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Research

Factors Associated with Family Consent to Organ Donation in Qatar: Results from a Household Survey

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ABSTRACT

Background: Family consent and organ donors rates are co-linear to each other. The low consent rate can be influenced by socioeconomic and behavioral factors in the population. This study aimed to assess the influence of sociodemographic and behavioral factors on family consent for organ donation in the household population.
Subjects dan Method: This is a secondary data analysis of the cross-sectional research design of 1044 household participants conducted in Qatar on organ donation between October and November 2016. A two-stage systematic random sampling was applied to collect data. The dependent variable was family consent. The independent variables were demographic and behavioral factors such as knowledge, attitude, intention, and beliefs about organ donation. Data were collected using household survey Questionnaire and analysed using Student t-tests (unpaired), chi-square tests, and multivariate logistic regression analysis. C-statistics was applied to see discriminate accury of the developed regression model for family consent.
Results: Attitude (aOR= 1.73; 95%CI= 1.28 to 2.34; p= 0.001) and Intention (aOR= 7.50; 95%CI= 4.04 to 13.92; p= 0.001) factors were significantly associated to family consent to increase organ donation registration whereas; control belief (aOR= 0.74; 95%CI= 0.55 to 0.99; p= 0.050) was negatively associated to family consent. Knowledge (aOR= 1.63; 95%CI= 0.55 to 4.80; p= 0.380), behavioral belief (aOR= 1.11; 95%CI= 0.77 to 1.61; p= 0.580), heard organ donation (aOR= 1.12; 95%CI= 0.71 to 1.76; p= 0.630), registered for organ donation (aOR= 1.11; 95%CI= 0.50 to 2.46; p= 0.800), and donated any organ/blood/tissue (aOR= 1.63; 95%CI= 0.55 to 4.80; p= 0.380) factors were not statistically significant to family consent to increase organ donation registration.
Conclusion: Attitude and intention can increase family consent to organ donation registration.

Keywords: Family consent, intention, attitude, knowledge, organ donation.

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BACKGROUND

Success rates for end-stage disease organ transplantation increased substantially by modern medical technology with rising development in life-saving interventions but an inability to deliver exists due to inadequate availability of organs for transplantation (Shanteau et al., 1992). Organ donors cannot be increased unless consent rates increase (Hulme et al., 2016). The consent rate for deceased donations exceeded 80% in many European countries. Family consent touches both in opt-in and opt-out systems; however it contradicts against the donor's wish in the opt-in system and opposes the donor's presumed consent in the opt-out system (Shaw et al., 2017). Family overrule in opt-out might be even more crucial to prevent being no evidence of the subjects entry on the register.

Only 50% of donors who wish to donate after death discuss with their family which is an important aspect to predict consent for donation (Vincent and Logan, 2012). Family consent is influenced by attitude, belief about registering for organ donation, and mistrust in the medical profession (Vincent and Logan, 2012). Patient ethnicity, knowledge of patient's wishes, and involvement of specialist nurses in organ donation are also advocated to improve family consent rate (Vincent and Logan, 2012) .

There has been an increase in chronic diseases and end-stage renal disease in Qatar (Asim et al., 2017). The longer life expectancy and a general increase in the standard of living have all contributed to age-related chronic conditions and organ failure, ultimately resulting in the need for organ transplants. The shortage of organ donors for transplantation is a priority issue for Qatar and will continue as a crucial issue unless the supply of donated organs increases.

The low consent rate is a major factor limiting organ donation worldwide for a living or desceased relative (Agarwal et al., 2018; Maslamani et al., 2014). Since the knowledge available on organ donation and transplantation related to family consent in Qatar is scarce, studies are required to collect public views on these issues where the opt-in system prevails. Hence, a large-scale household survey data was planned to identify socioeconomic and behavioral factors for family consent to develop strategies that can effectively address the role of the consent-increasing organ donors in Qatar.

SUBJECTS AND METHOD

1. Study Design

A cross-sectional survey with two-stage systematic random sampling was applied to select Primary Sampling Units (PSUs) at the first stage and a sample of households within each selected PSU at the second stage during October and November 2016 in Qatar.

