

Religious and ethnic influences on willingness to donate organs and donor behavior: an Australian perspective

Context—Globally, the demand for donated organs outstrips supply, meaning that there are both practical and theoretical reasons for examining factors that are predictive of individuals' willingness to donate their organs upon their death.

Objectives—To determine whether individuals of different religious denominations living in Australia have different views on organ donation, whether donation attitudes differ significantly across ethnic groups, and whether factors identified in international research are predictors of willingness to donate and actual donor behavior in this population.

Participants—Data for this study were collected from students at an Australian university from a range of religious and ethnic backgrounds, and their friends and relatives (N = 509).

Intervention—Participants were administered the Organ Donation Attitude Scale, as well as additional attitudes and knowledge measures.

Main Outcome Measures—Self-reported "willingness to donate" and "donor behavior."

Results—Our findings complemented those reported in comparable countries, with females, younger Australians, and those with high knowledge levels being more willing to donate than males, older persons, and those with low knowledge. Persons who described themselves as having stronger religious beliefs (particularly Buddhist and Islamic) held less favorable attitudes toward donation, had lower knowledge levels, and were more likely to oppose donation.

Conclusions—Although this study established that attitudes toward, knowledge about, and predictors of organ donation in Australia are similar to those reported elsewhere, donation rates remain low. Further in-depth research examining the impact of religion and culture on attitudes, beliefs, and behavior is essential when exploring strategies to improve organ donation rates in highly multicultural societies such as Australia. (*Progress in Transplantation*. 2011;21:161-168)

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Linden¹ argued that solid organ transplantation is one of the most successful medical advances of the past 60 years. Across the world, including in Australia and New Zealand, the demand for donated organs far outstrips supply.²⁻⁴ This situation has arisen in part because Australia and New Zealand have among the lowest rates of organ donation in the developed world when assessed as donors per million population (which does not take into account several key variables such as death rates, cause of death, and consent rates).⁵

Many different approaches to increase the number of organs for transplantation have been proposed and in some cases implemented, including education campaigns aimed at increasing knowledge in both the

general public and hospital staff,² organizational changes such as formation of national organ donation registers and better training of transplantation coordinators,⁶ and other more controversial options such as xenotransplantation (where organs from nonhumans are procured for transplantation),⁷ use of organs from executed prisoners,⁸ commercially regulated sale of organs or sale of stolen organs,⁹ and laws that presume consent so individuals have to "opt out."¹⁰

Complex bioethical and legal issues are associated with strategies designed to increase the number of organs and tissues available. Many of these issues are minimized when organs are recovered from an individual who has made a decision to become a registered

organ donor. One limitation of the availability of organs for transplantation is the number of people who, before death, have indicated their willingness to be an organ donor. Hence it is not surprising that understanding psychosocial aspects of organ donation and transplantation has been an important focus of research. A recent review of the literature showed that individuals who are younger, are female, have higher educational levels and/or socioeconomic status, have fewer religious beliefs, have higher knowledge about organ donation, and have fewer concerns about manipulation of a deceased donor's body are more likely to have positive attitudes toward donation and are more willing to donate.¹¹ Perhaps the most intriguing finding in the literature on beliefs influencing the decision to become an organ donor is that participants who belong to African American and Hispanic communities and those with strong Christian religious beliefs report less willingness to donate.^{12,13} This finding has also been reported for respondents who were attending local markets in Pakistan, which is a predominantly Muslim country.¹⁴

Few data speak to the question of the relationship between religious beliefs and attitudes to organ donation in Australia and New Zealand. Data from the Australia and New Zealand Organ Donation Registry show that the religion of most (73%) of the 259 donors in Australia in 2008 was unknown.⁵ For the remainder, 18% were Christian and 7% had no religion. Ninety percent were described as white. In a recent survey¹⁵ of 233 Australian university students, several paradoxical findings were reported. A surprisingly large proportion (59%) indicated that they had registered to become organ donors. These were more likely than nonregistered participants to have discussed the decision with members of their religious group. However, only 35% of the participants as a whole correctly endorsed "true" to the statement that "almost all Western religious groups support the concept of organ or tissue donation."

