

H. Bilgel<sup>1</sup>, G. Sadikoglu<sup>2</sup>, N. Bilgel<sup>3</sup>

## Knowledge and Attitudes about Organ Donation Among Medical Students

In almost every country, the organ supply for transplantation does not match the increasing demand; health professionals may play an important role in eliminating barriers and increasing organ donation. Therefore, assessing medical students' knowledge and attitudes regarding organ donation is important for the future organ supply.

Some 409 of 508 first- and second-year medical students answered an anonymous, multiple-choice questionnaire about demographic variables, knowledge about transplant issues, and willingness to donate organs. The mean age was  $20.3 \pm 1.8$  years (range: 17 to 29 years); 50.1% were male, 49.9% were female. Some 44.8% of the total respondents reported that they had sufficient knowledge about organ donation, and 40.1% reported knowledge about organ transplantation. The primary source of their knowledge was reported as the media (72.1%). Willingness to donate their own organs was 58.4% and willingness as to their relatives' organs was 39.9%. The acceptance of live organ donation was higher (74.6%) than cadaver donation. Only 1.2% had a organ donation card. Female students were more willing to donate their own and their relatives' organs. Since medical students are prospective leaders of promoting organ donation action, these issues should be taught within the context of social medicine lessons, and desirable behavioral changes should be implemented.

### Key words:

organ donation, medicine, students, attitudes, transplantation

### *Wissen und Einstellungen zur Organspende bei Medizinstudenten*

*In fast allen Ländern kann die Zahl von Organspenden für Transplantation den steigenden Bedarf nicht decken; die im Gesundheitsbereich tätigen Fachkräfte könnten eine wichtige Rolle bei der Überwindung von Barrieren und beim Erhöhen der Organspendebereitschaft spielen. Daher ist es für die Zukunft der Organspende wichtig, das Wissen und die Einstellungen zur Organspende unter den Medizinstudenten zu untersuchen.*

*Etwa 409 der 508 Medizinstudenten im ersten bzw. zweiten Studienjahr beantworteten einen anonymen Multiple-Choice-Fragebogen über demographische Variablen, Wissen in Bezug auf Transplantationsthemen sowie die Bereitschaft zur Organspende. Das mittlere Alter lag bei  $20,3 \pm 1,8$  Jahren (Bereich: 17 bis 29 Jahre); 50,1% waren Männer, 49,9% waren Frauen. Etwa 44,8% der Umfrageteilnehmer gaben an, dass sie über ausreichende Kenntnisse*

<sup>1</sup>Professor of Surgery, Anadolu Foundation Health Care System, Turkey

<sup>2</sup>Assistant Professor of Family Medicine, Uludag University Faculty of Medicine Department of Family Medicine, Bursa, Turkey

<sup>3</sup>Professor of Public Health, Uludag University Faculty of Medicine Department of Family Medicine, Bursa, Turkey

*hinsichtlich der Organspende verfügten, und 40,1% berichteten, dass Sie Kenntnisse über Organspende hätten. Als hauptsächliche Informationsquelle für ihre Kenntnisse wurden die Medien genannt (72,1%). Die Bereitschaft, die eigenen Organe zu spenden, betrug 58,4%, in Bezug auf die Organe ihrer Angehörigen lag die Bereitschaft bei 39,9%. Die Akzeptanz der Lebendorganspende war höher (74,6%) als die der Leichenspende. Lediglich 1,2% besaßen einen Organspendeausweis. Studentinnen zeigten eine größere Bereitschaft, ihre eigenen Organe und die ihrer Angehörigen zu spenden. Nachdem Medizinstudenten vermutlich in herausragender Stellung bei der Förderung der Organspende beteiligt sein werden, sollten diese Themen im Rahmen des sozialmedizinischen Unterrichts vermittelt werden und wünschenswerte Einstellungsänderungen angestoßen werden.*

**Schlüsselwörter:**

*Organspende, Medizin, Studenten, Einstellungen, Transplantation*

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## Introduction

Since the Toronto kidney transplant series of 1951-1952 [1], this life-enhancing and extending procedure has advanced from the experimental stages to that of standard practice. Although scientific progress has made the possibility of successful organ transplantation more common, the shortage of organs for transplant has become more pronounced. As of the end of November 2005, there were 90.346 patients on the UNOS waiting list and 15.849 patients on the Eurotransplant waiting list, of whom 75% were waiting for a kidney [2, 3]. According to the statistics from UNOS and Eurotransplant, 18.995 and 5.060 transplantations, respectively, were performed during 2005 [2, 3]. The statistics showed a discrepancy between the demand and supply of donor organs. The opinions of the medical community and, perhaps most importantly, the attitudes of the public, clearly affect the availability of such organs [4-7]. Any measures to deal with these problems must include educating and attracting the doctors of tomorrow, medical students [8, 9].

