Organ donation and transplantation: A gender perspective and awareness survey in Qatar

Mohamud A. Verjee1,*, Pascale Haddad2, Sa’ad Laws3, Laith Jamal Abu-Raddad4

ABSTRACT
Organ transplantation in the Middle East and North Africa has evolved to serve two major needs. The first is to sustain life where severe disease or disorders would mean death without organ replacement as in congenital heart disease. The second need is to provide cost-effective treatment and a quality of life without constant tertiary care and maintenance treatment. Renal transplantation caused by chronic kidney disease and failure is one such example. Qatar in the Middle East and North Africa is one of six countries comprising the Gulf Cooperation Council (GCC) in the Arabian Gulf Region, which has developed an active transplant program. It has one main challenge as other global nations, namely a disparity between organ availability and need, or supply and demand. A survey of university students’ and employees’ awareness of organ transplantation and donation was completed in 2013 at Education City, Doha, Qatar. Three hundred out of four hundred surveys were returned, or 75% of the total distributed. A literature review was carried out and comparisons made to the subsequent findings. Participants comprised 89% students and 11% employees.

Of the participants, 90.6% were aware that donated organs were potentially life saving, and 72.7% knew about brain death. While most figures seemed comparable to other regional results, two significantly new findings emerged. More females (62.3%) than males (47.1%) believed that Islam supported organ donation, and 72.4% believed that there was no conflict between their faith and organ donation. Awareness campaigns and use of social media were thought to be the most effective way of disseminating organ donation knowledge.

Keywords: organ transplantation, Qatar, awareness, shortage, global, donation

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INTRODUCTION
The development of organ transplantation in the second half of the 20th century has been a remarkable achievement. Its success has been heavily dependent on public awareness, support and active participation. Without these factors, the effectiveness of organ transplantation and the consequent saving or extension of lives would have undoubtedly suffered adversely. Baxter and Smerdon (2000) in an extensive Canadian study, predicted a widening gap between the supply and demand of organs, with global reflections. Al-Mousawi (2007) remarked that absent organ procurement organizations coupled with legislation deficits in Middle Eastern countries had led to a “severe shortage of deceased donors”. The impact of the shortage of donors has been to severely limit the number of kidney transplants in the Middle East. To address this deficit, Faraja et al., (2010) suggested new strategies to expand the donor pool from cadaver donors to more living ones, or split and domino donations in the case of liver transplants.

Public opinion of organ donation and transplantation in the Arabian Gulf region has been studied periodically in order to understand the area’s knowledge and attitudes. Efforts to increase public awareness have been attempted on multiple occasions by campaigns in the Gulf Cooperation Council (GCC) region. Some knowledge of organ donation was reported in 2010 by 38% of Omani citizens and 60% of expatriate residents in a study in Oman. In Saudi Arabia, 62.5% of participants in a study reported some knowledge of organ donation. A study in Qatar in 2005 showed that 69.1% of those surveyed had heard of organ donation. However, only 37.8% of Qataris and 32.8% of non-Qataris were willing to donate. The majority of those wished to donate only after death, and then only to family or close friends. Ghaly (2012) highlighted the issue of three fatwas on organ donation, eliciting the support by large numbers of Muslim religious scholars for organ donation, and adhering to the principle of transnationalism where donation was concerned.

In 2011, Qatar opened the Qatar Center for Organ Transplantation (QCOT). More recently, it was designated the Qatar Organ Donation Center (QODC) and is known locally as “Hiba”. It abides by the ethic of implementing the agreed moral values determined and endorsed by international and local regulatory guidelines framed by the Doha Donation Accord (DDA). This is embodied in Qatar’s Transplant Law Number 21, together with World Health Organization’s (WHO) established guiding principles on transplantation. The following year, an awareness campaign encouraging the public to become organ donors, took place at Hamad Bin Khalifa University, in Education City in Doha, Qatar.

The specific aim of this new study was to assess the organ donation knowledge of Education City students and university employees, to investigate differentials in knowledge, and elicit barriers to improved awareness. The overarching aim of this study was to contribute to capacity building for an effective organ donation system in Qatar, bearing in mind the anticipated severe shortages of organ donors.

METHODS
Study design and participants
This was a cross-sectional study on students and employees studying or working at Hamad Bin Khalifa University in Education City during the period of December 1, 2012 – January 31, 2013. Study participants were from a wide selection of academic and social backgrounds. They included representatives from a medical school, as well as physical sciences, arts, engineering, journalism, and graphics with art and design universities. While being predominantly in the 18-25 year old age group, it was felt that this age group was more likely to be representative and aware of previous organ donation campaigns held on campus. Participants were selected on a randomized 1:4 basis, with either only one in a group of four being asked to answer, or the fourth person to pass by the investigator. All filled a self-administered questionnaire that consisted of two sections including data on socio-demographic indicators, and knowledge regarding organ donation in Qatar.