A second limitation of the availability of organs for transplantation is the utilization rate, which is the number of organs that are donated in the event that a potential donor becomes a suitable candidate. Some research suggests that a potent barrier to increasing the number of organs available for transplantation is family refusal to consent, even when evidence of the willingness of the potential donor was apparent.¹⁶⁻¹⁹ Some factors that have been identified as associated with family refusal (eg, young age of donor or a violent death)²⁰ are difficult to change, but potentially modifiable variables such as knowledge and beliefs about organ donation are likely to influence consent to donation of the organs of a family member.²¹

Objectives

There are both practical (eg, to inform national campaigns to increase donation rates) and theoretical

reasons for examining factors that are predictive of a willingness to donate. Hence it is important to study attitudes, knowledge, and beliefs about organ donation in a cross-section of the population including persons likely to become donors and persons likely to be asked to consent to organ donation. The data for this study were collected from students at an Australian university and their friends and relatives, whose ages spanned the range of almost all persons whose organs were donated in Australia in 2008.⁵ The study was intended to answer 4 research questions, namely (1) whether individuals of different religious denominations living in Australia have different views on organ donation; (2) whether attitudes toward organ donation differ significantly across ethnic groups; (3) whether key factors identified in previous research, such as knowledge and attitudes about organ donation, are predictors of willingness to donate in this population; and (4) actual donor behavior.

Methods

Participants

After obtaining approval from the Macquarie University Human Ethics Committee, data were obtained from 509 participants, 35% male, with ages ranging from 18 to 71 years (mean, 29.14 years; SD, 13.64 years). The data set comprised 190 responses from first-year psychology students, with an additional 319 responses from family members and friends recruited by a third-year psychology class for a practical project. Participants were also asked to specify their ethnic and religious affiliation.

Measures

Organ Donation Attitude Scale (ODAS). The ODAS is a 20-item questionnaire developed by Rumsey, Hurford, and Cole²² and designed to assess overall attitude toward deceased organ donation. The ODAS uses a 4-point Likert scale that ranges from strongly disagree to strongly agree. It also contains questions about respondents' sex, ethnic group, religious affiliation, and a measure of religiosity on a scale of 1 to 10. A subset of 18 items in the ODAS combine to produce scores for 4 factors: opposing organ donation (involving items such as "I support organ donation"), accepting organ donation (involving items such as "I think organ donation is a safe effective practice"), potential donor (items such as "I have signed an organ donor card"), and religious objection. Rumsey et al²² reported that the 20 ODAS items showed good reliability (Cronbach $\alpha=0.90$). In this sample, the Cronbach alpha was similar at 0.89.

Attitude Scale. A second scale for assessing attitude toward deceased organ donation, developed by Sander and Miller,⁴ was also included in the survey to

supplement the ODAS scale. This consisted of 9 items and a 5-point Likert scale ranging from strongly disagree to strongly agree. The Likert scale was changed to 4 points to eliminate the neutral option (neither agree nor disagree) in the middle. Higher scores represent greater endorsement of organ donation. Sander and Miller reported a Cronbach alpha of 0.88, whereas this sample exhibited a higher alpha coefficient of 0.92.

Knowledge Scale. A 15-item knowledge scale about organ donation developed by Sander and Miller⁴ was included as a potential predictor of donation attitudes. This scale consists of 15 items in a true/false response format. An example of an item is, "People can recover from brain death." Higher scores represent better knowledge. The reliability of this dichotomously scored scale is low, with a reported Cronbach alpha of 0.42. This sample produced an improved reliability of 0.58, although this reliability is still low by psychometric standards.

Data Analysis

Data were analyzed by using SPSS 17.0 (SPSS, Chicago, Illinois). Descriptive statistics including means, medians, percentages, ranges, and standard deviations were initially calculated to describe the sample in terms of its demographic characteristics and to examine willingness to donate and donor behavior, attitudes, and knowledge. Pearson correlation coefficients (*r*) were used when the predictor variable was continuous. To assess determinants of willingness to donate and donor behavior, we performed stepwise linear regression and included the following variables: sex, age, religion, ethnic background, self-reported religiosity, knowledge about organ donation, and attitudes toward donation.^{23,24} A progressive, backward elimination modeling strategy was used until a final model was obtained that contained only predictor variables with *P* less than .05.