2. Population and Sample

Data were utilized from Qatar National Research Fund (QNRF) research project (NPRP-7-965-3-247). 1,044 participants, aged 18 years or above, were interviewed through face to face interviews by a team of 29 members consisting of bilingual female interviewers and supervisors, after verbal consent using a validated questionnaire based on Theory of Planned Behavior (TPB).

3. Study Variables

Dependent variable was Family consent. Independent variables were nationality, Gender, Hearing of organ donation, Attending organ donation campaign, Registering for organ donation, donating any organ/blood/tissue, Household income,

Occupation, Religion, Marital status, Education, Number of dependent children, Duration in Qatar and behavioural factors like intention, attitude, knowledge and beliefs towards organ donation.

4. Operational Definition of Variables

Family consent was dependent variable in this study and considered as agreed if the household participant was willing to register as an organ/tissue donor or willing to donate any of the organs (kidney /blood/ heart/ eyes/ liver/ skin/ lungs/ bone marrow) whereas; not willing to register or not decided to register was considered as disagreed for family consent. Nationality was defined Qatari citizen as Qatari and Qatari resident as non-Qatari. Gender was defined as male and female. Marital status was defined as single/married/divorced /widowed. Occupation categories were defined as student: those who are studying, homemaker: those involving in domestic drudgery, govt. employee: those working in govt offices, non-govt. employee: those working in private sector in Qatar and self-employed: those who were involved in their own jobs (self-employed) and earning for their family. Education categories were defined as primary till class 5, secondary till class 10, higher secondary till class 12 or equivalent, graduation those qualified up to 14, post-graduation those educated up to class 16, Doctoral degree is defined as any PhD degree and diploma as one year education after 12 class. Those who were able to read and write were categorized as can read and write and those who were not able to read and write as cannot read and write.

Household income was categorized as monthly income less than Qatari Ryal (QR) <10,000, QR 10,000 to 20,000, QR above 20,000 to QR 30,000, and QR 30,000 and above. Religion was categorized as Islam: those were following Islam, Christianity: those were following Christianity, and other: those were following Buddhism, Sikhism, etc. Number of dependent children: Number of the family children who were dependent for their survival. Participants stay in Qatar was defined as all life in Qatar or not. Heard of organ donation was defined as 'Yes' if the participant heard from word of mouth from somebody/relative, newspaper, television, radio, internet, social event, social get together else no. Attended organ donation campaign was defined as 'Yes' if the participant ever attended organ donation promotion campaigns in Qatar else 'No'. Register for organ donation was either in Qatar/ Outside of the Qatar /not registered. Donation of organ/tissue/blood was defined as 'Yes' if the participant ever donated one

5. Study Instruments

This study used a Household survey Questionnaire.

6. Data Analysis

Interval variables including each domain index such as knolwdge, attitude, beliefs and interntion to organ donation were described in the form of mean and standard deviations whereas; frequency with percentages were calculated for categorical variables in the study. Integer codes were applied to make qualitative data at par with quantitative data to use advanced parametric statistics (Zaidan et al., 2011). The formula ∑(items response)/ ∑(highest values in the items) is used to calculate an individual index for each domain (Zaidan et al., 2011; Thomas, 2009). All the indices were compared using Student t-tests (unpaired) to see mean difference between participants who agreed and who did not to family consent and chi-square tests were applied for associations between socio-demographic variables and families agreed for consent vs those who did not agree.

Multivariate logistic regression analysis was performed for families agreed for consent in comparison to those who did not agree and adjusted odds ratios (slopes) and 95%CI were presented. C-statistics and Receiver Operating Characteristic (ROC) curve were presented from the predictive values of the model to discriminate between family agreed to consent and who did not. P≤ 0.05 (two-tailed) was considered for a statistically significant level.

7. Research Ethics

Verbal consent was approved by the IRB (Ref. No. 14,227/14), Medical Research Center, HMC, Doha, Qatar.

RESULTS

532 (51.0%) out of 1044 subjects agreed to give family consent to organ donation for a live or deceased relative and their mean age was 38.90±10.50 years. 148 (27.80%) of the 532 participants were Qataris, 277 (52.10%) were females, and 467 (87.80%) heard of organ donation. 39 (7.30%) participants were registered within Qatar and 22 (4.10%) were registered outside Qatar. Only 19(3.60%) participants attended organ donation campaigns and 170 (32%) had donated any organ/ blood/ tissue in their lifetime. 165(31%) participants were Government employees. 251 (47.10%) were having a household income of 10,001-20,000 QR and most of them 434 (81.6%) were following Islam. 442 (83.10%) were married and 207 (38.90 %) were having more than 6 dependent children (Table 1 and Table 2).

