education and the attitude towards organ donation ($p:0.021$). The attitude towards organ donation is significantly higher in those with postgraduate education. Tukey test revealed that the mean scores of bachelor's degree graduates were significantly higher than associate degree graduates ($p < 0.05$).

It is seen that there is no significant difference between having an organ donor card, the sector of employment, considering the level of knowledge about organ donation to be sufficient, receiving information about organ donation before and organ donation and organ donation attitude ($p > 0.05$; Table 2). Table 3 presents Pearson Correlation analysis results and mean score statistics between health literacy and organ donation attitude.

Table 3. Pearson correlation analysis results and mean score statistics between health literacy and organ donation attitude (N: 652)

Variables	Min-Max	Mean		Health literacy	Organ Donation Attitude	Positive attitude	Negative attitude
Health literacy	1-4	3.04±0.40	r	1	.529**	.467**	.476**
			p		.000	.000	.000
Organ Donation Attitude	1-5	3.71±0.62	r	.529**	1	.908**	.868**
			p	.000		.000	.000
Positive attitude	1-5	3.34±0.75	r	.467**	.908**	1	.580**
			p	.000	.000		.000
Negative attitude	1-5	4.08±0.63	r	.476**	.868**	.580**	1
			p	.000	.000	.000	
Cronbach Alpha				.848	.926	.899	.903
Skewness				.270	.024	.157	-.636
Kurtosis				.263	-.300	-.163	.716

** $p < 0.01$

There was a significant and positive relationship between health literacy and attitude towards organ donation ($r: .529$), positive attitude ($r: .467$) and negative attitude ($r: .476$). The mean score of health literacy was 3.04 ± 0.40 . The mean score of organ donation attitude was 3.71 ± 0.62 ; positive attitude was 3.34 ± 0.75 , and negative attitude was 4.08 ± 0.63 . Table 4 shows the effect of health literacy on organ donation attitude.

Table 4. The effect of health literacy on organ donation attitude (N: 652)

Model	Independent Variable	Dependent Variable: Attitude toward organ donation					95% Confidence Interval	
		Unstandardized Coefficients		Standardized Coefficients				
		B	Std. Error	Beta (β)	t	Sig.	LL	UL
Model 1	(Constant)	1.221	.158		7.734	.000*		
	Health literacy	.817	.051	.529	15.910	.000*	.725	.897
	<i>R= .529; R2 =.280; Adjusted R2 = .279; F=253.124; p=.000*</i>							
		Dependent Variable: Positive attitude						
Model 2	(Constant)	.656	.201		3.267	.000*		
	Health literacy	.881	.065	.467	13.478	.000*	.748	1.024
<i>R= .467; R2 =.218; Adjusted R2 = .217; F=181.651; p=.000*</i>								
		Dependent Variable: Negative attitude						
Model 3	(Constant)	1.786	.168		10.623	.000*		
	Health literacy	.754	.055	.476	13.781	.000*	.644	.865
<i>R= .476; R2 =.226; Adjusted R2 = .225; F=189.907; p=.000*</i>								

*p<0.01

Participants’ health literacy has a significant and positive effect on organ donation attitude (β : .529), and the explained variance R2 value is .280 (Model 1; Table 4). Health literacy has a significant and positive effect on the positive attitude towards organ donation dimension (β : .467) and the explained variance R2 value is .218 (Model 2; Table 4). Health literacy has a significant and positive effect on negative attitude towards organ donation (β : .476). The explained variance R2 value of this effect is .226 (Model 3; Table 4; Figure 2).

