

Original Article

Scores of Awareness and Altruism in Organ Transplantation among Saudi Health Colleges Students-Impact of Gender, Year of Study, and Field of Specialization

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ABSTRACT. This study aimed to evaluate the awareness of organ transplantation and willingness to donate among Saudi Health Colleges students and the impact of gender, year of study, and field of specialization on this. This is a cross-sectional survey-based study. The survey was distributed to all the students attending the annual national conference of Saudi Health Colleges students held in 2018. The survey had two parts. The first part collected the information about gender, university, college of specialization, and year of study. The second part asked 10 questions, seven of which were about the types, causes, treatment of organ failure (awareness questions), and three of which were about their willingness to donate (altruism questions). The participants had three response options: “Yes”, “No” and “I don’t know. Descriptive statistics (mean, standard) and the frequencies were generated for each parameter. Categorical data were compared using Chi-square and continuous data using an independent *t*-test or paired *t*-test. A total of 821 respondents completed the questionnaire; 58.1% were female, 41.3% studying medicine, 25.1% applied medical sciences, 12.7% pharmacy, 9.6% dentistry, and 4.5% nursing 4.5%. The overall awareness of the correct responses constituted 60.4% while 12.3 % gave incorrect responses and 27.3% did not know what the answers were. The highest awareness score was about the concept of brain death (86.4%). The overall awareness score was significantly higher

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than the altruism score (62.7% and 45.7% respectively ($P = 0.0001$)). Female respondents proved more aware than the male respondents in all the questions did. However, the differences reached the significant levels in four of the ten questions. If we split and summate the responses into “awareness” questions and

“altruism” questions, we find that, although female students score higher in both categories, this reaches the significant level for the altruism score (59.90% vs. 45.60% ($P = 0.0001$)). Final year students were significantly more aware than the freshmen in seven of the 10 questions posed with the biggest gap seen in the awareness that Islamic Sharia permits donating organs after death (82.3% vs. 49.6% ($P = 0.0001$)). When we compare of responses by the college, we find that significant differences between the College of Medicine students and applied medical sciences in two questions with the former having a higher awareness score. The overall awareness score was significantly higher than the altruism score (62.7% and 45.7% respectively). Female students have higher altruistic score than male students. The scores are significantly higher in the senior students than in the junior ones.

Introduction

A major hurdle against organ transplantation is the immense shortage of organs.^{1,2} This leads to the thousands of patients dying on while waiting for a suitable organ.¹⁻³ Organ transplantation is the ultimate example of a situation where the contribution by society is simply paramount in its deliverance as organs can only come from the members of society.

It has been shown that an important factor associated with increased pool of donors is the awareness about organ transplantation and donation.^{4,5} In a study from Saudi Arabia comparing families who consented donate their relatives' kidneys, after their death, to families that did not, it was found that the consenters were more educated, had positive feelings about donation and had keener knowledge of organ donation, of religious standpoints, of donation and the results of transplantation.⁶

In a study form in the UK, it was found that factors that influence the family decisions including knowledge of the deceased's wishes (e.g. carrying a donor card) and understanding of brain stem death.⁷

In another study from Saudi Arabia, rural areas dwellers were less likely than the urban

dwellers to be aware of organ transplantation, to be willing to donate their organs and to be aware of the brain death concept.⁸ This finding was not confirmed by another study.⁹

In study among Riyadh residents, 41% were not willing to donate and only 30.1% were aware of Sharia view about organ donation.⁹ Higher awareness score was seen in women, older, more educated, and in higher income group. Barriers to donating were found to be fear of disfigurement, lack of knowledge about the concept of brain death (24%), and about Islamic permissibility of donation.⁹ Similarly, in a study from Qatar, the most important barrier to donation was lack of awareness.¹⁰

Willingness to donate one's organs after death was reported to be 45.7% from Greece, 80% from USA, and 89% from India.¹¹⁻¹⁴

In a meta-synthesis about the general public view about organ donation after death, it was found that the two most important barriers to donation were the need to maintain bodily integrity and the perceived conflict of interest by doctors in wanting organ donation to proceed.¹⁵

As can be seen, lack of awareness has been found to be a major barrier against organ donation in many studied. Among the health science students from India, Medical students had higher knowledge score than dental and nursing students. Two-thirds of the of medical students pledged their organs.¹⁶

This study look evaluates the degree of awareness and altruism among Saudi Health Care Colleges.