Table 1. Age in family consent participants for organ donation registration

Variable	Mean	SD	Min.	Max.
Age	38.90	10.50	18	65

Table 2. Demographic and socioeconomic characteristics according to family consent participants for organ donation registration

Variable	Category	Frequence	Precentage
Nationality	Qatari	148	27.80
	Non-Qatari	384	72.20
Gender	Male	255	47.90
	Female	277	52.10
Heard of Organ Donation	Yes	467	87.80
Attended Organ Donation Capmpaign	Yes	19	3.60
Register for Organ Donation	Qatar	39	7.30
	Outside Qatar	22	4.10
	Not registered	471	88.50
Donated any organ/blood/tissue	Yes	170	32.00
Household income	QR ≤ 10000	114	21.40
	QR 10001-20000	251	47.20
	QR 20001 – 30000	91	17.10
	QR > 300001	76	14.30
Occupation	Student	27	5.10
	Home maker	150	28.20
	Govt. employee	165	31.00
	Non- Govt. employee	152	28.60
	Self-emloyed	22	4.10
	Retired	13	2.40
	Unemployed	03	0.60

Continue.

Variable	Category	Frequence	Precentage
Religion	Islam	434	81.60
	Christianity	66	12.40
	Others	32	6.00
Marital status	Single	69	13.00
	Married	442	83.10
	Divorced	10	1.90
	Widowed	11	2.10
All life in Qatar	Yes	194	36.50
Education	Up to primary	53	10.00
	Secondary & higher secondary	155	29.10
	Diploma & graduation	269	50.60
	Post graduate & above	55	10.30
Number of dependent	<3 children	151	28.40
	4-5 children	174	32.70
	> 6 children	207	38.90
Education	Up to primary	53	10.00
	Secondary & higher secondary	155	29.10
	Diploma & graduation	269	50.60
	Post graduate & above	55	10.30
Number of dependent	<3 children	151	28.40
	4-5 children	174	32.70
	>6 children	207	38.90

Knowledge domain for organ donation according to the participants' view on family consent

When the knowledge among participants who agreed to family consent for organ donation was analyzed; 321(60.30%) participants understood the meaning of organ donation as the transfer of tissue/organ from a dead body or a living donor to a patient and 121 (22.70%) knew the meaning of death as brain death while the heart is pumping with the help of a ventilator to keep breathing. Many knew that one can donate organs like kidney 82.90% (441), heart 261 (49.10%), liver 249 (46.80%), lungs 125 (23.50%), pancreas 96 (18.00%), intestine 85 (16.00%), blood 341 (64.10%), cornea 210 (39.50%), skin 98 (18.40%), bone marrow 79 (14.80%) and bone 136 (25.60%). More than half of the participants 268 (50.40%) had knowledge of the Qatar organ donor registry and 393 (73.90%) knew that 18 years and above can register for organ donation in Qatar. Only few people knew someone like a family member (12.00%), a friend (14.10%), or a colleague (1.900%) who had donated organs in their lifetime. The majority 330 (62.00%) knew that a part of the liver can be donated to their relative in their lifetime, however, 197 (37%) were under the impression that donating the part of their liver is a risk. In contrast, 472 (88.70%) knew that one of the two kidneys can be donated and 381 (75.30%) knew that donating their kidney is safe. 396 (74.40%) did not know that their religion allows organ donation.

The majority of the participants who agreed to family consent to organ donation for a living or deceased relative knew about organ donation law & policy in Qatar that prohibits any buying or selling of organs 370 (69.50%), provides access to transplant

a facility for all nationalities equally 354 (66.50%), gives donated organs from deceased donors to the first person on the waiting list regardless of nationality 367 (69.00%), puts no pressure on the deceased donor family or a living donor to donate organs 361 (67.90%,), provides health insurance to all live donors 281 (52.80%) and provides social support to all family members of the deceased if needed it 324 (60.90%) (Table 3).

