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Attitudes towards organ donation among waitlisted transplant patients: results of a cross-sectional survey

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Abstract

Organ shortage remains a major barrier to transplantation. While many efforts have focused on educating the general population regarding donation, few studies have examined knowledge regarding donation and donor registration rates among waitlisted candidates. We aimed to determine waitlisted patients' willingness to donate, elucidate attitudes surrounding organ allocation, and identify barriers to donation. A cross-sectional survey was distributed to assess demographics, knowledge regarding organ donation, and attitudes regarding the allocation process. Responses from 225 of 579 (39%) waitlisted patients were collected. 71 respondents (32%) were registered donors, while 64 patients (28%) noted no interest in participating in donation. 19% of respondents felt their medical treatment would change by being a donor, while 86 patients (38%) felt their condition precluded them from donation. 40 patients (18%) felt they should be prioritized on the waitlist if they agreed to donate. A minority of patients (28%) reported discussion of organ donation with their physician. Waitlisted candidates constitute a population of willing, though often unregistered, organ donors. Moreover, many endorse misconceptions regarding the allocation process and their donation eligibility. In a population for which transplantation is not always possible, education is needed regarding organ donation among waitlisted patients, as this may enhance donation rates.

Keywords

Organ Donation; Transplantation; Patient Education; Waitlist; Reciprocity

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Introduction

Organ availability continues to critically limit transplantation in the United States. At present, over 100,000 patients are listed for transplant and more than 7,000 deaths occur annually while on the waitlist (1). Although significant advances have been made in the perioperative management of transplant patients, the size of the donor pool has remained largely unchanged. This quandary was highlighted by the American Society of Transplant Surgeons theme for their 2016 winter symposium “Limited Supply, Increasing Demand: Expanding Organ Donation” and emphasized as a component of the 2015-2018 OPTN strategic plan to increase the number of transplants (2).

Multiple measures have been taken to increase the donor pool globally, including public education programs, extended criteria donation, donation after cardiac death, split-liver transplants, and diminishing financial disincentives for living donation (3). Some countries have adopted reciprocity programs where patients who are willing donors are prioritized in the allocation algorithm (4). Attitudes towards the organ allocation systems are intriguing, as people who are supportive of organ donation do not necessarily support the current allocation algorithms or implementation of reciprocity (5, 6).

The majority of literature on attitudes surrounding organ donation are based on surveying the general public who serve as potential healthy donors (7-9). Attitudes from the general public do not necessarily reflect those of currently waitlisted patients. Although a vast amount about barriers to donation among healthy donors has been described, there is a dearth of information regarding opinions toward organ donation among end-organ failure patients. While the goals of a transplant program are principally to provide organ grafts for all waitlisted patients, this is not always possible in the setting of the current organ shortage (1). The willingness of patients on the transplant waiting list to donate in the event they do not receive transplantation has not been previously evaluated. Waitlisted patients represent a special population that may be supportive of organ transplantation, but are not necessarily registered as donors. In this cross-sectional study, donor registration rates, perceived barriers to donation, and attitudes toward organ allocation among patients on the transplant waitlist are assessed.

Methods

Population and Study Setting

This cross-sectional, single center study enrolled patients active on the transplant waitlist at an academic, tertiary care hospital. The 579 patients active on the waitlist at the time of survey distribution represented all supported abdominal solid organ transplant programs at the center, including 472 (82%) renal, 100 (17%) hepatic, and 7 (1%) pancreatic failure patients.