Methods

This is a cross-sectional survey-based study. The survey was distributed to all the students attending the annual national conference of Saudi Health Colleges students held in 2018.

The survey had two parts: the first part collected information about gender, university, college of specialization, and year of study. The second part asked 10 questions, seven of which were about on the types, causes, treatment of organ failure (awareness questions) and thereof which were about their willingness

to donate (altruism King questions). The participants had three response options: “yes,” “no” and “I don’t know.”

Descriptive statistics (mean, standard) and frequencies were generated for each parameter. Categorical data was compared using Chi-Square and continuous data using independent *t*-test or paired *t*-test.

Results

Of the total respondents ($n = 821$), 79.8% were from King Saud Bin Abdulaziz University for Health Sciences (KSAU-HS) and 21.2 % from other Saudi Universities; 58.1% were female and 41.9 % were male (Table 1). The respondents were students in the following colleges: medicine (41.3%), dentistry (9.6%), pharmacy (12.7%), nursing (4.5%), applied medical sciences (25.1%), public health (1.7%), and college of science and health professions (5.1%) (Table 1).

Overall, those aware of the correct responses constituted 60.4% of the sample, those with incorrect responses 12.3% and those who did not know the answers constituted 27.3% of the sample (Table 2).

The highest awareness score was seen in the response to the question “are you aware of the concept of brain death?” (86.4%) and the lowest was seen in the response to the question “will you agree to donate your kidney to a stranger with kidney failure” (33.94%) (Table 3).

When we compared the responses of the students of KSAU-HS and the other universities, we found no differences except in one item namely, “I will agree to donate my kidney to a stranger with kidney failure” 31.6% and 42.8%, respectively ($P = 0.024$) (Table 4).

When we compare the responses of the freshmen to the final year students, we find significantly increasing awareness in seven of the 10 questions posed (Table 5), namely “heart transplantations are done in KSA” ($P = 0.0001$), “diabetes is the most common cause of kidney failure in KSA” ($P = 0.0001$), “many patients die because of shortage in organ donation” ($P = 0.01$), “are you aware of the concept of brain death?” ($P = 0.0001$), “Islamic Sharia permits donating kidney, heart and liver after death?” ($P = 0.0001$), “I will agree to donate my kidney to a relative with kidney failure” ($P = 0.009$), “I will agree to donate my organs after death” ($P = 0.0013$).

Table 1. University, college and gender of the respondents.

College and gender	<i>n</i> (%)
University	
King Saud Bin Abdulaziz University for Health Sciences	655 (79.8)
Other Universities	166 (20.2)
Gender	
Male	344 (41.9)
Female	477 (58.1)
College	
Medicine	339 (41.3)
Dentistry	79 (9.6)
Pharmacy	104 (12.7)
Nursing	37 (4.5)
Applied Medical Sciences	206 (25.1)
Public Health	14 (1.7)
College of Science and Health Professions	42 (5.1)

Table 2. Overall awareness scores.

Correctness of responses	Awareness score (%)
Correct responses	60.40%
Incorrect responses	12.30%
Do not know	27.30%

Table 3. Awareness scores for each of the 10 questions.

