

Beliefs and Intention to Organ Donation: A Household Survey

Abstract

Background: Organ transplantation is considered as the last therapeutic option for the treatment for end-stage organ failure. However, the gap between the demand and supply of transplantable organs is still wide. Extensive researches have been conducted to understand this gap, and many countries have introduced Opt-out laws and have started targeted awareness programs. We aimed to assess, among the household residents, the normative behavior and beliefs and its correlation to intentions toward becoming organ donors. **Subjects and Methods:** A household survey with the resident population of Qatar was conducted from October 2016 to November 2016. A sample of 1044 individuals aged 18 and above, residing in eight municipalities within the country, was selected using a two-stage systematic random sampling method to understand the relationship between organ donation intentions and behavioral, normative, and control beliefs. Independent female enumerators collected data on electronic tablets and exported to SPSS for data analysis. **Results:** Data from 930/1044 (89%) individuals responded to the intention-related questions were taken for final analysis. Multivariate analysis brought out that behavioral beliefs (standardized beta coefficient = 0.25, $t = 6.5$, $P = 0.001$) and normative beliefs (standardized beta coefficient = 0.32, $t = 8.4$, $P = 0.001$) were significant contributors to intention to donate organs whereas control beliefs (standardized beta coefficient = -0.07 , $t = -2.3$, $P = 0.02$) were negatively associated to organ donation intention. **Conclusions:** Findings indicate that behavioral and normative beliefs play a very important role in contributing to the intention of the individual toward organ donation.

Keywords: Behavioral beliefs, donation, intentions, organ transplantation

Introduction

Organ transplantation is often the treatment of choice for many end-stage organ diseases.^[1] Unfortunately, organ donors have not increased exponentially to meet the growing needs of transplant patients all over the world. Several factors are influencing the knowledge, attitudes, and determinants toward organ donation including gender, educational level, occupation, sociodemographic status, income level, culture, and religion.^[2-7] Analyzing factors influencing organ donor decisions has become an important aspect for understanding the gap between the demand and availability of organs for transplant. Studies have used “Theory of Planned Behavior” (TPB), a social-cognitive model to understand the determinants of people’s decisions to disclose their organ donation wishes via a donor registry.^[8-14] TPB explains the psychology of an individual and links one’s beliefs and behavior toward a particular phenomenon. Beliefs

can further be divided into normative, control, and behavioral beliefs. Individual perception of social normative pressures or relating to an evaluative standard that should or should not be performed, such as behavior, is called normative beliefs. Control beliefs are the presence of factors that hinder the performance of the behavior, whereas behavior belief belongs to response to perform a given behavior in a given situation.^[13]

Previous organ donation studies provided an assessment of all the constructs in the TPB model and have found differing results. A study carried out in Australia, using students who were predominantly Caucasian, female, and aged 17–24 years, showed attitude, subjective norm, and perceived behavioral control to significantly influence registering intentions for all participants.^[15] In contrast, a study on students in the Netherlands found that organ donation decision was predominantly based on attitude and was mostly influenced by the presence or absence of negative

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beliefs.^[16] Another study analyzing attitudes toward organ donation among the students of America, Korea, and Japan found that within these countries, spiritual connection/concern was the main influence of attitude. Subjective norm was important in America, perceived behavioral control was the best predictor of intention to register in Japan, and increased knowledge was associated with reluctance to register in Korea.^[8] Therefore, it is important to assess organ donation behavior in every population as there is an effect of culture. Little is known about what specific thoughts or feelings influence people's organ donation decision in Qatar. Hence, a large-scale household survey was conducted using a validated questionnaire based on TPB to analyze how intentions related to organ donation are associated with the beliefs of individuals in Qatar. If a strong association could be established with beliefs, an appropriate organ donation promotion strategy could be devised so that these intentions could be influenced positively.