Results

The demographic characteristics of the sample and the results from the administration of the survey are shown in Tables 1 and 2, with a *t* test comparison with data from the original study where available. Table 2 indicates a small but statistically significant difference in scores on the Knowledge and Attitude scales compared with scores reported by Sander and Miller,⁴ such that participants in this study had a less positive attitude toward donation and slightly lower knowledge levels than did the respondents in the original study (with a mean attitude score of 36.71 vs 37.50; *t*=3.22, *P*= .001 and mean knowledge score of 11.90 vs 12.91; *t*= 10.48, *P*< .001). Correlational analyses revealed that both age and sex were significantly related to the potential donor variable, with

Table 1 Demographic characteristics of the sample (N=509)

Characteristic	No. (%) of participants
Sex	
Female	331 (65)
Male	178 (35)
Religious affiliation	
Christian	287 (56)
Buddhist	20 (4)
Islamic	17 (3)
None specified	185 (36)
Ethnic background	
White	331 (65)
Asian	51 (10)
Other, or not specified	127 (25)

females and younger participants indicating more strongly that they would become organ donors (*r*=0.13, *P*= .004 and *r*=0.09, *P*= .035, respectively). Level of religiosity was negatively related to the attitude toward organ donation measure (*r*=-0.20, *P*= .001), and positively related to both the opposing donation and religious objection factors (*r*=0.20, *P*= .001 and *r*=0.22, *P*= .001, respectively), indicating that those who described themselves as having more religious beliefs held less favorable attitudes toward organ donation and were less likely to be identified as potential organ donors. The correlation matrices also showed a significant positive relationship between knowledge about organ donation and scores on the accepting donor organ (*r*=0.41, *P*= .001) and potential donor (*r*=0.32, *P*= .001) variables.

Research Questions

The first question about whether people of different religious denominations have different views on organ donation was examined by using a 1-way analysis of variance with post-hoc testing (Table 3). Post-hoc testing indicated no significant difference in attitude and knowledge between Christian and none (no religion specified), but significant differences were found between Christian/none (mean attitude scores [Christian, 36.86; none, 37.46], mean knowledge scores: [Christian, 12.03; none, 11.97]) and Buddhist/Islamic religions (mean attitude scores [Buddhist, 33.13; Islamic, 30.15], mean knowledge scores: [Buddhist, 10.70; Islamic, 10.47]). The justification for considering Christian and none together was that most white respondents chose one of these options for their religion. In this way, Christian/none acted as a proxy for the Western white category. The Christian/none grouping had significantly higher attitude and knowledge scores than did the Buddhist/Islamic grouping. In terms of the opposing donation factor, significant differences were found between all groups, with the Christian/none groups having the lowest scores. For

Table 2 Descriptive statistics for administered measures, together with comparison with norms where available (N=509)

Characteristic	This sample				Norms		Significance	
	Minimum	Maximum	Mean	SD	Mean	SD	<i>t</i>	<i>P</i>
Age, y	18	71	29.14	13.64				
Religiosity score	1	10	3.32	2.49				
Attitude score ⁴	16.25	45.00	36.71	5.53	37.50	5.33	3.22	.001
Knowledge score ⁴	1.00	15.00	11.90	2.17	12.91	1.69	10.48	<.001
Score on Organ Donation Attitude Scale ²²	23.00	72.00	58.55	8.40				
Opposing donation score	1.00	4.00	1.54	0.49				
Accepting organ donation score	1.40	4.00	3.32	0.53				
Potential donor score	1.00	4.00	2.95	0.76				
Religious objection score	1.00	4.00	1.54	0.60				

the potential donor factor, no significant difference was found between religions of Christianity, Buddhism, or none, but a significant difference was found between Christian/Buddhist/none and participants specifying the Islamic religion. The Islamic group had the lowest potential donor scores.