Table 3. Description on knowledge domain for organ donation according to family consent who disagreed/agreed for organ donation registration

Variable	Category	Disagree to Consent, 512(49%)	Agree to Consent, 532 (51%)
Meaning of organ/tissue/blood donation	Transfer of tissues or organ from a dead body to a patient in need	93 (18.20)	106 (19.90)
	Transfer of tissue organ from a living donor to a patient in need	82 (16.00)	105 (19.70)
	Both the above	334 (65.20)	321 (60.30)
Organs/tissue can be donated	Kidney	423 (82.60)	441 (82.90)
	Heart	236 (46.10)	261 (49.10)
	Liver	233 (45.50)	249 (46.80)
	Lungs	127 (24.80)	125 (23.50)
	Pancreas	109 (21.30)	96 (18.00)
	Intestine	95 (18.60)	85 (16.00)
	Blood	357 (69.70)	341 (64.10)
	Cornea	193 (37.70)	210 (39.50)
	Skin	105 (20.50)	98 (18.40)
	Bone marrow	87 (17.00)	79 (14.80)
	Bone	139 (27.10)	136 (25.60)
Knowledge of donor registry in Qatar	Yes	185 (36.10)	268 (50.40)
	No	314 (63.30)	255 (47.90)
	Missing	13 (2.50)	9 (1.70)
Age of an individual register for organ donation	At any age	45 (8.80)	7 (13.30)
	18 years and above	361 (70.50)	393 (73.90)
	Don't know	106 (20.70)	68 (12.80)
Meaning of Death	Heart is not beating and there is no breathing	374 (73.00)	350 (65.80)
	Brain death in which the heart is beating with the help of ventilator to keep breathing	75 (14.60)	121 (22.70)
	Don't know	58 (11.30)	59 (11.10)
	Others (specify)	5 (1.00)	2 (0.40)
Religion allows organ donation	Yes	64 (12.50)	31 (5.80)
	No	298 (58.20)	396 (74.40)
	Don't know	150 (29.30)	105 (19.70)
Know anyone who donated an organ	Family member	45 (8.80)	64 (12.00)
	Friend	62 (12.10)	75 (14.10)
	Colleague	9 (1.80)	10 (1.90)
	No one	393 (76.80)	380 (71.40)
	Others	3 (0.60)	3 (0.60)

Continue.

Variable	Category	Disagree to Consent, 512(49%)	Agree to Consent, 532 (51%)
A part of the liver of an individual can be donated to his/her relative in his lifetime	Yes	297 (58.00)	330 (62.00)
Donating part of the liver is risky	Yes	171 (33.40)	197 (37.00)
	May be	104 (20.30)	55 (10.30)
	No	164 (32.00)	209 (39.30)
	Don't know	73 (14.30)	71 (13.30)
One of the two kidneys can be donated	Yes	430 (84.00)	472 (88.70)
Donating a kidney is safe	Yes	297 (63.30)	381 (75.30)
	May be	108 (23.00)	70 (13.80)
	No	64 (13.60)	55 (10.90)
Qatar organ donation law & policy			
Prohibits any buying or selling of organs	Yes	272 (53.10)	370 (69.50)
Provides access to transplant facilities for all nationalities equally	Yes	248 (48.40)	354 (66.50)
Gives donated organs from deceased donors to the first person on the waiting list regardless of nationality	Yes	254 (49.60)	367 (69.00)
Puts no pressure on the deceased donor family or a living donor to donate	Yes	264 (51.60)	361 (67.90)
Provides health insurance to all living donors	Yes	175 (34.20)	281 (52.80)
Provides social support to all family members of the deceased, if needed it	Yes	192 (37.50)	324 (60.90)

Attitude domain for organ donation according to the participants' view on family consent

Among the 532 (51.0%) participants who agreed to family consent to organ donation for a living or deceased relative, 47.4% and 49.4% strongly agreed and agreed that organ donation is a good thing to promote and 42.3% strongly agreed and 53.6% agreed that registering as an organ donor could save somebody's life. 53.2% agreed that Qataris and non-Qataris should be automatically registered for organ donation with the ability to refuse it if they wish. 53.9% were willing to register as organ donors if their family would have no objection to donation of their organs at the time of their death. Many were willing to register as organ donors (49.8%) if they knew more about the organ transplantation process, where to register for organ donation (59.4%), and the viewpoint of their religion about the donation of organs (62.4%) (Table 4).