Statistical Analysis
Sample characteristics including age, gender, occupation, religion and nationality were summarized using frequency distributions (Table 1). Questions related to knowledge of organ donation were summarized also using frequency distributions (Table 2). The knowledge questions were also stratified by gender, religion and nationality, respectively. The Chi-squared test or the Fisher’s exact tests were
used to determine statistical significance in these associations (Table 2). IBM-SPSS version 21.0 was used for all statistical analyses. The statistical significance was set at $p < 0.05$.

The Institutional Review Board at Weill Cornell Medical College in Qatar approved this study in 2012.

RESULTS

A total of 300 of the 400 distributed surveys were completed and returned, a response rate of 75%. The sample characteristics were summarized in Table 1. The majority of the participants were females (N = 190; 63.3%) and students (N = 267; 89.0%), 54.0% were aged between 21 and 25 years old (N = 162), and 76.8% were Muslims (N = 229). Only 172 of the 300 participants answered the question related to nationality, with 30.8% being Qatari (N = 53) and 69.2% being non-Qatari (N = 119).

Some of the main results as well as the stratified results by gender, nationality and religion are presented in Table 2. Overall, 41.0% had heard of QCOT (now QODC), and among those who had heard about QCOT, 50.4% had heard of the organ donor card. Only 8.4% were aware of whom to contact to obtain an organ donor card. Source of awareness of QCOT was reported to be through the Education City campaign (37.0%), relatives or friends (31.1%), media (23.5%), and healthcare providers (7.6%).

A large majority of 90.6% of the participants was aware that donated organs were potentially life saving, and 72.7% knew about brain death. Of the organs identified for transplantation, 48.7% confirmed the kidney, 38.7% said the liver, and 25% reported the heart. Nearly a quarter of the sample (24.7%) knew someone who had received a transplant. Of these, 75.7% reported that the person had received a kidney transplant, 17.6% a liver transplant, 6.8% a heart transplant, 6.8% a bone marrow transplant, 4.1% a lung transplant, 2.7% a cornea transplant, and 1.4% a pancreas transplant.

For the religion-related knowledge questions, 72.4% believed that there was no conflict between their own religious beliefs and organ donation. While 85.3% of non-Muslims reported no conflict, only 68.3% of Muslims believed so ($p = 0.006$). When asked specifically whether Islam supported organ donation, only 57.8% believed so. Larger proportions of females and Qataris believed that Islam supported organ donation compared to males and non-Qataris ($p = 0.014$ and $p = 0.047$), respectively.

The vast majority of the sample (82.0%) could not identify a key signatory figure publicly pledging and signing an organ donor card. Among the 18.0% who were aware of a key figure, 28.3% of Qataris and 15.1% of non-Qataris were aware that Her Highness Sheikha Moza bint Nasser, Chairperson of the Qatar Foundation for Education, Science and Community Development, had signed an organ donor card ($p = 0.043$).

DISCUSSION

Developing and resourcing organ donation capacity in Qatar is a priority for policymakers and is critical with respect to the growing needs of transplants in this country. Our study quantified the levels of knowledge of organ donation among a sample of a young and educated population. The significance

<table>
<thead>
<tr>
<th>Table 1. Sample characteristics</th>
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<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-20</td>
<td>109</td>
<td>36.3</td>
</tr>
<tr>
<td>21-25</td>
<td>162</td>
<td>54.0</td>
</tr>
<tr>
<td>26 or more</td>
<td>29</td>
<td>9.7</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>110</td>
<td>36.7</td>
</tr>
<tr>
<td>Female</td>
<td>190</td>
<td>63.3</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>267</td>
<td>89.0</td>
</tr>
<tr>
<td>Other</td>
<td>33</td>
<td>11.0</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Islam</td>
<td>229</td>
<td>76.8</td>
</tr>
<tr>
<td>Other</td>
<td>69</td>
<td>30.8</td>
</tr>
<tr>
<td>Nationality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qatari</td>
<td>53</td>
<td>30.8</td>
</tr>
<tr>
<td>Non-Qatari</td>
<td>119</td>
<td>69.2</td>
</tr>
</tbody>
</table>