The second research question addressed ethnic differences between attitude, knowledge and whether the participant was a potential donor. The survey captured only Asian and white ethnicity because they were the dominant groups in the sample. No significant differences were found in attitude and knowledge scores between Asian and white groups; however, those in the white group were more likely to be potential donors ($P < .001$).

The third research question was intended to determine which key factors would indicate willingness to become a donor. These results were investigated by using stepwise regression analysis, with each of the questionnaire items as predictors. Attitude item 2 was used as the criterion: "I am willing to donate my organs and tissues after my death." A significant regression model was obtained that explained 55% of the variance in the criterion ($P < .001$, Table 4). The following beliefs were significant predictors of willingness to donate: that organ donation was against religious beliefs ($P = .026$), that it is important for a person's body to be buried whole ($P < .001$), that organ donation allows something positive to come from the death ($P < .001$), that doctors would still try hard to save their lives after death ($P = .004$), and finally, that organ donation is a "good thing" ($P = .001$). Also, willingness to donate to a person of a different race ($P < .001$), knowing someone who was a registered organ donor ($P = .016$), and having discussed organ donation wishes with family ($P = .004$) were significant predictors of willingness to donate.

The fourth research question was intended to identify the key factors that are predictive of actual donor behavior. This question was answered by using stepwise regression analysis and the same set of questionnaire items as predictors, with the ODAS item number 7 as the criterion: "I have signed an organ donor card or the back of my driver's license." Table 5 presents the final significant regression model, which included the following predictors: knowledge ($P = .006$), willingness to donate ($P < .001$), knowing a registered donor ($P < .001$), and having discussed donation wishes with family ($P < .001$). The final model explained 57% of the variance in the criterion ($P < .001$).

Discussion

This study is, to our knowledge, the first to investigate the relationships between willingness to donate, donor behavior, attitudes, knowledge, religiosity, and ethnicity in such a large sample of Australian adults. Participants in this study had a less positive attitude toward donation but slightly lower knowledge levels than did the respondents in the Sander and Miller study which assessed these variables in a sample of adults from the United States.⁴ In line with previous international research,¹¹ females and younger Australians were more likely to report a willingness to donate their organs than were males and older individuals. Also in line with other literature in the area,^{22,25} respondents who described themselves as having stronger religious beliefs held less favorable attitudes toward organ donation and were more likely to oppose organ donation. Knowledge about organ donation was also a strong predictor of attitudes toward donation, with individuals with more knowledge about donation being more likely to accept organ donation and to be identified as a potential donor. This finding confirms results of studies reported around the

Table 3 Means and results of 1-way analysis of variance for attitude, knowledge, opposing donation, and potential donor by religious affiliation

Factor	Religion	N	Mean	SD	F	P
Attitude	Christian	287	36.86	5.15	12.806	<.001
	Buddhist	20	33.13	5.68		
	Islamic	17	30.15	6.90		
	None	185	37.46	5.47		
Knowledge	Christian	287	12.03	2.08	5.041	.002
	Buddhist	20	10.70	2.00		
	Islamic	17	10.47	2.07		
	None	185	11.97	2.26		
Opposing donation	Christian	287	1.56	0.47	22.616	<.001
	Buddhist	20	1.86	0.64		
	Islamic	17	2.29	0.60		
	None	185	1.41	0.42		
Potential donor	Christian	287	2.96	0.77	5.072	.002
	Buddhist	20	2.68	0.55		
	Islamic	17	2.33	0.67		
	None	185	3.01	0.74		

world^{13,14,22,26-31} indicating the significant relationship between knowledge and attitudes toward donation.

