Brain Death and Organ Donation: Knowledge, Awareness, and Attitudes of Medical, Law, Divinity, Nursing, and Communication Students

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ABSTRACT

Background. Throughout the world, there is a shortage of suitable organs for organ transplantation. The aim of this study was to assess the level of knowledge, awareness, and attitudes of medical, law, divinity, nursing, and communication students, who will be involved in this issue in the future, regarding brain death and organ donation.

Methods. Data were collected with the use of a 30-item questionnaire.

Results. Of the 341 participants, 228 (66.8%) were female and overall average age was 21.6 ± 2.8 years. Nearly one-half of them (51.3%), especially nursing and medical students, wanted to be a donor, but only 2% had an organ donation card; 78.3% emphasized that family must have the right to make the decision for organ donation, and the vast majority of the participants considered that the organs could not be taken without any permission. Kidney and heart were the most commonly identified transplantable organs; the less frequently known organ was intestine. Only 71 participants, most of them medical, divinity, and law students, correctly answered all questions about brain death; 68.6% stated that organ donation is allowed by religion, and 5% expressed that it is religiously forbidden; 37.3% did not have confidence in health care policy. Law students were more confident, nursing students less confident.

Conclusions. Better understanding of organ donation and concepts by the doctors, nurses, legislators, religious officials, and mass communications professionals who will give direction to society's behaviors and beliefs would help to spread positive attitudes toward organ donation and transplantation in the public.

BECAUSE of advances in transplant immunology, organ preservation, and surgical techniques, organ and tissue transplantation has become an accepted medical treatment for many patients with organ failure. Despite significant medical improvement and increased awareness of organ donation, the gap between the number of patients waiting for transplantation and the number of donors widens day by day all over the world [1]. In the United States, according to the Organ Procurement and Transplantation Network (OPTN), there are >120,000 patients on the national waiting lists. Of those, 79,000 people are active waiting list candidates. Every 10 minutes, a new patient is added to the national transplant waiting list, and on average 21 people die each day while waiting for a transplant [2]. In Turkey, according to the Ministry of Health records, 28,200 patients were waiting for organ donation in 2014 and ~2,000 patients die per year while awaiting transplantation [3].

Today, one of the biggest problem facing transplantation is a shortage of suitable organs available for transplant [4]. Organ and tissue transplantation might be increased by optimizing the current donor pool, increasing the number of living-donor transplantations, using deceased donors without cardiac activity or anencephalic donors, and performing xenotransplants. The largest potential increase in the

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number of available organs would result from improving donation rates from suitable deceased donors [5]. The predicted annual number of brain-dead potential organ donors is 10,500–13,800 in the United State [6]. Currently, however, only about one-half of them are actually used. The most important reason for the lack of deceased-donor organ retrieval is the inability to obtain consent from the closest relatives of the potential deceased donor. In Turkey, from 2011 to 2014, the family consent rate for donation after brain death was only 23% and below the worldwide average [3].

In June 2010, the European Commission issued a public opinion survey regarding organ donation and transplantation at the European level. According to the survey, almost one-third of Europeans (31%) who are unwilling to donate either their own organs or those of a deceased close family member are unable to give a reason for their reluctance. Of the remainder, one-fourth (25%) are fearful of manipulation of the human body, and one-fifth (21%) cite distrust of the system as a barrier to donation. Fewer than 1 in 10 Europeans (7%) do not support organ donation for religious reasons. Turkey stands out as a place where respondents are most likely to be reluctant to donate organs for religious reasons (29%) [7].

Organ donation is the first and most important step in transplantation, and many factors influence public attitudes toward organ donation. In addition to sociodemographic characteristics such as age, sex, education, and economic status, secular, religious, and cultural factors play an important role for the willingness to donate one's own or family members' organs [8,9]. It is thought that with legislative initiatives, policy changes, and educational campaigns, organ donation rates can be increased [10]. Therefore, not only health care professionals, but also legislators and officials of religion, have an important responsibility to members of the public to raise awareness of organ and tissue donation.