Subjects and Methods

Assuming 50% (as no figure is available in Qatar about the general population for organ donation) of the population will know about the organ donation or willing to donate with 5% absolute error keeping 95% confidence interval (CI) and design effect 2 to avoid biasness of clustering, a sample size of $768 \approx 800$ households would have been sufficient to enroll in the study. Sample size $n = (\text{Design effect} \times N [p(1-p)]) / (d^2 / Z^2 1 - \alpha/2 \times [N - 1] + P \times [1 - p])$, where N is Qatar general population eligible for organ donation, P is proportion of willingness to donate, and d is 5% absolute error, is used for the calculation.^[17] Further, to represent all eight municipalities of Qatar and ensuring the representation of both Qatari and non-Qatari households, the sample size of 1044 is considered for the survey.

Female interviewers visited each selected household and identified an individual in the household who was 18 years or above to complete the validated questionnaire that was prepared using the TPB.^[18] The total sample size was proportionally distributed among all eight municipalities of Qatar ensuring the representation of both Qatari and non-Qatari households.

Demographic variables such as age, nationality, occupation, household income, religion, marital status, number of dependents, education, and number of years in Qatar were taken into consideration. Household income responses refused by the participants were merged with QR 10,000–20,000/month income category for non-Qatari residents and QR >30,000/month for Qatar residents to utilize all information for advance statistics. According to Qatar policy, expatriate residents having income QR 10,000/month or more are allowed to keep their family whereas per capita income of Qatari residents is more than \$100,000/year. Factor analysis showed that

beliefs and intention domains to organ donation of the survey questionnaire were able to explain 70% and 74% variations, respectively.

Of 1044 individuals who participated in the survey, only 930 individuals responded to the intention related questions. Therefore, data of only these individuals were considered while analyzing this study.

Data coding

Multiple items of each domain were coded as “1” and “0” for yes and no or correct and wrong response to the dichotomous questions. Items with categories such as yes, maybe, and no/do not know in the questionnaire were coded as 2, 1, and 0. Variables with five-level Likert scale, “strongly disagree,” “disagree,” “neither agree nor disagree,” “agree,” and “strongly agree,” were coded as “-2,” “-1,” “0,” “+1,” and “+2,” respectively. Reverse codes were given to negatively keyed items. Qualitative responses were coded with integers to all items for each domain (behavioral belief, normative belief, control belief, and intentions) to make qualitative responses on par with quantitative responses. Individual's response index, i.e., $\sum(\text{items response}) / \sum(\text{highest values in the items})$, was calculated for each domain.^[19]

Statistical analysis

Frequency and percentages were performed for all categorical variables. Mean and standard deviation (SD) were calculated for each domain. Student's *t*-test and one-way ANOVA were used to see significant mean level differences of intention to organ donation index between/among demographic characteristics in the study. Correlation coefficients were calculated among normative, control, and behavioral beliefs and intention to organ donation index. Significant variables at univariate analysis were used for multivariate regression analysis to intention to organ donation. $P \leq 0.05$ (two-tailed) was considered for statistical significant level. SPSS 22.0 Statistical Package (Armonk, NY: IBM Corp.) was used for the analysis.

Results

Data from 930/1044 (89%) individuals responded to the intention-related questions were taken for final analysis. Participant's average age was 38 ± 11 years, 49% were males, and 51% were females. Most participants were government employees, nongovernment employees, or homemakers. The average income of nearly 36.7% ranged between QR 10,000 and 20,000/month. 19.2% had less than QR 10,000 and 18.2% had between 20,000 and 30,000 monthly incomes. About 80% of the participants followed Islam; rest followed Christianity or other religions. 80.4% of the participants were married. Majority of the participants have >5 dependents. 51.7% of participants had a graduation degree or diploma, while 29.5% had just a secondary or higher secondary degree; only 11.3% of

individuals had completed postgraduation and above. Most of the participants had spent ≤10 years in Qatar [Table 1].