As for our specific research questions, this study reports a novel finding: respondents living in Australia who identified themselves as having a Buddhist or Islamic religious affiliation tended to hold less positive attitudes toward organ donation and to have lower knowledge levels than did respondents with either no religious affiliation and respondents who identified themselves as Christian. Although it may appear surprising that individuals with a Buddhist affiliation in our study felt less positively about organ donation (despite a central tenet of Buddhism being the elimination of suffering of others and a high value placed on acts of compassion and altruism), Bresnahan and Mahler³² recently proposed a possible explanation for our findings. They argue that although Buddhism honors persons who donate their organs to save a life (or for the advancement of science), debate remains about how Buddhist beliefs surrounding a person's spirit and death can be reconciled with the medical concept of brain death.³² Bresnahan and Mahler suggest that one of the possible explanations for the reluctance of persons with Buddhist beliefs may lie in the complexity of the issues surrounding how Buddhism identifies "consciousness" and the possibility that the spirit of a person who is deemed brain dead, but whose heart is still beating, may still remain with the body.³²

In our study, persons with an Islamic affiliation were the least likely group to be identified as potential organ donors. Although it was beyond the scope of this study to attempt to identify the reasons underlying the reticence of some of our study participants with Islamic backgrounds, it is possible that they may hold

similar beliefs to those reported by Saleem et al,¹⁴ who found that a belief that organ donation was not allowed in their religion was 1 of only 3 significant predictors of motivation to donate in a group of 440 adults in Pakistan. In fact, although the religion of Islam generally is described as supportive of the concept of organ transplantation in the guidelines typically produced by organ donation agencies, Bresnahan and Mahler's recent survey of the information available on the Web concerning Islam and organ donation revealed a lack of unanimity among Muslim jurists' beliefs about organ donation in the context of brain death, especially with respect to the need to continue with end-of-life rituals until signs of death are visible to the laity (ie, nonclerical members of the religious group).³² It would also be interesting to examine whether Buddhist and Islamic individuals living in Australia might be more willing to donate to members of their own faith than to individuals of different faiths.

Interestingly, attitudinal differences were not as marked when investigating ethnicity in our study, with findings suggesting that attitudes and knowledge scores were similar between respondents of Asian and white backgrounds (although whites were more likely to be identified as potential donors). These findings are remarkably similar to those reported by Bresnahan et al,²⁵ who compared the willingness of Americans, Koreans, and Japanese to register as organ donors and found that, although the overall levels of positive attitudes toward organ donation were similar across the 3 groups, the Korean students in their study were the least likely to accept an application form to register as a donor. Our findings were somewhat more positive about this issue than other reports of attitudes toward organ donation and donor behavior in adults living in

Table 4 Linear regression results for variables associated with willingness to become an organ donor (N=509)

Predictor variables	Standardized coefficient β	P
<u>Attitude scale items</u>		
4. "Organ and tissue donation is against my religious beliefs." (reverse scored)	-.07	.026
5. "I feel it is important for a person's body to have all its parts when it is buried." (reverse scored)	-.18	<.001
6. "Organ and tissue donation allows something positive to come out of a person's death."	.30	<.001
<u>Organ Donation Attitude Scale</u>		
8. "I know someone who has signed an organ donor card."	.08	.016
10. "I have discussed my wishes for after my death with my family."	.09	.004
12. "I would be willing to donate my organs to a person of a different race."	.21	<.001
18. "I think doctors would try just as hard to save my life whether or not I plan to be an organ donor."	.09	.006
19. "In general, I think that organ donation is a good thing."	.13	.001

Table 5 Linear regression results for variables associated with donor behavior, that is, having signed an organ donor card or indicated donor status on driver's license (N=509)

Variable	Standardized coefficient β	P
<u>Knowledge scale</u>		
All 15 items scored to produce a total knowledge score	.09	.006
<u>Organ Donation Attitude Scale</u>		
6. "I am willing to have organs donated after my death."	.52	<.001
8. "I know someone who has signed an organ donor card."	.24	<.001
10. "I have discussed my wishes for after my death with my family."	.13	<.001

Asian countries such as China,^{33,34} Hong Kong,^{35,36} and Taiwan.³⁷ Of course, participants in our study were currently residing in Australia and many may therefore have had second- or third-generation Asian backgrounds, making it difficult to make comparisons between our findings and those involving individuals currently residing in Asia. Future research in this area would be invaluable, particularly in Australia, where approximately 22% of the population was born overseas and a further 26% of people who were born in Australia have at least 1 parent who was born overseas.³⁸