Questions	Yes	No	I don't know
Organ failure such as kidney, liver, and heart failure is common in KSA	78.2	5.8	16.0
Heart transplantations are done in KSA	54.8	8.2	37.0
Diabetes is the most common cause of kidney failure in KSA	63.2	9.7	27.0
Many patients die because of shortage in organ donation	54.7	9.7	35.6
Are you aware of the concept of brain death?	86.4	8.4	5.2
Face transplantation has been performed?	35.0	21.3	43.7
Islamic Sharia permits kidney, heart, and liver donation after death	67.0	11.6	21.4
I will agree to donate my kidney to a relative with kidney failure	68.7	8.2	23.1
I will agree to donate my kidney to a stranger with kidney failure	33.9	26.9	39.2
I will agree to donate my organs after death	61.6	13.4	25.0

KSA: Kingdom of Saudi Arabia.

Table 4. Comparing rate of awareness of KSAU-HS students to students from other universities (%).

Questions	KSAU-HS	Other Universities	P
Organ failure, such as kidney, liver and heart failure, is common in KSA	77.7%	80.1%	0.7
Heart transplantations are done in KSA	56.5%	48.2%	0.08
Diabetes is the most common cause of kidney failure in KSA	63.8%	60.8%	0.23
Many patients die because of shortage in organ donation	54.8%	54.2%	0.86
Are you aware of the concept of brain death?	87.3%	82.5%	0.1
Face transplantation has been performed.	35.7%	31.9%	0.65
Islamic Sharia permits donating kidney, heart, and live after death.	67.5%	65.6%	0.6
I will agree to donate my kidney to a relative with kidney failure	67.8%	72.3%	0.2
I will agree to donate my kidney to a stranger with kidney failure	31.6%	42.8%	0.024
I will agree to donate my organs after death	61.2%	63.2%	0.8

KSAU-HS: King Saud Bin Abdulaziz University for Health Sciences, KSA: Kingdom of Saudi Arabia.

Table 5. Comparing responses by year of study of respondents.

Questions	Freshman year	Final year	P
Heart transplantations are done in KSA	43.2%	70.7%	0.0001
Diabetes is the most common cause of kidney failure in KSA	64.0%	78.5%	0.0001
Many patients die because of shortage in organ donation	40.0%	63.3%	0.01
Are you aware of the concept of brain death?	73.6%	93.7%	0.0001
Islamic Sharia permits donating kidney, heart, and live after death?	49.6%	82.3%	0.0001
I will agree to donate my kidney to a relative with kidney failure	62.0%	74.4%	0.009
I will agree to donate my organs after death	53.6%	74.4%	0.0013

KSA: Kingdom of Saudi Arabia.

Table 6. Comparing responses by gender of respondents.

Questions	Males	Females	P
Organ failure, such as kidney, liver and heart failure, is common in KSA	76.1%	79.7%	0.5
Heart transplantations are done in KSA	54.0%	55.0%	0.75
Diabetes is the most common cause of kidney failure in KSA	60.2.0%	65.4%	0.3
Many patients die because of shortage in organ donation	50.0%	58.0%	0.009
Are you aware of the concept of brain death?	84.6%	87.6%	0.3
Face transplantation has been performed?	31.1%	37.7%	0.07
Islamic Sharia permits donating kidney, heart, and liver after death?	63.4%	69.6%	0.13
I will agree to donate my kidney to a relative with kidney failure	60.5%	74.6%	0.0001
I will agree to donate my kidney to a stranger with kidney failure	23.8%	41.1%	0.0001
I will agree to donate my organs after death	52.3%	68.3%	0.0001

KSA: Kingdom of Saudi Arabia.

Female respondents proved more aware than male respondents in all the questions. However, the differences reached significant levels in only four of the ten questions, namely “many patients die because of shortage in organ donation (58% vs. 50%) ($P = 0.009$), “I will agree to donate my kidney to a relative with kidney failure” (74.6% vs. 60.5% ($P = 0.0001$), “I will agree to donate my kidney to a stranger with kidney failure” (41.1% vs. 24.8% ($P = 0.0001$), “I will agree to donate my organs after death” (68.3% vs. 52.3% ($P = 0.0001$), (Table 6).