The aim of the present study was to assess the level of knowledge, awareness, and attitudes of medical, law, divinity, nursing, and communication students, who will serve in this capacity in the future, regarding brain death and organ donation.

MATERIALS AND METHODS

This cross-sectional study was performed from February to May 2013 by means of face-to-face interview. Participants included 341 students from different faculties of Ankara University in Turkey. After verbal informed consents were obtained, data were collected with the use of an anonymous 30-item questionnaire that included sociodemographic characteristics, such as age, sex, and education, and knowledge, awareness, and attitudes about brain death and organ donation. Statistical analysis was performed with the use of chi-square and/or Fisher exact chi-square test for categoric (qualitative) variables and Mann-Whitney U and/or Kruskal-Wallis test for continuous (quantitative) variables. All statistical data were analyzed with the use of Statistical Package for the Social Sciences 20.0 (SPSS) software. The descriptive data were presented as mean ± SD, and the statistical significance value was set at $P < .05$.

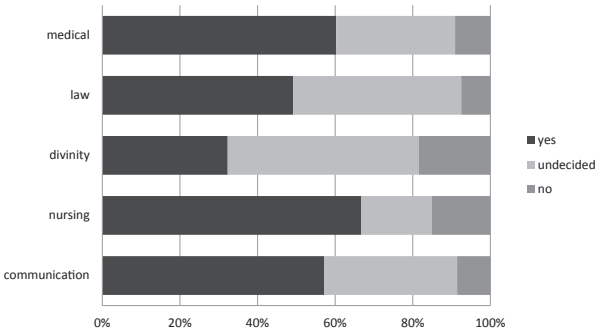


Fig 1. Willingness to donate own organs after death.

RESULTS

A total of 341 students were included in the study. The participants were from different faculties of Ankara University: 88 medical, 120 law, 65 divinity, 33 nursing, and 35 communication students. The average age was 21.6 ± 2.8 years, and 66.8% of the participants were female.

As for willingness to donate organs, 51.3% of the participants reported that they would donate their own organs after death. Nursing and medical students were more likely to answer positively (66.7% and 60.2%) compared with divinity students (32.3%; Fig 1). Despite this relatively positive attitude toward own organ donation, the participants had an unfavorable attitude toward donation of organs from a family member. A significant relationship was found between the trend of donating family members' organs and subgroups: 52.3% of the divinity students were not willing to donate family members' organs after death ($P = .001$). In addition, most of the participants were familiar with the concept of the donor card, and there was no difference between subgroups. However, only 2% of all students and 4% of who expressed willingness to donate their organs had an organ donation card.

Regarding consent, 267 participants (78.3%) thought that the family must have the right to make the decision about organ donation after death, 9.4% felt that no one has the right to make this decision, and 12.3% were indecisive on this issue. The vast majority of the participants thought that even if organ transplantation was the only hope for some patients with organ failure to continue living, the organs could not be taken without permission ($n = 240$; 70.4%). Medical and law students' responses were relatively more positive ($P > .05$).

Regarding specific organ transplantation, kidney (95.3%), heart (85.3%), and liver (77.7%) were the most commonly identified organs; less frequently known transplantable organs were pancreas (25.8%) and intestine (24.9%; Fig 2). Only 45 participants (13.2%) knew that all organs could be transplanted. Although not statistically significant, medical and nursing students were more aware of transplantable organs compared with law, divinity, and communication students.

Regarding knowledge, 2 questions consisting of 10 items were asked to the participants about brain death, and the

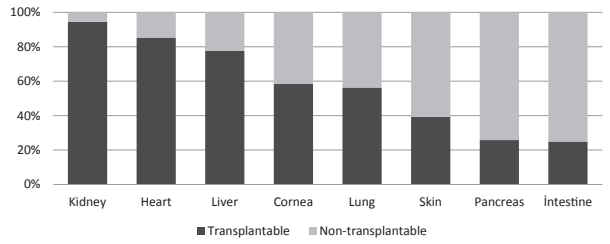


Fig 2. Knowledge of transplantable organs/tissues.

participants' yes/no responses were recorded. Only 3 of all of the defined sentences were correctly answered by all participants, and 71 participants (20.8%) correctly answered all questions. To the question, "Do a brain-dead patient's organs, including the heart, deteriorate in function over a short period despite an intensive care process?," only 101 participants (29.6%), most of them medical, divinity, and law students, gave the correct answer. All questions about organ transplantation and brain death are presented in Table 1.