In Turkey, many factors influence public attitudes toward organ donation. In addition to socio-demographic characteristics such as age, sex, education, and economic status, religion and superstition play an important role, and the

willingness to donate one's own or a relative's organs have not changed during a period of 12 years [10, 11]. In Turkey, about 80% of all transplants are based on living donors, and cadaver transplants account for about 0.5 pmp/year. The number of patients on the national waiting list for a cadaver organ is 6.563, of whom 90% are waiting for a kidney. Some Turkish regional studies showed the public willingness to donate their own and their relatives' organs as being between 50% and 60% and 30% and 50%, respectively [10-13]. Despite this relatively higher willingness, the percentage of those who had an official organ donation card was between 0.4% and 1.7% [10-13].

These data support the need to identify strategies to eliminate barriers and increase organ donation. To achieve this objective, health professionals may play an important role [5]. Educators should be aware of the need to increase the influence on health professionals in increasing organ donation. To identify educational strategies that give greater emphasis, it is important to assess the degree of knowledge and the attitudes of medical students regarding organ donation. Therefore, we decided to carry out a survey among medical students from the Medical Faculty of Uludag University, located in the most socio-economically developed region of Turkey, with the following objectives:

(1) to describe the students' knowledge of cadaver and live organ donation; (2) to assess the students' attitudes toward donating their own and their relatives' organs; and (3) to verify whether this attitude varied according to gender and age.

## Materials and Methods

Only first- and second-year students were included in the study, because during these years they take a one-hour lecture regarding organ donation within the context of their social medicine course; we wanted to assess their attitudes after this activity. Out of a total of 508 students, 409 participated in our study (participation ratio = 80.5%). Out of the excluded 99 students, 25 were taken into the pilot testing, 25 were not reachable, 20 students did not want to participate, and 29 students gave incomplete data. The original questionnaire consisted of 20 items: 2 items assessing demographics, 6 items measuring knowledge, and 12 items measuring attitude. The order of items was randomized. Some of the items regarding knowledge required 4 responses such as "very sufficient," "sufficient," "not sufficient," and "no knowledge." The questions addressed knowledge of organ donation and transplantation, source of knowledge, definition of brain death, and cadaver organ donors. The items regarding attitude used answers such as "Yes, without any hesitation," "Yes, but need persuasion," "Undecided," and "No, absolutely not." The topics addressed were willingness to donate one's own or a relative's organs, willingness regarding live organ donation, reasons for being against donation, organ donation card holders, experience with NTX, opinions about the reasons for the shortage of cadaver organ transplants, and opinions about the financial incentives regarding organ donation. The questionnaire was pilot-tested on a random sample of 25 first-year medical students regarding wording and completion time. All participants who filled in the questionnaire for the pilot testing were excluded from the study. Anonymous questionnaires were handed out to students during class lectures. To keep compliance high, the time to fill out the questionnaire was not supposed to exceed 10 minutes. We used the SPSS 9.0 package program (SPSS, Inc., Chicago,

IL) for data analysis. The descriptive data are presented with mean ± SD. The differences among groups were assessed using chi-square tests. All statistical tests were two sided, and an α level of 0.05 was considered to indicate statistical significance. We performed logistic regression to explore the association between covariates (age, gender, knowledge of donation, knowledge of transplantation) and the likelihood of the respondent's willingness to donate. In the logistic regression modeling, respondents who answered "Undecided" regarding their willingness to donate were excluded from the analysis. Respondents who answered "Yes, without any hesitation" and "Yes, but need persuasion" were accepted as "Yes," and respondents who answered "No, absolutely not" were accepted as "No." We calculated adjusted odds ratios (OR) and their corresponding 95% confidence intervals (CI).