Beliefs domain for organ donation according to the participants' view on family consent

53.60% of the 532 participants who agreed to family consent to organ donation to living or deceased relatve believed that organ donation whether living or after death is going to impact life after death in a good way and 56.40% believed that this act will be rewarded by God. A small number of participants 4.70% strongly believed that doctors will not provide enough care if the patient is a registered organ donor in case of emergency and the organ retrieval process after death may cause body disfigurement (2.40%). 58.10% believed that organ donation will increase if social support is provided to the family of the deceased regardless of whether they donate or not. A small number of participants

(0.60%) strongly believed that they couldn't find many opportunities to register as organ donors in Qatar and it is a time-consuming process. 2.60% strongly believed that while registering for organ donation, they may not get answers to all their questions.

Table 4. Description of attitude domain towards organ donation according to family consent who disagree/agreed for organ donation registration

Variable Disagreed/Agreed to Consent	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
Organ donation is good thing to promote	37.7/47.4	56.6/49.4	4.1/1.7	1.6/1.3	0.0/0.2
Registering as organ donor could save somebody's life	27.1/42.3	65.4/53.6	3.3/1.1	4.1/2.8	0.0/0.2
Qatari and non-Qatari should be automatically registered for organ donation with the ability to refuse it if they wish	12.1/23.5	49.6/53.2	16.0/3.8	18.6/17.3	3.7/2.3
Willing to register as an organ donor. If my family would have no objection to allowing the donation of my organs at the time of my death	6.8/19.9	39.8/53.9	11.9/5.3	38.7/18.4	2.7/2.4
Willing to register as an organ donor, If I knew more about what is organ transplant and how it is done	3.5/14.5	43.2/49.8	12.9/5.3	36.3/17.5	4.1/3.0
Willing to register as an organ donor, if more information was available about the viewpoint of my religion with regard to organ donation	8.8/18.8	45.1/62.4	10.4/5.3	32.6/12.0	3.1/1.5
Willing to register as an organ donor, if I knew where I could register	5.3/17.1	346/59.4	16.2/5.5	39.6/15.4	4.3/2.6

A very small percentage strongly believed that it is not healthy to donate organs (2.30%) and their age is not fit for organ donation (2.10%). Few believed that operation procedure for procuring organs is discouraging (12.20%) and were worried that organ donation might leave them weak and disabled (1.50%). However, the majority of the participants trusted the healthcare system in Qatar and felt that going abroad for organ donation and transplantation was not required (56.60%). 41.40% strongly believed that emotions of their family members while organs are being taken make them feel concerned and believed that opinion would be taken either from a family member (48.90%), my community (3.40%), a religious leader (19.20%) and a friend (4.70%) to register as an organ donor (Table 5).

Table 5. Description of beliefs domain for organ donation in family consent who disagreed/ agreed for organ donation registration

Variable Disagreed/ Agreed to Consent in percentages	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
Donation whether living or after death is going to impact life after death in a good way	10.2/22.6	49.6/53.6	17.6/5.5	20.7/16.4	2.0/2.1
Organ donation is an act that will be rewarded by God	17.2/34.6	54.9/56.4	17.2/4.3	9.8/4.1	1.0/0.6
In case of an emergency, doctors will not provide enough care if the patient is a registered organ donor	3.9/4.7	17.0/18.6	20.3/6.8	52.3/52.3	6.4/17.7
Organ retrieval process after death may cause body disfigurement	2.3/2.4	24.6/19.5	22.5/9.2	47.3/55.3	3.3/13.5
Organ donation will increase if social support is provided to the family of the deceased regardless of whether they donate or not	4.5/9.0	52.7/58.1	19.3/7.7	22.3/18.2	1.2/7.0
Control Beliefs					
Could not find many opportunities to register as an organ donor in Qatar	2.5/4.9	28.9/36.5	19.5/7.7	46.3/42.7	2.7/8.3
Organ donor registration is time consuming process (asked only if registered in Qatar)	0/0.6	0.4/1.9	0.2/0.4	1.6/4.5	--/--
While registering for an organ donation, all questions may not get answers	1.6/2.6	29.9/34.0	20.5/10.2	45.7/43.8	2.3/9.4
Not healthy to donate	4.3/2.3	27.3/23.5	13.5/6.2	51.4/57.1	3.5/10.9
Age is not fit for donating	2.0/2.1	18.6/19.4	12.9/5.3	63.9/62.4	2.7/10.9
Operation procedure for procuring organs is discouraging	3.3/12.2	30.3/37.8	22.7/8.1	40.6/38.9	3.1/3.0
Worried that organ donation might leave weak and disabled	4.9/1.5	31.1/22.2	10.2/5.6	47.5/54.3	6.4/16.4
Don't trust the health care system in Qatar and it is better to go abroad for organ donation and organ transplantation	3.1/2.3	14.6/14.5	14.5/7.1	60.4/56.6	7.4/19.5
Emotions of your family members while organs are being taken make you feel concerned	6.6/6.8	51.4/41.4	10.5/7.0	28.5/34.8	2.9/10.2
Normative beliefs					
The opinion will be taken to register as an organ donor	Family member	My community	Religious leader	Friend	None
No/Yes to Consent in percentages	45.9/48.9	5.7/3.4	21.1/19.2	4.3/4.7	32.4/33.1