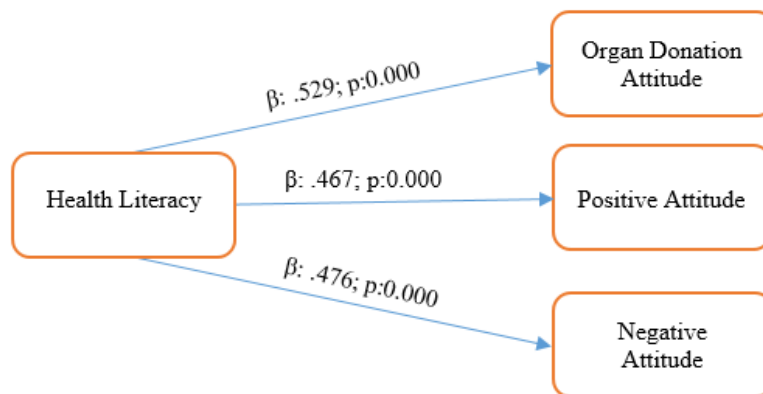


Figure 2. The effect of health literacy on organ donation attitude

4. DISCUSSION

Organ transplants are extremely valuable for patients suffering from end-stage organ failure (Ozer et al., 2010: 3366; Uskun and Ozturk, 2013: 39). The gap between the need for organ transplants and the number of donors remains huge, and the number of organ donations globally remains inadequate (Adam et al., 2018: 1294; Seyahi et al., 2017: 160). Increasing organ donation will save patients waiting for transplantation and increase the number of healthy days spent (Abouna, 2008: 35). One of the most important reasons for the lack of organ donation is the lack of awareness in society about organ donation (Akbulut et al., 2020: 2239). Various factors such as knowledge, education and religion can influence public attitudes towards organ donation.

Willingness to donate organs is determined by knowledge and attitudes towards organ donation. In studies conducted on healthcare professionals, it is stated that the participants have high levels of knowledge about organ donation (Alkhatib et al., 2014: 150; Murakami et al., 2020: 5; Stadlbauer et al., 2013: 3). On the other hand, although healthcare professionals' knowledge levels and attitudes are high, the attitudes of individuals other than healthcare professionals towards organ donation need to be increased. As can be seen, it can be said that the level of organ donation knowledge of the participants in this study should be increased. According to Fan and colleagues (2022: 1) greater knowledge about organ donation is linked to willingness to donate.

The transplantation programme in any health system is fundamentally influenced by public awareness of organ donation. There is a positive relationship between knowledge and awareness of organ donation and attitudinal change towards, readiness for and registration of organ donation (Tokalak et al., 2006: 494; Wakefield et al., 2010: 389). Many studies have shown that individuals with more information have a positive attitude toward donation (Reubsaet et al., 2001: 54; Saleem et al., 2009: 5; Sirois et al., 2005: 209). Evidence also shows that low-health literate individuals need technical information to decide about organ donation (Rademakers et al., 2022: 4). This study aims to examine the effect of health literacy on organ donation attitudes. This study found that participants' health literacy had a significant and positive impact on their willingness to donate organs.

In the study, female participants had a significantly higher health literacy and organ donation attitude. In another study, it was observed that men were less willing to donate organs (Zhang et al., 2017: 1979). Krupić, Grbić, and Alić (2022: 35) also found that women and those with higher income levels affected their positive attitudes toward organ donation. Health literacy and attitude towards organ donation were significantly higher in single participants. Another study emphasized that single participants' positive attitudes toward organ donation were higher (Abukhaizaran et al., 2018: 45). On the other hand, Vijayalakshmi et al. (2016: 258) did not show a significant difference in organ donation according to marital status.

There is evidence from many studies that young people are more likely to be organ donors (Conesa et al., 2006: 867; El-Shoubaki and Bener, 2005: 1996; Schulz et al., 2006: 299; Siminoff et al., 2006: 999). In this study, people aged between 20 and 30 years had significantly higher health literacy and attitudes towards organ donation. In the study of Vijayalakshmi et al. (2016: 260), it was determined that organ donation showed a significant difference according to age, and organ donation was significantly higher in the 25-40 age groups, and the finding obtained in this study was supported.

In addition, there is evidence that people with higher levels of education have more positive attitudes toward organ donation (Khan et al., 2011: 20; Zhang et al., 2022: 1). There is a significant correlation between educational attainment and organ donation willingness, and those who have completed postgraduate education have significantly higher willingness. In previous studies in the literature, it was reported that there was a significant relationship between education level and organ donation (Conesa et al., 2006: 867; Vijayalakshmi et al., 2016: 260; Zhang et al., 2017: 1979). On the other hand, Georgiadou et al. (2012: 2699) observed no significant difference between the participants' attitudes toward organ donation and their level of education.