### Results

The average age of the students was 20.3 ± 1.8 years (range, 17-29); the sample included 204 men (49.9%) and 205 women (50.1%). Regarding knowledge of who could be a donor, 1.0% answered all of the deceased, 5.4% chose only people who were brain dead, 16.4% chose all of the deceased who had given consent, and 68.9% answered people who were brain dead and had given consent. About 8.3% of the students did not know this. Regarding their own reports, 10.5% of students could describe the term "brain dead" in full, and 76.0% partially. Some 12.2% mentioned that they could not describe the term, and 1.2% did not know this term. According to their own responses, 2.7% of the students found their knowledge of organ donation very sufficient, 42.1% found their knowledge sufficient, 48.4% found their knowledge not sufficient, and 6.8% responded that they had no knowledge. The percentages for knowledge of organ transplant were 2.0%, 38.1%, 54.0%, and 6.0%, respectively. The primary source of their knowledge was the media (72.1%), and only 22.7% of students reported that they had gotten this knowledge from their medical education. As for willingness to donate organs, 17.1% of the students reported that they would donate their own organs, and

12.5% would give consent for their relatives' organs without any hesitation. Table 1 shows the students' willingness to donate their organs and their reasons for not being willing to donate. We also assessed the students' attitudes regarding live donation and found the acceptance higher than for cadaver donation. Our question was, "If one of your relatives needed kidney transplantation, would you donate your kidney?" Table 2 shows the attitudes of the students toward live organ donation and their reasons for not being willing to donate. We performed a logistic regression modeling to assess the impact of age,

gender, and knowledge of donation and transplants on the student's willingness to donate his or her own organs or relatives' organs. The students' age and knowledge about donation and transplants were not significantly associated with willingness to donate. Male students were 1.9 and 2.7 times more likely to report not to donate their own and their relatives' organs, respectively, compared to female students. There was not a significant difference between male and female students regarding willingness for a live organ donation (for example, the donation of a kidney to a relative). Table 3 shows the summary of this modeling.

Tab. 1: Willingness to donate organs and reasons for not donating

WILLINGNESS	Own Organs		Relatives' Organs	
	N	%	N	%
Yes, without any hesitation	70	17.1	51	12.5
Yes, but needed persuasion	169	41.3	112	27.4
Do not know	77	18.8	130	31.8
No, absolutely not	93	22.7	116	28.3
REASONS FOR NOT DONATING				
Organs could be wasted	9	9.7	10	8.6
Don't want to be cut into pieces	26	27.9	30	25.9
Religious beliefs	8	8.6	14	12.1
Fear of organ harvesting before death	14	15.1	4	3.4
Other reasons *	19	20.4	36	31.0
No reason	17	18.3	22	19.0

**Other reasons** \* don't want to be a hero, don't care about others, others should not be alive after their deaths, his/her parents don't allow him/her.

Tab. 2: Willingness to donate live organs and reasons for not donating

WILLINGNESS	N	%
Yes without any hesitation	135	33.0
Yes, but needed persuasion	169	41.3
Do not know	34	8.3
No, absolutely not	71	17.4
REASONS FOR NOT DONATING		
Organs could be wasted	4	11.8
Threat to own health	14	41.2
Fear	6	17.6
No reason	4	11.8
Other reasons	6	17.6

Tab. 3: Logistic regression modeling for willingness to donate

Variables	Own Organs				Relatives' Organs				Live Donation			
	P	Odds Ratio	95% CI Lower	Upper	P	Odds Ratio	95% CI Lower	Upper	P	Odds Ratio	95% CI Lower	Upper
Age	.5532	1.0414	.9108	1.1907	.1739	.9027	.7789	1.0462	.3216	1.1219	.8936	1.4086
Gender (male)	.0112	1.9085	1.1582	3.1449	.0001	2.7356	1.6288	4.5947	.9427	1.0269	.4982	2.1167
Have knowledge about donation	.0949	.6056	.3362	1.0909	.8615	.9483	.5225	1.7213	.4451	1.3985	.5913	3.3075
Have knowledge about transplants	.4836	1.2382	.6810	2.2510	.1365	.6265	.3385	1.1594	.7175	1.1782	.4847	2.8640
Hosmer Lemeshow goodness of fit test	$\chi^2 = 9.4993$ ; df= 8 ; p= . 3019				$\chi^2 = 10.9823$ ; df= 8 ; p= . 2027				$\chi^2 = 8.7177$ ; df= 8 ; p= . 3672			