Survey Design and Execution

The survey questionnaire was created collaboratively with all participating investigators. Collected information included demographics, knowledge and barriers regarding organ donation, as well as attitudes regarding the allocation process and reciprocity. Patient

knowledge regarding organ donation was assessed with the following three statements: (a) “My treatment plan would change as a result of being an organ donor”, (b) “If I were eligible to be an organ donor, I would register”, and (c) “Being a registered donor will affect the likelihood of me receiving an organ” (Supplementary Material, Items 4, 6, and 8). Barriers to donor registration were assessed by a negative response to the statement “I have discussed organ donation with my transplant doctors” (Supplementary material, Item 7) or an affirmative response to the following three statements: (a) “Organ donation is against my religious or moral beliefs”, (b) “My current state of health is not good enough to qualify me as an organ donor”, and (c) “I am concerned that my organs might go to someone who does not deserve them” (Supplementary material, Items 2, 3 and 5). Attitudes of organ allocation and reciprocity were evaluated by responses to the following five statements: (a) “Donated organs are allocated fairly”, (b) “I should be higher on the transplant waitlist if I am an organ donor”, (c) “It is important to me to receive an organ for a healthy donor”, (d) “It is important to me to receive an organ from someone in my state” and (e) “I feel that organs should go to the sickest patients first” (Supplementary Figure, Items 1, 9-12). All non-demographic features (including knowledge regarding organ donation, barriers towards registering as a donor, attitudes towards organ allocation and reciprocity) were assessed on a 5-point Likert scale (where 1=strongly disagree, 2=agree, 3=neutral, 4=agree and 5=strongly agree).

Surveys were distributed by United States postal mail to all waitlisted transplant patients at Yale-New Haven Hospital in July 2015 (see Supplementary Material). An additional online version of the survey was sent by electronic mail to those patients for whom an email address was listed in their electronic medical record. A reminder was sent 1 month following the initial contact to enhance participation. A six-month period was allotted for responses.

Participation was strictly voluntary. No compensation was provided to participants. All data was stored on a secure server in a de-identified manner. The study protocol is in accordance with the Helsinki Declaration of 1975 and was approved by the Yale School of Medicine Human Investigation Committee.

Statistical Analysis

Demographic information and data obtained from responses reported on a Likert scale were analyzed with descriptive statistics including mean and standard deviation for continuous variables and percentages for categorical variables. Due to small sample size, the 5-Likert scale of patient's opinion was combined into a 3 component scale of agree (4 and 5), not sure (3) and disagree (1 and 2).

Waitlisted patients registered as donors and those unwilling to donate were grouped into two separate categories (“Registered” and “Unwilling”, respectively). A third category, designated as “Uncommitted,” included patients interested in donation but not registered, those unaware of how to register, and those who stated they were considering donation but were unsure at the time of the survey. Patients that did not respond were excluded from analysis (n=26). All collected variables were compared between these three groups using a one-way ANOVA or chi-squared test. The Fisher's exact test was used when cell counts were less than 5.

Unadjusted multinomial logistic regression models were constructed to calculate the odds ratio of each variable comparing “Registered” vs. “Unwilling” groups and “Uncommitted” vs. “Unwilling” groups, by holding the “Unwilling” respondents as the reference group. To obtain the odds ratios of collected variables between “Registered” vs. “Uncommitted” groups, a similar regression was performed using “Uncommitted” participants as the reference group. Multivariate multinomial logistic regression models were developed using variables that were found to be significant at the 0.05-level in the unadjusted analyses. All analyses were performed using SAS software, Version 9.4 of the SAS System for Windows (Cary, NC, USA).

Results

Demographics

A total of 225 patients (39%) responded to the survey among 579 waitlisted transplant patients. Demographics are reported in Table 1. The mean age of study participants was 55.7. The majority of respondents were male (58%), Caucasian (67%), of Christian faith (76%), married (58%) and parents (70%). Approximately 22% of the study participants did not attend college. The majority of patient participants reported knowing an organ transplant recipient (59%) and holding a driver's license (94%). In comparison to the entire waitlisted population at our center, study respondents did not differ with respect to age ($p=0.12$), gender ($p=0.36$), or ethnicity ($p=0.15$).

Assessment of Knowledge and Barriers Surrounding Organ Donation

The survey questionnaire included several statements to assess patient knowledge regarding current organ donation practices. Among 225 total waitlisted patient survey respondents, 86 (38%) noted they would be ineligible to register, 43 (19%) felt their treatment plan would change as a result of being an organ donor and 15 (7%) noted that registering as an organ donor would affect their likelihood of receiving an organ. Among the 109 patients (48%) noting at least one of the above barriers to becoming a donor, 34 patients (31%) recalled a discussion regarding donation with their transplant providers.