The study revealed that 64.3% of the participants did not know well about organ donation. The study of Bilgel, Sadıkoğlu, and Bilgel (2006: 94) determined that 59.9% of the participants did not know enough about organ donation. Among the factors that may prevent organ donation reasons, such as religious beliefs, lack of information, medical insecurity, and the fact that the person's family will not allow it are stated (Yazar and Acikgoz, 2016: 255). However, it is crucial to develop a positive attitude toward organ donation (Sadic et al., 2016). Along with the findings mentioned above, El Hangouche and colleagues (2018: 1358) found that the older an individual was, the less education and information they had, the less likely they were to accept organ donation.

In this study, 35.7% of the participants stated that their knowledge about organ donation was good. In the study by Akbulut et al. (2020), 33.9% of the participants had sufficient knowledge about organ donation. However, it was determined that 93.3% of the participants did not have an organ donation card. However, an organ donation card has a significant role in deciding organ donation in emergencies so that the organ taken from a dying person can be used for transplantation to those in need (Mandell et al., 2006:2955). Another study

also found 46.8% of participants had an organ donor card, 58% would be willing to donate, and 13.8% would not (McGlade et al., 2014: 2).

Increasing the level of health literacy in society and thus raising the level of awareness and knowledge will increase the number of organ donations. For this, it is of great importance for governments to implement an education program that covers all segments of society, starting with children. Creating educational programs in schools to promote knowledge and attitudes toward organ donation will make significant contributions (Akbulut et al., 2022: 579). The high level of health literacy and organ donation attitudes of the young age group between 20-30 years of age, which was also revealed in the research, shows that it is necessary to focus primarily on individuals over 30. In this context, policy documents, including many steps such as training (informative home visits, training programs to be organized by local administrations, etc.), religious explanations, and support of health personnel in hospitals, should be put forward. There is evidence that mass media campaigns related to a specific target have minor to moderate effects on health knowledge, beliefs, attitudes, and behavior (Noar, 2006: 36). In this context, public service announcements about what organ donation involves may also have significant effects. In addition, the fact that the study was conducted in Yozgat province and the snowball method was used in the selection of the study participants can be stated as a limitation of this study. If studies are conducted in larger cities and with larger sample groups, more generalising results may emerge.

5. CONCLUSION

This study has shown a direct and strong relationship between health literacy and organ donation. In this context, increasing the health literacy level of society will positively affect organ transplantation and other gains. The increase in organ transplantation will save lives and prolong the lives of many patients waiting for organ donation. At the same time, many essential gains will be achieved in economic, social, and cultural aspects. In this context, to increase health literacy, it is essential to put forward policy documents that will reach all segments of society in various ways, starting from primary school. In addition, it is thought that using media campaigns to increase public awareness of health literacy and organ donation awareness will provide significant gains.