Tab. 4: Percent distribution of students regarding gender and willingness to donate

	Willingness to donate own organs				Willingness to donate relatives' organs				Willingness to donate live organs			
	Yes, definitely	Yes, but I need to be persuaded	Don't know	No, absolutely not	Yes, definitely	Yes, but I need to be persuaded	Don't know	No, absolutely not	Yes, definitely	Yes, but I need to be persuaded	Don't know	No, absolutely not
Male n=204	13.7	36.3	24.0	26.0	12.4	22.8	28.7	36.1	37.4	39.4	8.1	15.2
Female N=205	20.7	46.8	13.8	18.7	12.7	32.4	35.3	19.6	30.2	45.0	8.9	15.8
Total n=409	17.2	41.5	18.9	22.4	12.6	27.6	32.0	27.8	33.8	42.3	8.5	15.5
	$\chi^2 = 13.607$ df= 3 p= 0.003				$\chi^2 = 14.726$ df= 3 p= 0.002				$\chi^2 = 2.394$ df= 3 p= .495			

The percentage distributions of male and female students regarding their answers about their willingness to donate are shown in Table 4.

Only 1.2% of the students had an organ donation card, and 3.4% of the students had at least one family member with an organ donation card. Some 2.2% of the students had a family member who had had transplant surgery.

The opinions of the students regarding the small number of cadaver organ transplants in Turkey and their answers to the question, "If some financial advantages could be offered to the potential cadaver donors or their families, would this be helpful in raising the number of cadaver organ transplantations?" are shown in Table 5. Most of the students thought that financial advantages could raise the number of cadaver organ donations and transplants. On the other hand, approximately

64.1% mentioned that they were strictly against financial incentives.

### Discussion

Our study suggests that the majority of our medical students do not have positive attitudes toward organ donation and transplants; more information and education are needed on this particular issue. About 17.1% of them would donate their organs without any hesitation, and a further 41.3% had some doubts and needed persuasion. For donating a relative's organs, these percentages were 12.5% and 27.4%, respectively. Our previous studies among the public showed that 50.5% to 57.0% of the respondents would donate their own organs and 53.6% to 52.6% would donate their relatives' organs [10, 11]. These percentages suggest that among med-

ical students, the willingness to donate does not differ from that of the public. A study among university students in Turkey showed that 49.5% expressed a willingness to donate their organs after death [14]. In the same study, approximately 41.5% of the students said they would not approve the donation from a brain-dead relative. Another Turkish study among interns pointed out that 53.5% had not donated their organs, and only 0.7% had an official organ donation card [15]. Medical students' attitudes toward organ donation have been assessed in many other studies. A study in Italy revealed that 91% of first-year medical students had a positive attitude toward organ donation, and 87% were prepared to donate their organs after death [16]. Another study from Switzerland found the interest in organ donation and transplants among first-year medical students already strong; how-

Tab. 5: Students' opinions about the reasons for rare cadaver organ transplants and if financial advantages could raise the number

	N	%
<b>REASONS FOR RARE CADAVER ORGAN TRANSPLANTATION</b>		
Insufficient cadaver organ donation	216	52.8
Inadequate number of trained health personnel	27	6.6
Inadequate number of equipped hospitals	36	8.8
Combination of above mentioned reasons	39	11.7
Other reasons	38	9.3
Don't know	44	10.8
No answer	9	2.2
<b>Could financial advantages raise the number of cadaver organ transplants?</b>		
Yes, absolutely	130	31.8
Yes, I think so	196	47.9
No, not very much	67	16.4
No, absolutely not	10	2.4
No answer	6	1.5

ever, differences with the lay public were not detectable [9]. Among German first- and second-year medical students, positive attitudes toward organ donation were found, as 72.1% and 56.4%, respectively, gave correct answers to the questions for the assessment of their knowledge level of donation and transplants [17]. A study from Brazil showed that 69.2% of medical students were willing to donate organs and their willingness increased as their number of years in medical school increased [18]. Another study from England found that doubts still exist within the medical student group [29].