A majority of the students (83.6%) were either not sure or did not know the number of the physicians required to determine brain death: 5 students thought that ≥2, 17 said that ≥3 physicians should make the declaration of brain death, and 34 (10%) stated that it required the opinion of 4 physicians. Furthermore, 108 participants (31.6%) thought that if they donated their own organs, they might be sold for money instead of given to those in need.

Overall, 68.6% of the students stated that organ donation is allowed by religion, 5% expressed that it is religiously forbidden, and 26.4% of them said that they had no idea about the issue. Most of the students knew that organ donation is supported by all major religions. Communication and law students were more likely to answer positively, compared with divinity students (Fig 3). Nevertheless, a significant difference was not found between divinity students and the others ($P = .105$).

Regarding confidence in the health care system and doctors, 115 participants (33.7%) were trusting of the health care policy on organ transplantation, and 127 (37.3%) were not. Whereas law students were more confident, nursing students were less confident. In contrast, most of the participants ($n = 189$; 55.4%) were trusting of doctors.

When we asked, "What can be done and which methods can be used to increase organ donation in our country?," 83.9% of the participants said that it would be possible with public education and improving organ donation awareness campaign, 81.8% stated that mass media campaigns could be designed to promote organ donation, and 22.1% expressed that financial support could be provided to potential deceased donors' closest relatives.

DISCUSSION

Despite all dramatic advances in organ and tissue transplantation over the past decades, there are many patients waiting for an organ to become available, so the gap between available organs and patients awaiting transplantation is widening [1]. In Turkey, 28,200 patients were waiting for organ donation as of November 2014, and 1,989 patients died last year while awaiting transplantation [3]. Also, the number of deceased donors per million population (dpmp) is among the lowest in the world (4.1); Spain reaches 34.2 dpmp and the United States 26.2 dpmp [11].

Previous studies have suggested that various issues affect the decision of people to donate organs, including age, sex, educational level, socioeconomic status, and cultural factors. Also, medical mistrust, ethnic differences, and religious taboos seem to influence behavior toward organ donation [10–12]. The present study examined the knowledge, awareness, and attitudes regarding brain death and organ transplantation of 341 students (medical, law, divinity, nursing, and communication) who will help to shape these attitudes in the future.

According to the Eurobarometer survey (2010) concerning organ donation and transplantation, 55% of European citizens are willing to donate their own organs after death and 53% are willing to consent to donate organs of deceased close family members [7]. These ratios were found to be 51.3% and

Table 1. Organ Transplantation and Brain Death Knowledge

	Correct Response	n (%)
In which situations can organs be transplanted?		
If an irreversible cardiac arrest occurs	No	202 (59.2%)
If a brain death occurs in patients with a beating heart under respiratory support	Yes	238 (69.8%)
A condition characterized by self-breathing, unresponsiveness to sense and touch, and inability to eat, drink, and speak	No	334 (97.1%)
Hypotension leading to end-organ damage	No	339 (99.4%)
No idea	–	40 (11.7%)
Which is true for brain-death patients?		
A patient with a working heart who is determined to be brain-dead can be pronounced legally dead without clinical death occurring.	Yes	148 (43.4%)
A patient who is brain-dead can breathe without support of a breathing machine.	No	319 (93.5%)
In a patient who is brain-dead, the heart or the other organs can be functional for years.	No	218 (63.9%)
A brain-dead patient's organs, including the heart, deteriorate in function over a short period despite an intensive care process.	Yes	101 (29.6%)
A patient who is brain-dead can wake up (recover).	No	317 (92.9%)

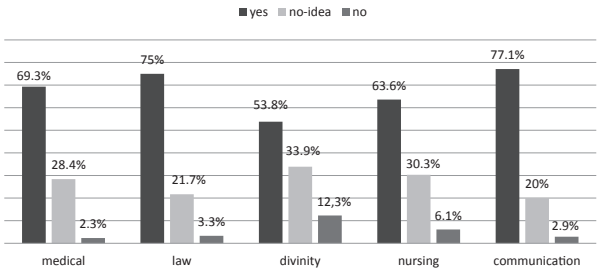


Fig 3. Is organ donation allowed by religion?