Behavioral beliefs

Positive impact on life after death or act being rewarded by God were prominently existent in Qatar population as 68.3% and 81.6%, respectively, responded with agree or strongly agree for these beliefs. About 58.5% of the individuals believed that they would be more willing to register if they knew more about organ donation and registration location. 94.5% population supported the views that their altruistic beliefs such as “organ donation could save somebody’s life” and “that is a good thing that should be promoted,” 24.4% people expressed agreement with behavioral belief of bodily disfigurement in the process of organ donation, and 21.7% people believed that in case of emergency, care would not be given, if they are registered as donors. However, the rest

of the individuals participated in the survey did not agree to these fear-centric beliefs associated with organ donation. The average index of behavioral beliefs was 0.42 ± 0.47 , i.e., 42% in survey participants.

Normative beliefs

49.9% of people said that they would take the opinion of their family members before registering as organ donors, and 60% expressed that they would be more willing to register as donors if they knew that their family members would not have an objection to allowing the donation of their organs at the time of death. 68.1% of them expressed higher willingness to register as a donor, if they knew more about the viewpoint of their religion about organ donation. The average index of normative beliefs in survey participants was 0.29 ± 0.21 , i.e., 29%.

Control beliefs

47.7% of the individuals believed that they may get many opportunities for registering as a donor, and 48.8% believed that they may get answers for all their questions while registering. More than half of the participants (60.2%) believed that they are healthy to donate organs, and 68.6% find operation procedure related to organ donation as encouraging. 61.1% of survey participants trust the healthcare system in Qatar. However, almost equal number of individuals agreed and disagreed to the belief that living organ donation might leave one weak. Over 70% of individuals disagreed with the control belief that emotions of family members, while the organ is being taken, made them feel concerned. The average index of control beliefs was found -0.27 ± 0.55 in the study.

Intentions to donate organs

43.8% of people showed a willingness to donate blood, and 35.9% of people showed a willingness to donate a kidney. However, only 19% of individuals were intending to donate eyes and heart. Relatively fewer numbers of people were interested in donating other organs, such as liver (17.8%), lung (14.6%), and bone marrow (14.7%). 30.1% were willing to donate after discussion with religious leaders, whereas 45.3% refused to consider a donation based on discussion with a religious leader. 52.2% of individuals showed intentions to register for organ donation, if approached by an organization, they could trust. Average intention to organ donation was (mean ± SD) 0.29 ± 0.31 , i.e., 29% (95% CI 27%–31%).

Univariate analysis showed that while comparing mean levels of intention to organ donation index between/among demographic characteristics, no variable found statistically significant [Table 2].

Indices such as normative beliefs ($r = 0.49$, $P = 0.001$) and behavioral beliefs ($r = 0.46$, $P = 0.001$) were positively correlated, whereas control beliefs ($r = -0.08$, $P = 0.02$) were negatively correlated [Table 3].

Table 1: Sociodemographic characteristics of intension to donate organ donation

Variable	Category	n (%)
Age	-	38±11*
Nationality	Qatari	243 (26.1)
	Non-Qatari	687 (73.9)
Gender	Male	456 (49)
	Female	474 (51)
Occupation	Student	50 (5.4)
	Homemaker	283 (30.4)
	Government employee	271 (29.1)
	Nongovernment employee	274 (29.5)
	Self-employed	26 (2.8)
	Retired	19 (2.0)
Household income	Unemployed	7 (0.8)
	QR<10,000/month	179 (19.2)
	QR 10,000-20,000/month	341 (36.7)
	QR 20,001-30,000/month	169 (18.2)
	QR>30,000/month	71 (7)
Religion	Refused	170 (18.3)
	Islam	745 (80.1)
	Christianity	123 (13.2)
Marital status	Others	62 (6.7)
	Single	149 (16)
	Married	748 (80.4)
Number of dependents	Divorced	10 (1.1)
	Widowed	23 (2.5)
	≤3	266 (28.6)
Education	4-5	313 (33.7)
	>5	351 (37.7)
	Up to primary	70 (7.5)
	Secondary and high secondary	274 (29.5)
Years in Qatar	Graduation and diploma	481 (51.7)
	Postgraduation and above	105 (11.3)
	≤10	724 (77.8)
	11-20	142 (15.3)
	>20	64 (6.9)

*Age: Mean±SD. SD: Standard deviation

Multivariate analysis showed that normative beliefs (standardized beta coefficient = 0.32, $t = 8.5$, $P = 0.001$) and behavioral beliefs (standardized beta coefficient = 0.25, $t = 6.5$, $P = 0.001$) have a significant positive correlation to intention to donate and control beliefs (standardized beta coefficient = -0.07, $t = -2.3$, $P = 0.02$) have a significant negative correlation with intention to donate organs [Table 4].