Attitudes of Organ Allocation and Reciprocity

Opinions regarding the current organ allocation system were assessed among waitlisted transplant patients. Among survey respondents, 98 (44%) felt that the current organ allocation system was fair. A smaller proportion of patients (18%) felt that allocation should give priority to patients who are registered donors. 48% of respondents noted that organs should be prioritized based on severity of patient illness while 33% felt priority should be given to those with the longest post-transplant life expectancy.

Donor Registration Status

32% ($n=71$) of waitlisted participants reported being registered organ donors while 28% ($n=64$) stated they did not plan on becoming an organ donor (Figure 1). Factors were compared across waitlisted patients who were registered as donors, uncommitted regarding donation, and those unwilling to donate. Those found to differ based on donation status are summarized in Table 2. Male ($p=0.03$) and non-native English speaking patients ($p=0.02$)

were less likely to be committed regarding organ donation. Patients who reported knowing an organ donor were more likely to be registered as donors themselves ($p=0.07$). A trend towards disinterest in organ donation was noted among older patients ($p=0.07$) and those with post-graduate education ($p=0.09$).

A multinomial logistic model was devised to compare patients registered as organ donors and those with no interest in organ donation, incorporating all factors identified using ANOVA and χ^2 analysis. A similar analysis was conducted to compare uncommitted patients with registered waitlisted patients as well as uncommitted patients with those having no interest in organ donation (Table 3A). Patient age, gender, status as a native English speaker, and patients with post-graduate education were found to be closely correlated with donor registration ($p<0.05$, all cases). Moreover, knowing an organ donor, beliefs regarding eligibility for donation and health status as well as prior discussion of organ donation with transplant providers were also significantly associated with respondent's donor registration status.

An adjusted multinomial logistic regression including all variables identified as significant in the unadjusted model was constructed for each of the aforementioned 3 pairwise comparisons (see Table 3B and Figure 2). Following adjusted analysis, comparison of registered organ donors with those uninterested in organ donation revealed that those who felt they were too sick to register were less likely to donate (OR 0.39, $p=0.04$). Additionally, a strong trend towards being a registered donor was noted among those who felt they were eligible for donation and registration compared to those uninterested in organ donation (OR 4.67, $p=0.06$). Waitlisted patients with post-graduate education were 68% less likely to register as organ donors compared to other respondents (OR, 0.32, $p=0.03$). Patients uncommitted regarding donation registration were more frequently male compared to registered donors and those uninterested in being organ donors ($p=0.03$, all cases). Additionally, patients registered for donation were 3.5-fold more likely to have discussed donation with a transplant provider than those uncommitted regarding donation ($p=0.01$).

Discussion

The majority of efforts to expand organ transplantation have focused on educating the lay public on the importance and urgency of organ donation, expanding donor criteria and revitalizing marginal allografts with perfusion technologies (9-12). Encouraging donor registration among end-organ failure patients may be an additional strategy to augmenting the donor pool. To identify potential barriers to donation, this study assessed waitlisted patients' knowledge and perceptions regarding organ donation. Notably, 32% of waitlisted survey respondents noted being registered as organ donors. Moreover, nearly half affirmed misconceptions regarding the allocation process, with few recalling discussion surrounding organ donation with their transplant provider. Together, these findings elucidate an opportunity to improve donation among waitlisted patients through provider-based education.

Current allocation algorithms do not exclude end-organ failure patients from donor registration or deceased donation. As nearly 7% of the waitlisted patients succumb to organ

failure without receiving an organ and a similar rate become too ill to remain on the waitlist, the pool of potential donors available is roughly 14,000 annually (1). Among the over 100,000 patients listed for transplantation, if the remaining 68% of waitlisted patients who are not currently registered do so, a population of 9,500 new registrants would be added to the donor pool, for which 19,000 additional transplants could occur annually (assuming a 2 organ per donor rate). Although organ quality from waitlisted transplant patients may be compromised when compared to healthy donors, donation of soft tissue, cornea, and other unaffected organ systems is possible. As postoperative management of transplanted patients continues to improve, previously unacceptable candidates in the waitlist pool may become acceptable donors.