REFERENCES

- Abbasi, M., Kiani, M., Ahmadi, M., and Salehi, B. (2018). "Knowledge and Ethical Issues in Organ Transplantation and Organ Donation: Perspectives from Iranian Health Personnel". *Annals of Transplantation*, 23, 292–299. <https://doi.org/10.12659/AOT.908615>
- Abouna, G. M. (2008). "Organ Shortage Crisis: Problems and Possible Solutions". *Transplantation Proceedings*, 40(1), 34–38. <https://doi.org/10.1016/j.transproceed.2007.11.067>
- Abukhaizaran, N., Hashem, M., Hroub, O., Belkebir, S., and Demyati, K. (2018). "Knowledge, attitudes, and practices of Palestinian people relating to organ donation in 2016: a cross-sectional study". *The Lancet*, 391, S45. [https://doi.org/10.1016/S0140-6736\(18\)30411-2](https://doi.org/10.1016/S0140-6736(18)30411-2)
- Adam, R., Karam, V., Cailliez, V., O Grady, J. G., Mirza, D., Cherqui, D., Klempnauer, J., Salizzoni, M., Pratschke, J., Jamieson, N., Hidalgo, E., Paul, A., Andujar, R. L., Lerut, J., Fisher, L., Boudjema, K., Fondevila, C., Soubrane, O., Bachellier, P., ... Duvoux, C. (2018). "2018 Annual Report of the European Liver Transplant Registry (ELTR) - 50-year evolution of liver transplantation". *Transplant International*, 31(12), 1293–1317. <https://doi.org/10.1111/tri.13358>
- Akbulut, S., Ozer, A., Firinci, B., Demyati, K., Saritas, H., and Yilmaz, S. (2022). "Assessment of Knowledge and Attitudes Toward Organ Donation Among School Teachers: First National Survey Study". *Transplantation Proceedings*, 54(3), 575–581. <https://doi.org/10.1016/j.transproceed.2021.11.029>
- Akbulut, S., Ozer, A., Gokce, A., Demyati, K., Saritas, H., and Yilmaz, S. (2020). "Attitudes, awareness, and knowledge levels of the Turkish adult population toward organ donation: Study of a nationwide survey". *World Journal of Clinical Cases*, 8(11), 2235–2245. <https://doi.org/10.12998/wjcc.v8.i11.2235>
- Alkhatib, A. A., Maldonado, A. Q., Abdel Jalil, A., and Hutson, W. (2014). "Physicians' attitude toward organ donation and transplantation in the USA". *Clinical Transplantation*, 28(2), 149–151. <https://doi.org/10.1111/ctr.12307>

- Bedi, K. K., Hakeem, A. R., Dave, R., Lewington, A., Sanfey, H., and Ahmad, N. (2015). "Survey of the Knowledge, Perception, and Attitude of Medical Students at the University of Leeds Toward Organ Donation and Transplantation". *Transplantation Proceedings*, 47(2), 247–260. <https://doi.org/10.1016/j.transproceed.2014.11.033>
- Bilgel, H., Sadikoglu, G. B. N., & Bilgel N. (2006). "Knowledge and Attitudes about Organ Donation Among Medical Students". *Transplantationsmedizin*, 18, 91–96.
- Chakradhar, K., Doshi, D., Srikanth Reddy, B., Kulkarni, S., Padma Reddy, M., and Sruthi Reddy, S. (2016). "Knowledge, Attitude and Practice Regarding Organ Donation among Indian Dental Students". *International Journal of Organ Transplantation Medicine*, 7(1), 28–35.
- Cho, S., Mohan, S., Husain, S. A., and Natarajan, K. (2018). "Expanding transplant outcomes research opportunities through the use of a common data model". *American Journal of Transplantation*, 18(6), 1321–1327. <https://doi.org/10.1111/ajt.14892>