Intention domain for organ donation according to the participants' view on family consent

When assessing willingness to register as an organ or tissue donor among the participants who agreed to give family consent for organ donation to live or deceased, 44.90% of the 532 decided to register as an organ/tissue donor. The participants were willing to donate kidney (45.20%), blood (56.40%), heart (25.60%), eyes (25.60%), liver (22.70%), skin (19.10%), lungs (20.5%), and bone marrow (20.30%). 45.60% agreed that they have a religious leader to trust and 42.40% were willing to register as organ donors only after discussing with their religious leader. However, 55.60% were willing to consider donating organs more seriously if they were approached by an organization (Table 6).

Table 6. Description of intention domain to organ donation in family consent who disagreed and agreed organ donation registration

Variable	Category	Disagreed to Consent, 512(49%)	Agreed to Consent, 532 (51%)
Having religious leaders to trust	Yes	35.1	45.6
Consideration of organ donation after discussion with a religious leader	Yes	19.4	42.4
	No	60.7	37.8
	Maybe	19.9	19.8
Consideration of donating organ more seriously if approached by an organization	Strongly agree	2.4	11.6
	Agree	28.5	55.6
	Neutral	17.8	8.5
	Disagree	44.7	18.1
	Strongly disagree	6.6	6.3

Comparison of indices according to the participants' view on family disagreed/ agreed to consent for organ donation regiatration

The participants who agreed to give family consent were having significantly higher knowledge (Mean= 0.48; SD= 0.14 vs Mean= 0.44; SD= 0.16; p= 0.001), attitude (Mean= 0.93; SD= 0.60 vs Mean= 0.47; SD= 0.65; p=0.001), behavioral belief (Mean= 0.49; SD= 0.46 vs Mean= 0.35; SD= 0.47; p= 0.001), and intention (Mean= 0.40; SD= 0.31 vs Mean= 0.18; SD= 0.28; p=0.001) in comparison to those participants who did not agree towards organ donation. However, normative belief (Mean= 0.30; SD= 0.21 vs Mean= 0.29; SD= 0.21; p= 0.820) was not significant between the two and control belief (Mean= -0.20; SD= 0.52 vs Mean= -0.34; SD= 0.58; p=0.001) was found to be low in participants who did not agree to give family consent for organ donation (Table 7).

Table 7. Indices comparison according to family consent who disagreed and agreed for organ donation registration

Variable	Disagree to Consent		Agree to Consent		p
	Mean	SD	Mean	SD	
Knowledge	0.44	0.16	0.48	0.14	0.001
Attitude	0.47	0.65	0.93	0.60	0.001
Behavioral belief	0.35	0.47	0.49	0.46	0.001
Normative belief	0.30	0.21	0.29	0.21	0.82
Control belief	-0.20	0.52	-0.34	0.58	0.001
Intention	0.18	0.28	0.40	0.31	0.001

Table 8. Multivariate logistic regression for family consent who agreed in comparison to who disagreed for organ donation registration