42.8%, respectively, in our study. Nursing and medical students were more likely to be willing to donate their own and family members' organs compared with divinity students. Another study among university students in Turkey showed that 49.5% expressed a willingness to donate their organs after death. In that study, only 7.6% of students said that they carried legal donor cards [13]. Among our study group, only 2% had an organ donation card.

Family members play a conspicuous role in donation decisions at the time of death. Rodrigue et al showed that in 16.1% of cases in which it was known that the deceased preferred donation, the closest relatives did not consent to donation, and in 14.7% of the cases in which it was known that the deceased did not want to be a donor the closest relatives consented to donation [14]. In the present study, 78.3% of the participants emphasized that the family must have the right to make decision for organ donation after death and more than one-half felt that the organs could not be taken without any permission. Interestingly, medical and law students thought more positively that organs could be taken without consent of next-of-kin in case of necessity.

A lack of understanding of brain death was demonstrated among the participants, especially medical and law students. Fewer than one-third of the participants correctly knew the definition of brain death in our study. The participants were particularly weak also in knowledge related to organ transplantation. A small proportion (13.2%) of the students knew that all referred organs in the questionnaire could be transplanted. Kidney (95.3%), heart (85.3%), and liver (77.7%) were the type of transplanted organ cited by the largest proportion of them. Less frequently known organs were pancreas (25.8%) and intestine (24.9%). The findings of previous studies [15] on this issue and the present study are similar but we think that our rates are too low. On the other hand, the vast majority of the participants (83.6%) were either not sure or did not know the number of the physicians required to determine brain death, and some of them thought that if they donated their own organs, they might be sold for money instead of given to those in need—despite selling and trading organs being legally forbidden worldwide, including in Turkey. The misconceptions, misunderstandings, and misinformation about this concept likely affect donation consent rates adversely. Thus, not only health care providers, including doctors and nurses, but also lawmakers, have responsibilities for understanding and managing brain death. These professionals must also be equipped with a thorough understanding of end-of-life care decisions, brain death, and procedures of organ donation. Therefore, curriculum needs to be more effective in defining and teaching how to manage these conditions.

No religion formally forbids donation or receipt of organs or is against transplantation from living or deceased donors [16]. In the present study, most of the students knew that organ donation is supported by all major religions: 68.6% of the participants thought that organ donation is appropriate according to their religion, and only 5% of the study group stated that it is religiously forbidden. Communication and law students were more likely to answer positively compared with divinity students. In a study of officials of religion, 9.8% said that their religion did not allow donation [17]. In another study in Pakistan, 31.5% stated that organ donation is not allowed by religions [18]. It is a fact that consultation with a religious leader or officials of religion regarding organ donation is an important source of information for the community, so by providing better information about this issue, the current organ donation rates can be improved.

In the present study, 37.3% of the participants did not have confidence in the health care system, whereas 115 participants (33.7%) were trusting of health care policy on organ transplantation. Law students were more confident and nursing students less confident. In contrast, most of the participants (n = 189; 55.4%) were trusting of doctors. Mistrust in the health care system may be a barrier to organ donation and may explain the unwillingness to donate own organs posthumously. Therefore, awareness of the potential gains and benefits of transplantation can be increased by informed education and better availability of information for members of the public.

There are still limited knowledge about and passive attitudes to brain death, organ donation, and transplantation. We think that better understanding of these concepts by the doctors, nurses, legislators, religious officials, and mass communications professionals, who give directions to society's behaviors and beliefs, would help to spread positive attitudes toward organ donation and transplantation in the public. The results of the present study support greater emphasis in medical, law, divinity, nursing, and communication students to improve the knowledge of future professionals about organ donation and transplantation issues.

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