- Conesa, C., Ríos, A., Ramírez, P., Cantéras, M., Rodríguez, M. M., and Parrilla, P. (2006). "Attitudes Toward Organ Donation in Rural Areas of Southeastern Spain". *Transplantation Proceedings*, 38(3), 866–868. <https://doi.org/10.1016/j.transproceed.2006.02.028>
- Duong, T. V., Aringazina, A., Kayupova, G., Nurjanah, Pham, T. V., Pham, K. M., Truong, T. Q., Nguyen, K. T., Oo, W. M., Su, T. T., Majid, H. A., Sørensen, K., Lin, I.-F., Chang, Y., Yang, S.-H., and Chang, P. W. S. (2019). "Development and Validation of a New Short-Form Health Literacy Instrument (HLS-SF12) for the General Public in Six Asian Countries". *HLP: Health Literacy Research & Practice*, 3(2), 19-102. <https://doi.org/10.3928/24748307-20190225-01>
- El-Shoubaki, H., and Bener, A. (2005). "Public Knowledge and Attitudes Toward Organ Donation and Transplantation: A Cross-Cultural Study". *Transplantation Proceedings*, 37(5), 1993–1997. <https://doi.org/10.1016/j.transproceed.2005.03.014>
- El Hangouche, A., Alaika, O., Rkain, H., Najdi, A., Errguig, L., Doghmi, N., Aboudrar, S., Cherti, M., and Dakka, T. (2018). "Knowledge, attitudes, and practice of organ donation in Morocco: A cross-sectional survey". *Saudi Journal of Kidney Diseases & Transplantation*, 29(6), 1358-1365. <https://doi.org/10.4103/1319-2442.248301>
- Eslamnik Parvin Alsadat, Parand Abdolmajid, Kalvandi Narges, J. M. (2018). "Barriers to organ donation". *Journal of Research in Medical and Dental Science*, 6(2), 178–182.
- Eylem, T. and G. B. (2016). "Türkiye’de Kadavra Dönörden Gerçekleştirilen Organ Nakline Etki Eden Faktörler". *Journal*, 11(2), 77–88.
- Fan, X., Li, M., Rolker, H., Li, Y., Du, J., Wang, D., and Li, E. (2022). "Knowledge, attitudes and willingness to organ donation among the general public: a cross-sectional survey in China". *BMC Public Health*, 22(1), 918. <https://doi.org/10.1186/s12889-022-13173-1>
- Georgiadou, E., Sounidakis, N., Mouloudi, E., Giaglis, P., Giasnetsova, T., Marmanidou, K., and Gritsi-Gerogianni, N. (2012). "Attitudes and Behavior Toward Organ Donation in Greece". *Transplantation Proceedings*, 44(9), 2698–2701. <https://doi.org/10.1016/j.transproceed.2012.09.017>
- Ghose, T. K., Deo, J., Dutt, V., Agarwal, R., Patel, B. B., Ganesh, M., More, V. K., Pandya, K. H., Sharma, R., Sharma, D., and Singh, H. (2021). "Knowledge and attitude towards organ donation: a study among medical and nursing students of a medical college". *International Journal Of Community Medicine And Public Health*, 8(11), 5398-5403. <https://doi.org/10.18203/2394-6040.ijcmph20214278>
- Global Observatory on Donation and Transplantation. (2022). *Global Data*.
- Gürkan, G. (2018). "Fen Bilgisi Öğretmen Adaylarının Organ Nakli Ve Bağışı Konularındaki Argümantasyon Becerileri, Epistemolojik İnançları, Konu Alan Bilgileri Ve Tutumlarının İncelenmesi". Doktora Tezi, *İnönü Üniversitesi Eğitim Bilimleri Enstitüsü Matematik ve Fen Bilimleri Eğitimi Anabilim Dalı Fen Bilgisi Öğretmenliği Bilim Dalı*.
- Hamid, R., and Khan, M. (2019). "Living-unrelated kidney donor transplantation: Legalization in exceptional circumstances?" *Saudi Journal of Kidney Diseases and Transplantation*, 30(5), 1111-1117. <https://doi.org/10.4103/1319-2442.270267>