Discussion

This is a unique quantitative study from a rapidly growing developing country from the Arab Middle East region that has the highest per capita income in the world. Qatar is a small country having approximately 85% expatriate population and has the highest rate of literacy in the Arab-speaking world. The results of the present study bring out that normative, behavioral, and control beliefs have a considerable influence over individuals' intentions toward donating their organs, especially registering consent to donate organs when they are alive or upon death. These findings are in accordance with the findings of Hyde and White, 2009 where they found a strong association between organ donation intention and behavioral, normative, and control beliefs.^[12] The behavioral and normative beliefs are significantly positively correlated, whereas control beliefs are significantly negatively correlated to intentions towards organ donation. This is supportive of Ajzen's model in which attitude and subjective norm significantly predict intention and perceived behavioral control not appearing as a significant predictor of intention.^[13]

Unselfish concern for the welfare of others or altruism is considered as the backbone of voluntary organ donation system.^[19-22] In this study, 95% of individuals agreed with altruistic beliefs toward organ donation as "Organ donation could save lives and it is good to be promoted." This increase in association of altruistic behavioral beliefs with organ donation could be an indication of a more positive outlook of the household population in Qatar toward organ donation. The data obtained also represented this positive outlook as most of the survey participants said that they were undecided about registering for organ donation at that moment and they may consider donating one or more organ or tissue in the future. A significantly large population believed that all Qatari, as well as non-Qatari residents, should automatically register as donors. The previous study also showed that 39.6% of Qatari individuals and 43.1% of non-Qatari individuals believed that organ donation is worthwhile to do to save lives.^[23] From these data, we presume that strong altruistic beliefs may have a strong relation with voluntary organ donation decisions.

One behavioral belief that prominently stood out in the survey was providing social support to families of the deceased, irrespective of the donation could increase organ donation. 63.7% of people voiced their agreement in this context. Similar results brought out by other studies

Table 2: Association of demographic characteristics to intension index to donate organ

Variable	Category	Index of intention to donate organ	P
Nationality	Qatari	0.28±0.31	0.65
	Non-Qatari	0.29±0.32	
Gender	Male	0.28±0.31	0.87
	Female	0.29±0.32	
Education	Up to primary	0.29±0.34	0.80
	Secondary and high secondary	0.27±0.29	
	Diploma and graduate	0.30±0.31	
	Postgraduate	0.30±0.33	
Dependents	≤3	0.31±0.32	0.36
	4-5	0.27±0.30	
	≥6	0.30±0.32	
Religion	Islam	0.29±0.31	0.52
	Christian	0.28±0.31	
	Others	0.25±0.30	
Occupation	Student	0.22±0.26	0.10
	Homemaker	0.27±0.31	
	Government employee	0.33±0.32	
	Nongovernment employee	0.29±0.32	
	Self-employed	0.35±0.30	
	Retired	0.19±0.30	
	Unemployed	0.25±0.31	
	Marital status	Single	
Married	0.20±0.32		
Divorced	0.41±0.38		
Widowed	0.18±0.23		
Years in Qatar	0-10	0.29±0.31	0.65
	11-20	0.30±0.33	
	>20	0.32±0.35	
Income	QR<10,000	0.25±0.27	0.10
	QR 10,000-20,000	0.31±0.32	
	QR 20,001-30,000	0.32±0.31	
	QR>30,000	0.26±0.33	