Assigning priority allocation to patients who are registered donors has the potential to encourage donation. When polled, public perception towards reciprocity suggests that adults are generally more supportive of priority assignment than incentivized donation, but most are largely undecided when asked for specific priority assignment strategies (13). Furthermore, countries where reciprocity is standard practice, such as in Israel, demonstrated increased donations after implementation (3). In 2012, leadership of the New Jersey Organ and Tissue Sharing Network supported a proposal termed “Golden Rule Proposal” where insurance can limit transplant coverage to patients who refuse to be donors (14). The idea that those who are willing to receive organs should also be willing to donate however, has not been met with overwhelming support. Though only a small fraction of surveyed waitlisted patients support reciprocity, many more were willing to register as donors, suggesting willingness to donate is not contingent on reciprocity.

Overall, the proportion of registered donors on the transplant waitlist is surprisingly well below national averages (15). This is likely a consequence of misinformation endorsed by this patient population, evidenced by the fact that nearly half of the respondents affirm at least one misperception about donation. These include beliefs surrounding their ineligibility for registration, registration affecting the probability of receiving an organ and registration affecting their personal treatment plan.

This high rate of misinformation is largely explained by the finding that the vast majority of patients did not recall discussion with their provider regarding donation. Patient education is likely a critical aspect of enhancing donation rates among waitlisted transplant patients. There is potential for establishing educational programs that promote donation among waitlisted patients in enhancing donation in this population. Transplant education is a cornerstone of successful programs, although such programs are usually focused on the waitlisted patient as a recipient, rather than a potential donor. Educating current waitlisted patients about their donor eligibility may enhance registration. This is supported by the fact that many respondents are willing to be donors, while many are unaware of their eligibility. Additionally, patients who discussed donation with the transplant team were more likely to be registered donors.

Particular demographic groups appeared more likely to be uncommitted with regard to organ donation including males and non-native English speakers. Such groups may be important targets of such educational efforts. Moreover, patients who reported knowing an organ donor

were more likely to be registered as donors themselves, suggesting that donor communities can play a positive role in enhancing donor registration.

This study is subject to several limitations. The overall response rate or the surveyed cohort was 39%. Although reminders were sent to potential participants, few additional surveys were completed. While differences between survey participants and patients who did not participate may exist, demographics of all waitlisted patients and survey respondents were similar with regard to age, gender and ethnicity. Unlike studies involving healthy volunteers, the surveyed patient cohort is more ill and thus less inclined to participate. It is also conceivable that a percentage of patients feared that their participation would somehow affect their treatment. Moreover, survey data was self-reported and may be subject to reporting bias. Additionally, it should be noted that the Likert scales assessing patient knowledge of organ donation and barriers towards registration have not been previously validated and their reliability was not assessed. To the best of the authors' knowledge, no validated survey instruments have been reported and may be the focus of future studies.

In sum, this study finds a low rate of donor registration among waitlisted transplant patients. Moreover, a sizable proportion of waitlisted patients endorse misconception regarding the impact of registration on treatment plans and false beliefs of ineligibility to register as donors. Education programs informing patients of their opportunity to donate may enhance registration in this population and should be examined to augment donation in this patient population.