- Janatolmakan, M., Soroush, A., Nouri, R., Andayeshgar, B., and Khatony, A. (2020). "Knowledge, Attitude, and Performance of ICU, CCU, and Emergency Wards Nurses in Kermanshah, Iran, regarding Organ Donation". *Critical Care Research & Practice*, 2020, 5167623. <https://doi.org/10.1155/2020/5167623>
- Kapikiran, G., Bulbuloglu, S., Ozdemir, A., and Saritas, S. (2021). "Knowledge and Attitudes on Organ Donation From the Perspective of Liver Transplant Patients". *Transplantation Proceedings*, 53(1), 25–29. <https://doi.org/10.1016/j.transproceed.2020.02.173>
- Khan, N., Masood, Z. and Zahra, S. (2011). "Knowledge and Attitude of People Towards Organ Donation". *Journal of University Medical and Dental College*, 2(2), 15–21. <https://jumdc.com/index.php/jumdc/article/view/37>
- Kim, H.-Y. (2013). "Statistical notes for clinical researchers: assessing normal distribution (2) using skewness and kurtosis". *Restorative Dentistry and Endodontics*, 38(1), 52-54. <https://doi.org/10.5395/rde.2013.38.1.52>
- Krupić, F., Grbić, K., and Alić, J. (2022). "Changes in Attitudes towards Organ Donation among Bosnian Immigrants in Sweden from Gender Perspective". *Acta Medica Academica*, 51(1), 35. <https://doi.org/10.5644/ama2006-124.368>
- Krupic, F., Westin, O., Hagelberg, M., Sköldenberg, O., and Samuelsson, K. (2019). "The Influence of Age, Gender and Religion on Willingness to be an Organ Donor: Experience of Religious Muslims Living in Sweden". *Journal of Religion & Health*, 58(3), 847–859. <https://doi.org/10.1007/s10943-018-0670-7>
- Mandell, M. S., Zamudio, S., Seem, D., McGaw, L. J., Wood, G., Liehr, P., Ethier, A., and D'Alessandro, A. M. (2006). "National evaluation of healthcare provider attitudes toward organ donation after cardiac death". *Critical Care Medicine*, 34(12), 2952–2958. <https://doi.org/10.1097/01.CCM.0000247718.27324.65>
- McGlade, D., McClenahan, C., and Pierscionek, B. (2014). "Pro-Donation Behaviours of Nursing Students from the Four Countries of the UK". *PLoS ONE*, 9(3), 1-6. <https://doi.org/10.1371/journal.pone.0091405>
- Murakami, M., Fukuma, S., Ikezoe, M., Izawa, S., Watanabe, H., Yamaguchi, H., Kitazawa, A., Takahashi, K., Natsukawa, S., and Fukuhara, S. (2020). "Knowledge Does Not Correlate with Behavior toward Deceased Organ Donation: A Cross-Sectional Study in Japan". *Annals of Transplantation*, 3;25:e918936 <https://doi.org/10.12659/AOT.918936>
- Noar, S. M. (2006). "A 10-Year Retrospective of Research in Health Mass Media Campaigns: Where Do We Go From Here?" *Journal of Health Communication*, 11(1), 21–42. <https://doi.org/10.1080/10810730500461059>
- Organ Procurement and Transplantation Network. (n.d.). *Data*. <https://optn.transplant.hrsa.gov/data/>
- Ozer, A., Ekerbicer, H. C., Celik, M., and Nacar, M. (2010). "Knowledge, Attitudes, and Behaviors of Officials of Religion About Organ Donation in Kahramanmaraş, an Eastern Mediterranean City of Turkey". *Transplantation Proceedings*, 42(9), 3363–3367. <https://doi.org/10.1016/j.transproceed.2010.08.035>
- Parnell, T. A., Stichler, J. F., Barton, A. J., Loan, L. A., Boyle, D. K., and Allen, P. E. (2019). "A concept analysis of health literacy". *Nursing Forum*, 54(3), 315–327. <https://doi.org/10.1111/nuf.12331>
- Rademakers, J., Rolink, M., and Heijmans, M. (2022). "Information Needs of People With Limited Health Literacy Regarding a New "Opt-Out" Organ Donation System: A Qualitative Study in the Netherlands". *Transplant International*, 35, 10295. <https://doi.org/10.3389/ti.2022.10295>
- Reubsaet, A., Brug, J., van den Borne, B., and van Hooff, H. (2001). "Predictors Of Organ Donation Registration Among Dutch Adolescents". *Transplantation*, 72(1), 51–56. <https://doi.org/10.1097/00007890-200107150-00012>
- Ríos, A., López-Navas, A. I., De-Francisco, C., Sánchez, Á., Hernández, A. M., Ramírez, P., and Parrilla, P. (2018). "Psychometric Characteristics of the Attitude Questionnaire Toward the Donation of Organs for Transplant (PCID-DTO-RIOS)". *Transplantation Proceedings*, 50(2), 345–349. <https://doi.org/10.1016/j.transproceed.2017.11.063>
- Sadat Hejazi, S., Nikbakht, S., Jouybari, L., Hares Abadi, M., Davoodi, D., Hoseini Azizi, T., and Yahyaei, S. (2017). "Knowledge and attitudes toward brain death and organ donation in Bojnurd". *Electronic Physician*, 9(7), 4746–4752. <https://doi.org/10.19082/4746>