Variable	aOR (95% CI)	p
Knowledge index	1.63 (0.55 to 4.80)	0.380
Attitude index	1.73 (1.28 to 2.34)	0.001
Behavioral belief index	1.11 (0.77 to 1.61)	0.580
Control belief index	0.74 (0.55 to 0.99)	0.050
Intention index	7.50 (4.04 to 13.92)	0.001
Heard Organ Donation	1.12 (0.71 to 1.76)	0.630
Registered for Organ Donation	1.11(0.50 to 2.46)	0.800
Donated any organ/blood/tissue	1.29(0.92 to 1.81)	0.150

After adjusting statistically significant variables at univariate analysis, multivariate analysis showed that attitude index and intention index were associated with family consent for organ donation (Table 8). The discriminative ability of the regression model was found to be good with an area under the ROC curve value 0.74 (95% CI= 0.71 to 0.77), showing that the model can discriminate accurately 74.1% for family consent towards organ donation in the study (Figure 1).

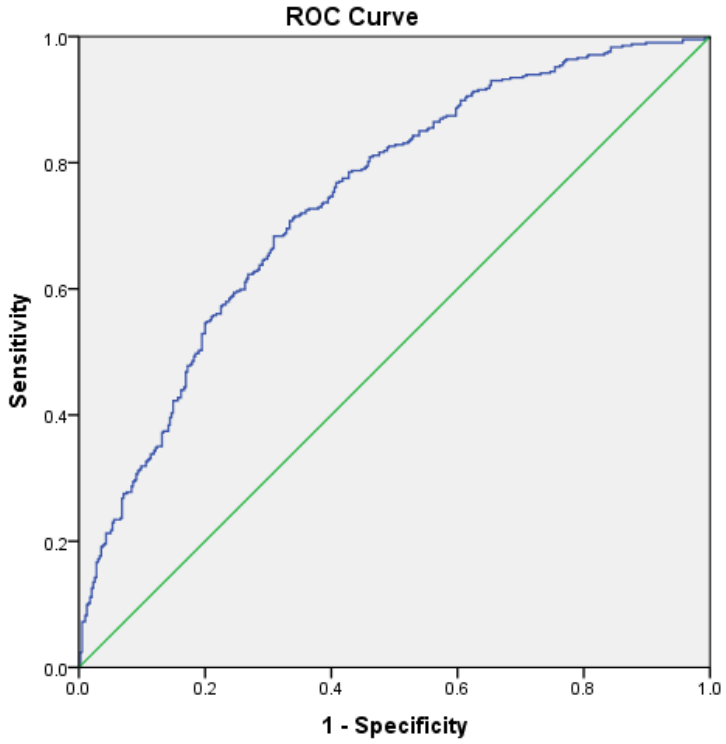

Figure 1. ROC curve showing the regression model discriminate ability of family consent towards organ donation

DISCUSSION

Family consent plays a pivotal role in organ/tissue donations mainly where the opt-in system prevails. It is influenced by the attitude and intentions of the residents towards registering for organ donation and can be improved by raising awareness to the household population.

In the present survey, we have found 51 percent of all participants agree to provide family consent for organ donor registration, which is significantly lower

than the family acceptance rate of more than 80 percent in Spain (Thomas et al., 2009). The low consent rate is one of the most significant obstacles to Qatar becoming self-sufficient in organ transplantation, and a top priority in the country's current organ transplantation strategy. The 'Spanish Model' for organ donation is generally recognized as the most effective in practice, prompting the World Health Organization to recommend its implementation worldwide. The higher consent rate in Spain is more likely to be explained by the development of a supportive social environment for organ donation by generating family's confidence in the process as well as the use of trained requestors for consent (Fahre et al., 2014). Also, the data analyzed from 54 countries reported that next-of-kin has the final decision-making power on whether their relative's organs will be donated or not (Rosenblum et al., 2012).

We also found that most of the participants were willing to discuss and consider the opinion of the family members to register as organ donors. A qualitative study conducted in Australia with family members of organ donors and the staff who were involved proposed that it is more important to encourage people to discuss donation with their family members than urging people to sign as donor (Boyarsky et al., 2012). The knowledge of the donor's wish may provide families with the comfort of knowing that they have fulfilled the deceased's wishes, easing their donation decision-making process, reducing their stress and family conflict at the time of extreme sensitivity and emotional burden.