Conclusion

Few waitlisted transplant patients are registered as organ donors and many endorse misperceptions regarding their donor eligibility and potential consequences to registration. Discussion regarding organ donation between waitlisted transplant patients and their transplant providers is uncommon. Provider-based patient education focused on donation eligibility and dispelling common misconceptions regarding donation may improve registration rates among waitlisted transplant patients.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1. Frequencies of donor registration categories among waitlisted patient respondents

Demographics of survey respondents by donor registration status of waitlisted patient respondents

Table 1

N = 199	Are you a registered organ donor?			Test Statistic	P Value
	Yes (N = 71)	Uncommitted (N = 64)	No (N = 64)		
Age (in years)					
Missing	4 (5.63%)	5 (7.81%)	4 (6.25%)	2.37 ^a	0.096 [*]
Mean (SD)	53.64 (13.90)	55.97 (12.47)	58.82 (13.63)		
Gender					
Missing	00 (00.00%)	00 (00.00%)	00 (00.00%)	7.16 ^b	0.03 [*]
Male	37 (52.11%)	46 (71.88%)	33 (51.56%)		
Female	34 (47.89%)	18 (28.13%)	31 (48.44%)		
Race/Ethnicity					
Missing	00 (00.00%)	01 (01.56%)	00 (00.00%)		0.34
Caucasian	52 (73.24%)	39 (60.94%)	48 (75.00%)	N/A	
Black/African American	14 (19.72%)	14 (21.88%)	13 (20.31%)		
Hispanic/Latino	03 (04.23%)	06 (09.38%)	03 (04.69%)		
Other	02 (02.82%)	04 (06.25%)	00 (00.00%)		
Religion					
Missing	00 (00.00%)	00 (00.00%)	00 (00.00%)		0.96
Christian	52 (73.24%)	50 (78.13%)	48 (75.00%)	N/A	
None/Atheist	06 (08.45%)	04 (06.25%)	04 (06.25%)		
Other	13 (18.31%)	10 (15.63%)	12 (18.75%)		
Is English your primary language?					
Missing	10 (14.08%)	04 (06.25%)	05 (07.81%)		0.02 [*]
Yes	60 (84.51%)	51 (79.69%)	55 (85.94%)	N/A	

N = 199	Are you a registered organ donor?			Test Statistic	P Value
	Yes (N = 71)	Uncommitted (N = 64)	No (N = 64)		
No	01 (01.41%)	09 (14.06%)	04 (06.25%)		
Marital Status					
Missing	04 (05.63%)	07 (10.94%)	02 (03.13%)	1.82 ^b	0.4
Married	38 (53.52%)	37 (57.81%)	42 (65.63%)		
Single	29 (40.85%)	20 (31.25%)	20 (31.25%)		
How many children do you have?					
Missing	00 (00.00%)	00 (00.00%)	01 (01.56%)	3.93 ^b	0.42
None	24 (33.80%)	20 (31.25%)	15 (23.44%)		
1 or 2	36 (50.70%)	30 (46.88%)	30 (46.88%)		
3 or more	11 (15.49%)	14 (21.88%)	18 (28.13%)		
Education (highest level completed?):					
Missing	00 (00.00%)	00 (00.00%)	00 (00.00%)	8.02 ^b	0.09 [*]
Up to Graduate School	14 (19.72%)	15 (23.44%)	23 (35.94%)		
High School	11 (15.49%)	16 (25.00%)	13 (20.31%)		
Up to College	46 (64.79%)	33 (51.56%)	28 (43.75%)		
Which of the following best describes you:					
Missing	00 (00.00%)	00 (00.00%)	00 (00.00%)	2.29 ^b	0.68
I have been on the transplant waitlist for less than 6 months	14 (19.72%)	11 (17.19%)	08 (12.50%)		
I have been on the transplant waitlist for more than 6 months and less than 1 year	11 (15.49%)	08 (12.50%)	07 (10.94%)		
I have been on the transplant waitlist for more than 1 year	46 (64.79%)	45 (70.31%)	49 (76.56%)		
Do you have a driver's license or a state ID?					
Missing	02 (02.82%)	00 (00.00%)	01 (01.56%)	N/A	0.8
Yes	67 (94.37%)	62 (96.88%)	60 (93.75%)		
No	02 (02.82%)	02 (03.13%)	03 (04.69%)		