We found that students had more positive attitudes toward live organ donation, and 33.8% responded that they would donate their organs to their relatives in need of live organ transplants. Female students had a more positive attitude toward cadaver organ donation than males. Burra et al. found the same point in their study [16]. We could not find this difference in willingness to donate live organs. The mostly frequently seen reasons for not donating their own or their relatives' organs after death were "concern about disfigurement," "fear of harvesting before death," "inappropriate use of organs," and "religi-

ous beliefs." With regard to live organ donation, the mostly often seen reason was "her or his own health." Other Turkish studies have pointed out reasons for not making cadaver donation as the following: no clear understanding of the concept of brain death, concern about disfigurement, inappropriate use of organs, fear of procurement, lack of information about organ donation, and religious beliefs [14, 15]. A study of first-year Swiss medical students revealed that the students mainly questioned whether the donor was truly dead when the donation took place, if illegal transplantation could be eliminated, if transplantation was truly necessary, and voiced some ethical and religious doubts [9].

Among our study group, only 1.2% had an official organ donation card; this percentage is very small when we compared with other countries: 63% in Italy [16], 58.3% in Germany [17], and 43% in England [19].

With regard to our study group, financial advantages could raise the number of cadaver organ donations and transplants in Turkey, but on the other hand, 64.1% of the students pointed out that they were strictly against financial incentives for cadaver organ donations. A

study among German clinic and primary care physicians showed that if a system of financial incentives for organ donation is installed, the readiness of physicians as cooperating partners in the process of cadaver organ recruitment would diminish, and consequently, the total number of organs for transplants would decrease [7].

Physicians are essential partners for transplant centers in cadaver organ donation. It is assumed that their attitudes toward donating their own organs will influence their readiness to participate in the cooperation process. In our study, we could not find differences from the lay public at this stage of medical training. Adequate information could influence future physicians in their mediator role. The results of this research indicate the need for more intensive interdisciplinary discussion and information to prepare the next generation of health-care professionals about transplants and organ donation.

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Gisbert Roloff & Barbara Zoeke (Hrsg.)

## 10 x Gerechtigkeit Unterwegs mit Sisyphos



Who needs me? Wer braucht mich? lautet nach Sennett eine der wichtigsten Fragen westlicher Gesellschaften. Und in der Tat blieben die Verknappung von Arbeit und die Zunahme prekärer Beschäftigungsverhältnisse nicht ohne Folgen für die Organisation des privaten wie des politischen Lebens: 6.5 Millionen Bundesbürger, die ohne Hoffnung auf auskömmliche Arbeit in wirtschaftlicher, sozialer und kultureller Deprivation leben, 2.5 Millionen Heranwachsende auf Sozialhilfeniveau, Hauptschüler in vererbter Bildungsarmut, Migrantenkinder ohne Zukunft - die Liste ließe sich verlängern.

Insofern kann es nicht verwundern, dass das Thema Gerechtigkeit wieder Konjunktur hat. Im vorliegenden Band werden Möglichkeiten untersucht, wie Human- und Sozialwissenschaftler bei ihren Servicefunktionen in Tätigkeitsfeldern entlang der Bruchlinien unserer Gesellschaft Gerechtigkeitsgesichtspunkte handlungsleitend berücksichtigen können, auch wenn jeder einzelne Arbeitstag nichts anderes bedeutet, als mit Sisyphos immer und immer wieder den Stein zu wälzen. Dabei reicht das Themenspektrum von Arbeitslosigkeit, Obdachlosigkeit, chronischer Krankheit, Migration bis hin zu medizinischer Versorgung, Erziehung, Bildung und Rechtsprechung.

Das Buch wendet sich an Human- und Sozialwissenschaftler - an Studenten ebenso wie an Professionals - aus den Bereichen der Medizin, der Pädagogik, der Psychologie, Soziologie und Sozialpädagogik.

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Internet: www.pabst-publishers.de

Halil Bilgel, M.D.  
Professor of Surgery  
Anadolu Foundation Health Care  
System  
Anadolu Caddesi No. 1  
Cayirova Mevkii Gebze  
41400 Kocaeli  
Turkey  
E-Mail:  
halil.bilgel@anadolusaglik.org