- Sadic, S., Sadic, J., Krupic, R., Fatahi, N., and Krupic, A. (2016). "The Influence of Information and Religion on Organ Donation, as Seen by School Teachers in Bosnia and Herzegovina". *Materia Socio Medica*, 28(5), 373. <https://doi.org/10.5455/msm.2016.28.373-377>
- Sağiroğlu, M., Günay, O., and Balci, E. (2015). "Attitudes of Turkish Medical and Law Students towards the Organ Donation". *International Journal of Organ Transplantation Medicine*, 6(1), 1–7.
- Sağlık Bakanlığı. (2022). *2019-2023 Stratejik Planı (Güncellenmiş Versiyon-2022)*. <https://sgb.saglik.gov.tr/Eklenti/35748/0/tc-saglik-bakanligi-2019-2023-stratejik-planı-guncellenmis-versiyonupdf.pdf>
- Saleem, T., Ishaque, S., Habib, N., Hussain, S. S., Jawed, A., Khan, A. A., Ahmad, M. I., Iftikhar, M. O., Mughal, H. P., and Jehan, I. (2009). "Knowledge, attitudes and practices survey on organ donation among a selected adult population of Pakistan". *BMC Medical Ethics*, 10(1), 5. <https://doi.org/10.1186/1472-6939-10-5>
- Schulz, P. J., Nakamoto, K., Brinberg, D., and Haes, J. (2006). "More than nation and knowledge: Cultural micro-diversity and organ donation in Switzerland". *Patient Education and Counseling*, 64(1–3), 294–302. <https://doi.org/10.1016/j.pec.2006.03.009>
- Karahan Yılmaz, S., & Eskici, G. (2021). "Sağlık Okuryazarlığı Ölçeği-Kısa Form ve Dijital Sağlıklı Diyet Okuryazarlığı Ölçeğinin Türkçe Formunun Geçerlik ve Güvenirlik Çalışması". *İzmir Katip Çelebi Üniversitesi Sağlık Bilimleri Fakültesi Dergisi*, 6(3), 19-25.
- Sıpkın, S. Akan, S., Tuna Malak, A.B. (2010). "Organ Donation and Transplantation in Onsekiz Mart Faculty of Medicine, Fine Arts and Theology : Academic Staffand#039;s Awareness and Opinions". *Journal*, 11(1), 19–25. <https://dergipark.org.tr/en/pub/meandrosmdj/issue/44149/544597>
- Seyahi, N., Ateş, K., and Süleymanlar, G. (2017). "Türkiye’de Renal Replasman Tedavilerinin Güncel Durumu: Türk Nefroloji Derneği Kayıt Sistemi 2015 Yılı Özet Raporu". *Turkish Nephrology Dialysis Transplantation*, 26(2). 154-160. <https://doi.org/10.5262/tndt.2017.1002.04>
- Siminoff, L. A., Burant, C. J., and Ibrahim, S. A. (2006). "Racial disparities in preferences and perceptions regarding organ donation". *Journal of General Internal Medicine*, 21(9), 995–1000. <https://doi.org/10.1111/j.1525-1497.2006.00516.x>
- Sirois, B. C., Sears, S. F., and Marhefka, S. (2005). "Do New Drivers Equal New Donors? An Examination of Factors Influencing Organ Donation Attitudes and Behaviors in Adolescents". *Journal of Behavioral Medicine*, 28(2), 201–212. <https://doi.org/10.1007/s10865-005-3669-y>
- Sørensen, K., Van den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z., and Brand, H. (2012). "Health literacy and public health: A systematic review and integration of definitions and models". *BMC Public Health*, 12(1), 80. <https://doi.org/10.1186/1471-2458-12-80>
- Stadlbauer, V., Steiner, P., Schweiger, M., Sereinigg, M., Tscheliessnigg, K.-H., Freidl, W., and Stiegler, P. (2013). "Knowledge and attitude of ICU nurses, students and patients towards the Austrian organ donation law". *BMC Medical Ethics*, 14(1), 32. <https://doi.org/10.1186/1472-6939-14-32>
- The European Society for Organ Transplantation (ESOT). (2022). *Tackling Inequalities in Organ Transplantation - A Pathway Forward*. https://esot.org/wp-content/uploads/2022/10/EM012518_ESOT_ActionDay_ThinkTankReport_2201005_v0-8_FH.pdf
- Tokalak, I., Kut, A., Moray, G., Emiroglu, R., Erdal, R., Karakayali, H., and Haberal, M. (2006). "Knowledge and attitudes of high school students related to organ donation and transplantation: a cross-sectional survey in Turkey". *Saudi Journal of Kidney Diseases and Transplantation : An Official Publication of the Saudi Center for Organ Transplantation, Saudi Arabia*, 17(4), 491–496.
- United Network for Organ Sharing. (2022). *Data and Trends*. <https://unos.org/data/>
- Uskun, E., and Ozturk, M. (2013). "Attitudes of Islamic religious officials toward organ transplant and donation". *Clinical Transplantation*, 27(1), E37–E41. <https://doi.org/10.1111/ctr.12058>
- Uzuntarla, Y. (2016). "Comparison of Young Age Group’s Thoughts and Knowledge Levels on Organ Donation in Terms of Education Given". *Turkish Nephrology Dialysis Transplantation*, 25(03). 296-301 <https://doi.org/10.5262/tndt.2016.1001.20>