N = 199	Are you a registered organ donor?			Test Statistic	P Value
	Yes (N = 71)	Uncommitted (N = 64)	No (N = 64)		
Do you work in the healthcare field?					
Missing	01 (01.41%)	00 (00.00%)	00 (00.00%)	2.35 ^b	0.31
Yes	11 (15.49%)	05 (07.81%)	10 (15.63%)		
No	59 (83.10%)	59 (92.19%)	54 (84.38%)		
Have you personally received an organ?					
Missing	00 (00.00%)	00 (00.00%)	00 (00.00%)	2.41 ^b	0.3
Yes	14 (19.72%)	08 (12.50%)	07 (10.94%)		
No	57 (80.28%)	56 (87.50%)	57 (89.06%)		
Do you know someone who has received an organ transplant?					
Missing	03 (04.23%)	01 (01.56%)	00 (00.00%)	0.29 ^b	0.86
Yes	41 (57.75%)	38 (59.38%)	36 (56.25%)		
No	27 (38.03%)	25 (39.06%)	28 (43.75%)		
Do you know someone who has donated an organ?					
Missing	00 (00.00%)	00 (00.00%)	00 (00.00%)	5.41 ^b	0.07 [*]
Yes	31 (43.66%)	25 (39.06%)	16 (25.00%)		
No	40 (56.34%)	39 (60.94%)	48 (75.00%)		

^aF test statistic^bChi-Square test statistic N/A Fisher's Exact test, no test statistic^{*}P value <0.1

Table 2
Survey features and responses categorized by donor registration status of waitlisted patient participants

All items were assessed on a 5-point Likert scale (1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree) and reported as mean (standard deviation). Comparisons between groups were evaluated by ANOVA.

N = 199	Are you a registered organ donor?			F Statistic	P Value
	Yes (N = 71)	Undecided (N = 64)	No (N = 64)		
Assessment of Knowledge Regarding Organ Donation					
My treatment plan would change as a result of being an organ donor	2.42 (1.37)	2.46 (1.23)	2.69 (1.23)	0.77	0.47
If I were eligible to be an organ donor, I would register	4.18 (1.07)	3.92 (0.94)	3.57 (1.20)	5.01	<0.01 *
Being a registered donor will affect the likelihood of me receiving an organ	2.03 (1.17)	2.14 (1.03)	2.13 (1.01)	0.2	0.82
Assessment of Barriers Regarding Organ Donation					
Organ donation is against my religious or moral beliefs	1.5 (1.05)	1.48 (0.97)	1.41 (0.88)	1.59	0.21
My current state of health is not good enough to qualify me as an organ donor	2.66 (1.44)	2.53 (1.36)	3.25 (1.64)	4.03	0.02 *
I am concerned that my organs might go to someone who does not deserve them	1.65 (0.92)	1.8 (1.03)	1.75 (0.81)	0.42	0.66
I have discussed organ donation with my transplant doctors	3.26 (1.3)	2.69 (1.19)	2.7 (1.25)	4.39	0.01 *
Attitudes of Organ Allocation and Reciprocity					
Donated organs are allocated fairly	3.45 (1.07)	3.28 (1.03)	3.42 (0.84)	0.511	0.6
I should be higher on the transplant waitlist if I am an organ donor	2.66 (1.41)	2.36 (1.18)	2.49 (1.1)	0.93	0.4
It is important to me to receive an organ for a healthy donor	4.03 (1.04)	4.2 (0.83)	4.57 (0.76)	1.66	0.2
It is important to me to receive an organ from someone in my state	1.94 (0.86)	2.2 (0.89)	2.4 (1.24)	1.28	0.29
I feel that organs should go to the sickest patients first	3.27 (1.07)	3.55 (1.05)	3.40 (1.35)	0.38	0.69

* P value <0.05

Table 3
(A) Unadjusted and (B) adjusted multinomial logistic regression models evaluating factors associated with waitlisted patient donor registration status