If we split the questions into “awareness” questions and “altruism” questions and summate the results, we find that although female students score higher in both categories, this reaches a significant level in the altruism score (59.9% vs. 45.60% ($P = 0.0001$) (Table 7).

The overall awareness score was significantly higher than the altruism score (62.7% and 45.7%, respectively ($P = 0.0001$) (Table 8).

When we compare the of responses by college, we find the significant differences between the College of Medicine students and applied medical sciences in two questions “diabetes is the most common cause of kidney failure in KSA” (71.1% vs. 51.9%) ($P = 0.0036$) and “Islamic Sharia permits donating kidney, heart, and liver after death (72.6% vs. 50.5%) ($P = 0.003$).

Discussion

Overall, 60.4% were aware of the correct responses while 12.3% gave incorrect responses and 27.3% did not know what the answers were. The overall awareness score was significantly higher than the altruism score (62.7% and 45.7%, respectively ($P = 0.0001$). In a study from Hong Kong among medical students, 85% had a “positive” attitude about donation.¹⁷

One of the reasons commonly cited as a barrier to donation after death is the fear of

Table 7. Awareness and altruistic score by gender.

	Females	Males	P
Awareness score	65%	59.90%	0.08
Altruistic score	59.90%	45.60%	0.0001

Table 8. Overall awareness and altruistic score.

	%	P
Overall Awareness score	62.7	0.001
Overall altruistic score	54.7	

premature termination of medical treatment to facilitate organ retrieval and transplantation after death and the need for preserved body parts after death.^{15,17}

The degree of awareness was found to positively impact the willingness to donate.^{7,9,10} In our study, 69% of the respondents were aware of the Islamic permissibility of organ donation. This compares to 30.1% in a study among Riyadh residents.⁹

In our study, 61.6% of the respondents were willing to donate their kidneys after death compared to 51.4% among the Riyadh residents.⁹

When our respondents were asked about their willingness to donate a kidney to a relative or a stranger their responses were 68.7% and 33.9%, respectively. In the study on Riyadh residents, the response was 22.2%.⁹

The females in our study scored higher than the males in both the “awareness score” (+5.1%; $P = 0.08$) and “altruism score” (+14.3%; $P = 0.0001$). They scored significantly higher in all these elements of altruism ($P = 0.0001$ in each). This is consistent with the fact that in the West, female donors are 1.6 times male donors.^{18,19} This is also consistent with the finding that female Japanese,²⁰ American,²¹ Mexican,²² and UK²³ medical students score higher in empathy evaluation tools.

In our survey, 86.4% were aware of the concept of brain death. In a survey, among Riyadh residents, the corresponding number was 89.8%. A nationwide study was done in Spain in 22 medical schools (9275 students) showed that 67% understood the brain death concept, 28% did not know what it meant. In this study, 80% were in favor of organ donation, 2% against, and 18% undecided with increasing trend of those in favor with more years of training.^{24,25} We, also, found that the final year students were significantly more aware than freshmen in seven of the 10 questions posed with biggest gap observed in the awareness that Islamic Sharia permits donating organs after death. The increasing awareness seen with increasing year of training among medical students, has also been observed in a large study from Spain.^{24,25}

Education about organ donation and transplantation results not only in better knowledge but also in motivation to donate.^{26,27}

In one study from an South Korea,²⁸ educational material given to participants increased their positive attitude toward organ donation from 75.0% to 92.4%, their willingness to donate their own organs from 60.9% to 80.4% and their willingness to donate a family member’s organs, after death, from 38.0% to 56.5%.²⁸ A study on medical students from India reported that 66% of medical students with better knowledge have pledged their organs.¹⁶

Conclusion

The overall awareness score was significantly higher than the altruism score (62.7% and 45.7% respectively). Female students have higher altruistic score than male students. The scores are significantly higher in the advanced students than in the junior ones. More public education is required.

Conflict of interest: None declared.

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