In terms of predictors of willingness to become a donor, our study results indicate that beliefs that organ donation is against religious beliefs and that it is important for a person's body to be buried whole are significant predictors of willingness to donate. These findings are in line with results of other studies that report a negative relationship between beliefs that the integrity of the body should be maintained after death and willingness to donate.^{13,39} Along similar lines, individuals in our study who, in general, believed organ donation is "a good thing" and those who were willing

to donate their organs to someone from a different race were more willing to report a willingness to donate. On a more practical level, people who knew someone who had signed an organ donor card and those who had discussed their wishes with their family reported that they would donate their organs after death (similar to those findings reported by Feeley et al⁴⁰ and Alvaro et al⁴¹). Finally, those who believed that doctors would still try hard to save their lives after death were more willing to donate, in line with results reported by Alden and Cheung.⁴²

Our regression model predicting self-reported organ donor behavior (as measured by carrying an organ donor card or by indicating their donor status on their driver's license) provided a very clear model. We demonstrated that knowledge about organ donation, willingness to donate, knowing someone who had signed an organ donor card, and having discussed their wishes with family members were predictive of actual donor behavior. Although again our findings complement the international literature in terms of the relationship between donor behavior and knowledge,^{28,29,31,40,43-45} and communication with family members,⁴⁰ the key issue warranting further discussion is how this information might best be used for the development of strategies to intervene to improve donation rates in Australia.

Having broadly established that attitudes toward, knowledge about, and predictors of organ donation in Australia are similar to those reported in other industrialized countries such as the United States, it is difficult to elucidate why Australian donation rates are lower than rates reported in comparable countries. These findings may be explained in part by the fact that our sample had less positive attitudes toward donation and slightly lower knowledge levels than a US sample. However, because of similarities in terms of the more modifiable factors at the individual level (eg, attitudes) between Australians and their international counterparts, it may be possible that factors at the

broader policy and procedural level may play a significant role in the organ donation arena in Australia. Indeed, the impact of the beliefs and actions of staff in critical care situations, the resources available to these staff, and the legislation surrounding organ procurement in Australia have not been studied enough.

Future studies investigating the broader cultural and policy factors at play in the Australian context would be valuable. Also, further in-depth (qualitative and quantitative) research on the complex interaction between religious beliefs, culture, and organ donation, especially in relation to concepts surrounding brain death, consciousness, and end-of-life rituals, is essential before a more nuanced understanding of the influence of religion on organ donation attitudes and behaviors can be achieved. It is possible that what appear to be religious objections may actually be cultural objections. Although religion influences the culture of a society, culture encompasses more influencing factors than religion alone. This may be especially so in Australia, where religious beliefs may be influenced by more general Australian cultural traditions and attitudes. Finally, more research that uses potential/actual conversion rates, rather than relying on “donors per million population” statistics would be valuable. Currently, it is difficult in Australia to access data that encompass all the variables that affect donation rates because limited data are collected about the numbers of potential donor families who are approached and refuse consent. It is possible, however, to report the number of donors per thousand deaths (approximately 34-37 in Australia)⁴⁶ and actual retrieval rates (which are relatively high in Australia).⁴⁶

Limitations

This study was limited by its reliance on a non-representative sample. Although including friends and family members of participating university students increased representativeness somewhat, it is likely that the study suffers from sampling bias, especially with regards to education level. It cannot be assumed that the attitudes of participants in this study are generalizable to the wider Australian population. The knowledge data presented here were also limited by the poor psychometric properties of the scale used. Future studies would benefit from the use of a thoroughly validated knowledge scale with higher reliability. Finally, very little is known about the attitudes and beliefs of Aboriginal and Torres Strait Islander people about deceased organ donation. Rates of donation and transplantation are low among indigenous Australians,^{47,48} despite this group being at greater risk than non-indigenous Australians for chronic kidney disease.⁴⁹ Although further research in the area is difficult because of cultural challenges and the small population (indigenous Australians comprise approximately

2% of the population),⁵⁰ further research examining why indigenous Australians have low donation rates is critical.

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