A									
	Registered Donor vs. Unwilling to Donate			Uncommitted Regarding Donation vs. Unwilling to Donate			Registered Donor vs. Uncommitted Regarding Donation		
	Odds Ratio	Z test statistic	P Value	Odds Ratio	Z test statistic	P Value	Odds Ratio	Z test statistic	P Value
Patient Age (increase by 5)	0.86 (0.75 - 0.99)	-2.13	0.03	0.91 (0.79 - 1.06)	-1.22	0.22	0.94 (0.83 - 1.07)	-0.94	0.35
Gender (Female vs. Male)	0.98 (0.50 - 1.92)	-0.06	0.95	0.42 (0.20 - 0.87)	-2.34	0.02	2.35 (1.15 - 4.81)	2.33	0.02
Native English Speaker (Yes vs. No)	4.36 (0.47 - 40.2)	1.3	0.19	0.41 (0.12 - 1.42)	-1.4	0.16	10.59 (1.30 - 86.4)	2.2	0.03
Education (Post-Graduate Education vs. Undergraduate Education)	0.37 (0.16 - 0.84)	-2.39	0.02	0.55 (0.24 - 1.26)	-1.41	0.16	0.67 (0.28 - 1.57)	-0.92	0.36
Do you know someone who has donated an organ? (Yes vs. No)	2.32 (1.11 - 4.85)	2.25	0.02	1.92 (0.90 - 4.1)	1.69	0.09	1.21 (0.61 - 2.4)	0.54	0.59
My current state of health is not good enough to qualify me as an organ donor (Agree vs. Disagree)	0.37 (0.18 - 0.79)	-2.57	0.01	0.35 (0.16 - 0.77)	-2.61	0.01	1.08 (0.50 - 2.34)	0.19	0.85
If I were eligible to be an organ donor I would register (Agree vs. Disagree)	3.59 (1.02 - 12.6)	1.99	0.047	4.03 (1.01 - 16.1)	1.97	0.048	0.89 (0.19 - 4.2)	-0.15	0.88
I have discussed organ donation with my transplant doctors (Agree vs. Disagree)	2.73 (1.13 - 6.58)	2.24	0.03	0.69 (0.28 - 1.73)	-0.78	0.43	3.94 (1.63 - 9.53)	3.04	0.002

B									
	Registered Donor vs. Unwilling to Donate			Uncommitted Regarding Donation vs. Unwilling to Donate			Registered Donor vs. Uncommitted Regarding Donation		
	Odds Ratio	Z test statistic	P Value	Odds Ratio	Z test statistic	P Value	Odds Ratio	Z test statistic	P Value
Patient Age (increase by 5)	0.93 (0.79 - 1.09)	-0.93	0.35						

B									
	Registered Donor vs. Unwilling to Donate			Uncommitted Regarding Donation vs. Unwilling to Donate			Registered Donor vs. Uncommitted Regarding Donation		
	Odds Ratio	Z test statistic	P Value	Odds Ratio	Z test statistic	P Value	Odds Ratio	Z test statistic	P Value
Gender (Female vs. Male)				0.4 (0.18 - 0.92)	-2.16	0.03	2.46 (1.08 - 5.57)	2.15	0.03
Native English Speaker (Yes vs. No)							8.34 (0.93 - 74.6)	1.9	0.06
Education (Post-Graduate Education vs. Undergraduate Education)	0.32 (0.11 - 0.91)	-2.13	0.03						
Do you know someone who has donated an organ? (Yes vs. No)	1.76 (0.70 - 4.39)	1.21	0.23	1.41 (0.61 - 3.22)	0.8	0.42			
My current state of health is not good enough to qualify me as an organ donor (Agree vs. Disagree)	0.39 (0.16 - 0.96)	-2.05	0.04	0.37 (0.16 - 0.86)	-2.31	0.02			
If I were eligible to be an organ donor I would register (Agree vs. Disagree)	4.67 (0.95 - 22.9)	1.9	0.06	5.46 (1.28 - 23.2)	2.3	0.02			
I have discussed organ donation with my transplant doctors (Agree vs. Disagree)	2.34 (0.79 - 6.99)	1.53	0.13				3.47 (1.33 - 9.07)	2.54	0.01