The participants who agreed to family consent for organ donation in our survey had significantly higher knowledge about organ donation than the participants who did not agree to it (48% vs 44%). Siminoff et al. (2010) advocated that educating the public is the best mechanism for preparing the families to register for organ donation. The knowledge and preconceived attitudes about organ donation influence the family consent and have significant roles in how the request is accepted and processed by family members to decide on consent (Siminoff et al., 2010). People who were sufficiently informed about organ donation were more than twice as likely to have discussed their wishes with their family members, and those who had engaged in a family discussion about organ donation, in general, were more than seven times more likely to have shared their donation intentions with their family (Siminoff et al., 2009). People who were more favorable to and knowledgeable about organ donation were better able to respond to potentially negative views on organ donation of their family members (Wenger et al., 2012).

The attitude towards organ donor registration was also found to be significantly higher among participants who agreed to family consent in comparison to participants who did not agree with it (93% vs 47%). This shows that the residents of Qatar are more empathic and their emotional quotient is very high and are willing to make sacrifices to donate organs if the need arises in their family. However, most of them are expatriates and breadwinners of their family, which make them reluctant to make it possible. The positive attitudes along with the informed discussion within families may create a positive impact on families' willingness to consent to organ donation, which could potentially increase organ donation rates in opt-in systems like Qatar.

The participants who agreed to family consent expressed 49% of behavioral beliefs and 34% of control beliefs. Most of the participants believed that organ donation is

going to impact life after death in a good way and will be rewarded by (Vincent et al., 2012). They were not worried that the organ donation process may cause body disfigurement or leave them weak or disabled, contrary to the previous studies. There were many reasons reported previously for the refusal of family consent to organ donation mainly not wanting surgery on the deceased/donor body, concerns about disfigurement, worry about patient's sufferings, not knowing the patient's wishes, disagreements among the family members, religious and cultural beliefs, dissatisfaction with medical team and process, being concerned about the delay in funeral/burial process, unable to accept death, lack of understanding of brain death, misconception about the integrity of organ donation process particularly organ allocation and organ selling, relatives misbelief on deceased organs that it would not be suitable for donation, negative views on organ donation, emotional feelings of the family (Vincent et al., 2012); however, such reasons were not found predominant in the views of the participants who agreed for family consent to organ donation in our survey.

Also, the participants who agreed for family consent to organ donation in the household survey had a high intention towards organ donation (40%). The individuals with more positive intentions to donate their organs after death were more likely to have communicated this intention to their next-of-kin (Pitts et al., 2009). Though the law does not give family members the legal right to veto their deceased relative's organ donation wishes, organ donation will not take place if health professionals are confronted with family refusal (Thomas et al., 2009). Most of the participants in our survey were ready to consider organ donation if they were approached by an organization that emphasize the need for more awareness programs for the residents of Qatar.

Family consent can be successfully secured if adequate time is given to the families to discuss issues of concern such as the cost of donation, disfigurement of the body, and the impact of donation on funerals (Morgan et al., 2002). Moreover, the effective communication skills of the team also improve the request process and thereby increasing the likelihood of obtaining family consent. The requestors who are passionate about organ donation, skilled at clearly conveying essential information to families, confident in their skills, and able to engage in productive collaborations with other members of the hospital staff are more likely to secure family consent. Hence, it is important to educate the nurses involved and the team to understand the organ donation process to anticipate the physical and emotional needs to support the family, as well as have greater sensitivity in caring for the donor patient, which will increase the consent rate.

In our study, 335 (32.10%) of the 1044 participants did not agree to family consent whereas; 177 (17.00%) were not decided on family consent. The data from the participants who were not decided for the family consent were merged with the not agreed category as there was no significant difference between the groups with any of the demographic and other parameters.

Also, obtaining family consent for organ donation is more complicated than obtaining consent for any other medical procedure. It is associated with people's attitudes and intentions towards organ donation. Hence, raising public awareness about organ donation in the households population has the potential to increase

family consent, which would be a significant step toward addressing the unmet transplantation needs in the country.

AUTHOR CONTRIBUTION

All authors contributed equally.

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CONFLICT OF INTEREST

No conflicts of interest.

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