Table 2. Overall numbers and percentages and the gender, religion and nationality stratified knowledge questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Overall N (%)</th>
<th>Gender</th>
<th>Religion</th>
<th>Nationality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)Math</td>
<td>Male</td>
<td>Female</td>
<td>Islam</td>
</tr>
<tr>
<td>Heard of Qatar Center for Organ Transplantation (QCOT)</td>
<td>123 (41.0)</td>
<td>40 (36.4)</td>
<td>83 (43.7)</td>
<td>25 (36.2)</td>
</tr>
<tr>
<td>Knows that donated organs have the potential of saving lives</td>
<td>271 (90.6)</td>
<td>98 (89.9)</td>
<td>173 (91.2)</td>
<td>207 (90.8)</td>
</tr>
<tr>
<td>Knows what brain death means</td>
<td>218 (72.7)</td>
<td>84 (76.4)</td>
<td>134 (70.5)</td>
<td>168 (73.4)</td>
</tr>
<tr>
<td>Knows someone who received an organ transplant</td>
<td>74 (24.7)</td>
<td>26 (23.6)</td>
<td>48 (25.3)</td>
<td>51 (22.3)</td>
</tr>
<tr>
<td>Knows who to contact for organ donor card</td>
<td>25 (8.4)</td>
<td>5 (4.6)</td>
<td>20 (10.6)</td>
<td>24 (10.6)</td>
</tr>
<tr>
<td>Believes religion does not conflict with organ donation</td>
<td>215 (72.4)</td>
<td>78 (72.2)</td>
<td>137 (72.5)</td>
<td>155 (68.3)</td>
</tr>
<tr>
<td>Believes that Islam supports organ donation</td>
<td>149 (57.8)</td>
<td>41 (47.1)</td>
<td>108 (63.2)</td>
<td>131 (59.3)</td>
</tr>
<tr>
<td>Aware of a VIP who recently publicly signed an organ donor card</td>
<td>54 (18.0)</td>
<td>21 (19.1)</td>
<td>33 (17.4)</td>
<td>44 (19.2)</td>
</tr>
</tbody>
</table>

*p-value < 0.05
of this study is that it explored the needs for accurate and actionable knowledge of organ donation in Qatar against a background that suggests poor interest, misinformation and misperceptions about this health need. For example, a public opinion study regarding organ donation in Saudi Arabia showed dismal interest and fluctuating levels of knowledge. Our study has similarly identified knowledge gaps about organ donation and its capacity in Qatar. Indeed, the majority in our sample was not aware of how an organ donor card could be obtained. Nonetheless, over one-third of participants who were aware of organ donation capacity in Qatar, reported as their source of knowledge a recent Awareness Campaign targeting the community of Education City including both students and employees. This finding suggests that such community-based awareness campaigns have a role to play in increasing interest in organ donation and countering any misunderstandings.

Our findings are consistent with those of other studies in the Middle East and North Africa region. Najafizadeh et al., (2009) assessed the knowledge and attitudes of medical students towards organ donation in Iran. They reported that most students had not been exposed to “organ recipients nor received appropriate information about organ donation and transplantation”. In comparison, 72.2% of students in the study stated an understanding of brain death, with 95.1% comprehending the full nature of brain death. The majority (80.5%) of students acquired this knowledge from watching television, and 14.6% derived their knowledge from university resources.

A similar study of university students in Turkey revealed that 75.3% of the students were not aware where organs could be donated. In our study, 59.0% were not aware of QCOT. Stating the importance of organ donation knowledge among university students, a study from Saudi Arabia looked at the willingness of students to be potential donors. Those who knew more about organ donation were found to be more willing to donate. Students who had donor cards, who were informed about brain death, or who knew of a donation by a live or deceased donor, had a more positive attitude towards organ transplantation. This further affirms the need for awareness campaigns.

In a meta-analysis of college students in the United States, one study asked for confirmation that “I am knowledgeable about organ procurement and the organ procurement system”. Only 39% of students surveyed had positive responses. Our study showed a comparable proportion where 41% of Education City students were aware of QCOT, while 90.6% were aware of a donation’s life-saving potential. The US study confirmed that 24% of students knew an organ recipient or one that was awaiting a transplant. Our study result for this question was similar; 24.7% of surveyed participants were aware of someone who had received an organ transplant.

A critical issue in determining attitudes towards organ donation in the Middle East and North Africa region is that of religious beliefs. An encouraging finding of our study is that the majority of participants believed that Islam supports organ donation. Yet, there was a substantial minority who did not believe so, and Muslims were less likely than non-Muslims to believe that religion does not conflict with organ donation.