- Vijayalakshmi, P., Sunitha, T. S., Gandhi, S., Thimmaiah, R., and Math, S. B. (2016). "Knowledge, attitude and behaviour of the general population towards organ donation: An Indian perspective". *The National Medical Journal of India*, 29(5), 257–261.
- Wakefield, C., Watts, K., Homewood, J., Meiser, B., and Siminoff, L. (2010). "Attitudes toward organ donation and donor behavior: a review of the international literature". *Progress in Transplantation*, 20(4), 380–391. <https://doi.org/10.7182/prtr.20.4.p54651601pg80183>
- World Health Organization. (2022a). "Health literacy development for the prevention and control of noncommunicable diseases: volume 2: a globally relevant perspective". <https://apps.who.int/iris/handle/10665/364204>
- World Health Organization. (2022b). "Human organ and tissue transplantation". *Seventy-Fifth World Health Assembly*. https://apps.who.int/gb/ebwha/pdf_files/WHA75/A75_41-en.pdf
- Yazar, M. A., and Acikgoz, M. B. (2016). "Knowledge Levels and Attitudes of People Living in the City Centre of Nevşehir on Organ Donation and Transplantation". *Turkish Journal of Anesthesia and Reanimation*, 44(5), 250–257. <https://doi.org/10.5152/TJAR.2016.87094>
- Yılmazel, G., and Çetinkaya, F. (2016). "Sağlık okuryazarlığının toplum sağlığı açısından önem"i. *TAF Preventive Medicine Bulletin*, 15(1), 69–74. <https://www.bibliomed.org/mnsfulltext/1/1-1448870518.pdf?1672171435>
- Zhang, Q.-X., Xie, J.-F., Zhou, J.-D., Xiao, S.-S., Liu, A.-Z., Hu, G.-Q., Chen, Y., and Wang, C.-Y. (2017). "Impact Factors and Attitudes Toward Organ Donation Among Transplantation Patients and Their Caregivers in China". *Transplantation Proceedings*, 49(9), 1975–1981. <https://doi.org/10.1016/j.transproceed.2017.09.022>
- Zhang, X., Zheng, X., Chen, T., Li, Y., Wang, Y., Chen, J., Ye, X., Zhang, X., Wang, Y., Ming, W., Sun, X., Xiang, Z., Wu, Y., and Wu, J. (2022). "Factors affecting acceptance of organ donation in mainland China: A national cross-sectional study". *Journal of Clinical Nursing*. <https://doi.org/10.1111/jocn.16587>

Disclosure Statements (Beyan ve Açıklamalar)

1. The authors of this article confirm that their work complies with the principles of research and publication ethics (Bu çalışmanın yazarları, araştırma ve yayın etiği ilkelerine uyduklarını kabul etmektedirler).
2. No potential conflict of interest was reported by the authors (Yazarlar tarafından herhangi bir çıkar çatışması beyan edilmemiştir).
3. This article was screened for potential plagiarism using a plagiarism screening program (Bu çalışma, intihal tarama programı kullanılarak intihal taramasından geçirilmiştir).