Table 3: Beliefs correlation to intention index to organ donation

Variable	Correlation coefficient r and P
Normative belief index	0.49, 0.001
Control belief index	-0.08, 0.02
Behavioral belief index	0.46, 0.001

Table 4: Multivariate regression analysis for intention towards organ donation

Factors	Standardized beta coefficient	t	P
Normative belief	0.32	8.5	0.001
Behavioral beliefs	0.25	6.5	0.001
Control beliefs	-0.07	-2.3	0.02

that providing social support to families of the deceased individuals, who were experiencing the organ donation

process, could have a positive impact on the donation; one form of this could be bereavement support.^[24] Providing socioeconomic support to needy bereaved family based on formal evaluation inculcated in the organ donation strategy of Qatar.^[25] This brings out a need for creating better awareness toward the paradigms of Doha model in Qatar. The model has become an internationally respected example as it rewards the organ donors and their families with respect, appreciation, and recognition. It includes the provision of “medal of honor” to donors and families by the highest authorities in Qatar. Living donors are offered provisions of medical insurance for lifetime, compensation for any health problems once occur, life insurance, priority for transplantation in case of future renal failure, and other privileges such as free flight tickets. All the organ donation expenses will be covered by the government. Compensation of loss of wages and loss of working days during donation process will also be provided. In addition, travel support and social security support will be offered for families of the deceased donor.

Most household residents of Qatar also believed that donating their organs could have a positive impact on their life after death, and God would reward the act. Such behavioral beliefs could be used to harnesses more positive thinking about organ donation. Fear of bodily disfigurement, fear of operation, or not being taken care of in case of emergency are considered very influential behavioral beliefs.^[26,27] However, in the present survey, concurrence for such beliefs was very low (24.4% and 21.7%, respectively), which shows that these beliefs may not be acting as dissuading factor for organ donor registrations in Qatar. This could also be indicative of increased trust in the healthcare system of Qatar, which brought out in the question about trust in the healthcare system where 61.1% of the people disagreed with going abroad for transplantation.

This survey with household population also brought out a significant correlation between one’s organ donation intention and his normative beliefs, especially those associated with family and religion. A large number of participants opted that they would base their registration decision on views of their family members both while registering for organ donation and consenting for organ donation at the time of their death. This clearly shows that residents living in Qatar give high value to such normative beliefs of their family while making organ donation-related decisions. The previous study showed that residents of Qatar give a lot of importance to their family’s opinion while registering for organ donation,^[28] which is similar to the earlier findings of Rosenblum *et al.* that next-of-kin has a considerable influence on organ donation.^[29] These findings highlighted the need for continued public education to maximize positive beliefs about organ donation.

A large number of people felt that they would be more willing to donate if they had a clearer idea about their

religious views about organ donation. The ambiguity related to religious views about organ donation in the Arabic-speaking community was reported earlier.^[22] This could be an indication for creating more awareness about organ donation through religious channels, such as religious settings and religious leaders who could work to clarify all questions about the subject within a religious context.

A significant negative correlation was found between control beliefs and intention to donate organs in the present study. To improve the intention to organ donation, it is required to target a person’s control beliefs effectively such as no one can be too old or young to donate organs or the process of registering as an organ donor is less time-consuming. However, in the current scenario, control beliefs related to factors hindering organ donation influence relatively fewer residents. Increasing people’s perceived behavioral control reduces the gap between the intention of organ donation and the actual donation of organs. The present study showed that all beliefs had a high correlation with the intention to donate whereas all demographic factors could not play any significant role in individuals’ intentions to organ donation in Qatar.

Limitations

Although beliefs have a strong influence on intentions to organ donation of household residents in Qatar, an augmented TBP with planned behavior with the prototype/willingness model that includes social reaction pathway items also could explain more variability in the study.

Conclusions

Behavioral and normative beliefs have a strong influence over intentions to organ donation of household residents in Qatar. Increasing collective awareness of household residents about organ donation and its process in Qatar will improve individual donation intentions, thereby the possibility of increasing actual organ donations in Qatar.

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Conflicts of interest

There are no conflicts of interest.

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