This less than optimal outcome with respect to religious beliefs appears to be due to inferior awareness about blood donation within Islam. A striking finding in our study was the gender disparity in responses about Islam’s support for organ donation, (Figure 1). Females were nearly twice as likely as males to report Islam’s support for organ donation, and this disparity was statistically significant. Similarly, Qataris, a religiously conservative population, were more likely than non-Qataris to believe in Islam’s support of organ donation, and this result was also statistically significant. Since females and

![Believes that Islam supports organ donation](image)

**Figure 1.** Gender comparison $N = 149$ (57.8%)
Qataris appear to have been more exposed to awareness campaigns, these results suggest that misperceptions about organ donation within Islamic jurisprudence still linger, but could be overcome with more expanded awareness efforts.

Religious scholars have studied organ donation in Islam, from both a Sunni and Shiite perspective, and multiple resolutions have been suggested by different and expert Islamic assembly councils over the years. Religious scholars have converged on sanctioning the use of living and cadaveric organs, and donations by the living or dead. In a decree issued in 1982, brain death was equated with cardiac and respiratory death. Efforts focused on highlighting positive religious support for organ donation remain an aim and priority for subsequent awareness campaigns. The inclusion of religious scholars in such campaigns could catalyze advocacy for organ donation in public discussions.

While our study has shown the importance of awareness campaigns as a source of information about organ donation, it showed that less than 10% of the participants received valid information from healthcare professionals. Being the passage of access points for patients entering the health care system, understanding healthcare professionals’ knowledge and attitudes towards organ donation would be useful. A study in Qatar by Al-Saeid et al., (2012) showed that from the surveyed healthcare professionals, consisting of physicians, nurses and personnel of emergency medical services, a significantly lower proportion of nurses compared to other groups thought that “brain death matched their personal definition of death”. Nurses also stated that they “did not have sufficient information regarding organ donation”. Surprisingly, in the same study, a majority of physicians did not fully emphasize an organ shortage in the country. Improving the awareness of this cohort is an essential step to ensure proper communication to the public. Appreciating the seriousness of the organ shortage by healthcare professionals in Qatar may motivate them to recruit potential donors.

A recent review of organ donation in the Middle East and North Africa has identified common features in organ transplant programs: inadequate preventative medicine, uneven health infrastructure, poor medical community and public awareness, lack of focus among transplant doctors, and shortage of actual donations. These common fundamental challenges must be tackled to improve any organ donation program. Qatar is striving to improve the focus of physicians by the opening of a center dedicated to organ transplants, and is working on improving health infrastructure and public awareness. Nevertheless, the anticipated and potentially severe organ shortage in this region in the coming decades, within a context of poor public awareness, calls for more intense measures.

The recent review has also suggested a number of solutions for this problem, feasible to implement in Qatar. These include improving the medical community awareness via training courses, conferences, curricula of post-graduate hospital training, in addition to distribution of informational materials such as pamphlets and posters. An educational strategy is a vital tool that can improve awareness from an early age, with health officials visiting schools, encouraging public debate and disseminating actionable information through the media.

Several limitations may have affected our study. We recruited participants from within Education City institutions, and such a population may not be representative of the wider population in Qatar. Reporting or desirability bias may have also affected the self-reported measures. With the rather small sample size, and the limited number of measures collected, our study also lacked an analytical design to examine adjusted measures of association. The study was also focused on characterizing the knowledge of organ donation, thereby missing an assessment of attitudes and behaviors towards organ donation. Future studies would benefit from quantifying the willingness to donate specific organs, to whom, and whether participants have ever donated any organ.

CONCLUSION

Our study established low levels of actionable knowledge of organ donation even among a sample of a young and educated population. We found that less than half of the participants had heard about QCOT, with the overall majority not knowing where to go in order to become organ donors. Awareness campaigns and social media were identified as the most effective tools for disseminating awareness about organ donation. Misunderstandings regarding Islam’s point of view of organ donation were documented, and these contribute to a negative perspective on organ donation, significantly more so in men than women and more in non-Qataris than Qataris. These findings must be factored in any future awareness campaigns. While such campaigns are an indispensable tool, the educational system can be an asset too by integrating information and activities about organ donation within curricula and school activities. Religious scholars, with their influential role in society, can also be relied upon to
advocate for organ donation, and address misinformation and misperceptions about the position of organ donation in Islam. Targeted awareness campaigns for healthcare professionals must also be conducted. Lastly, our study supports the need for further research to assess attitudes and willingness of the public to donate organs in Qatar.

CONTRIBUTORS
MV conceived the study, developed the methodology, and led the conduct of the study and analyses. PH conducted the statistical analysis. SL assisted with the literature review. All authors contributed to the interpretation of the results and drafting of the manuscript.

CONFLICTS OF INTEREST
All authors declare that they have no conflicts of interest.

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