

H. El-Shoubaki¹, A. Bener²,
Y. Al-Mosalamani¹

Factors Influencing Organ Donation and Transplantation in State of Qatar

Objective: The aim of this study was to determine the knowledge, attitudes, awareness, and determinants of organ donation and transplantation in Qatari population.

Design: This is a cross-sectional study to determine the knowledge, attitude towards organ donation in Peninsula Arabian Gulf country.

Setting: Primary Health Care (PHC) Centers and community-based study in Qatar.

Subjects: A multistage sampling design was used and a representative sample of 1600 Qataris and non-Qataris, males and females aged 17 years and above were included from October 2003 to May 2004. 1305 (81.5%) subjects participated and gave consent for the study

Measurements: Participants completed a questionnaire assessing their knowledge, attitudes and awareness for organ donation.

Results: A total of 1305 of 1600 enrolled subjects participated in this study, giving a response rate of 81.5%. 67.8% of male and 70.4% of female subjects were found to be aware and having an idea on organ donation and transplantation. 61.4% of males and 70.4% of females disagreed the idea of importing organs from outside. Male respondents (31.7%) were generally less accepting the idea of organ donation than females (39.5%). More males (79.9%) than female respondents (87.6%) did not agree organ donation for money.

Conclusion: Intense efforts to improve public awareness and knowledge about organ donation and transplantation are necessary to maximize donation and the overall success of transplantation.

Key words:

Qatar, knowledge, attitudes, factors, organ donation, transplantation, gender

Einflussfaktoren auf Organspende und Transplantation in Qatar

Ziel: Mit der vorliegenden Studie sollten Wissen, Einstellungen, Bewusstsein und Determinanten in Bezug auf Organspende und Transplantation in der Bevölkerung von Qatar ermittelt werden.

Design: Es handelt sich um eine cross-sektionale Studie über das Wissen und die Einstellung zur Organspende in einem arabischen Golf-Staat (Halbinsel Qatar).

Setting: Die Studie wurde in Qatar an Gesundheitszentren der Allgemeinversorgung (PHC) sowie Kommunen durchgeführt.

Teilnehmer: Es wurde ein multistage Rekrutierungsdesign angewendet und von Oktober 2003 bis Mai 2004 eine repräsentative

¹Department of Organ Transplantation;

²Department of Medical Statistics & Epidemiology, Hamad General Hospital, Hamad Medical Corporation, Doha, State of Qatar

Teilnehmerzahl von 1600 Qataris und Nicht-Qataris, Frauen und Männer ab 17 Jahren in die Studie aufgenommen. 1.305 (81,5%) Probanden nahmen teil und gaben ihre Zustimmung für die Studie.

Methoden: *Die Teilnehmer füllten einen Fragebogen aus, mit dem Wissen, Einstellungen und Bewusstsein in Bezug auf Organspende evaluiert wurden.*

Ergebnisse: *Insgesamt 1.305 der 1.600 rekrutierten Probanden nahmen an dieser Studie teil, was einen Rücklauf von 81,5 % bedeutet. 67,8 % der männlichen und 70,4 % der weiblichen Teilnehmer waren sich der Problematik bewusst und hatten eine Ahnung von Organspende und Transplantation. 61,4 % der Männer und 70,4 % der Frauen waren mit der Vorstellung, Organe aus dem Ausland zu importieren, nicht einverstanden. Männliche Teilnehmer (31,7%) zeigten tendenziell weniger Bereitschaft zur Organspende als Frauen (39,5%). Mehr als die Männer (79,9%) sprachen sich die weiblichen Teilnehmer (87,6%) gegen bezahlte Organspende aus.*

Schlussfolgerung: *Es sind intensive Bemühungen erforderlich, um das öffentliche Bewusstsein und Wissen über Organspende und Transplantation zu verbessern und somit die Organspende und den Gesamterfolg der Transplantation zu fördern.*

Schlüsselwörter:

Qatar, Wissen, Einstellungen, Faktoren, Organspende, Transplantation, Geschlecht

Introduction

In the field of organ transplantation, several attempts have been made to develop strategies that increase organ donation. In spite of improvements in graft and patient survival rates, the number of available cadaveric organ transplants continues to lag far behind the need, and waiting lists are still growing (1-3). Shortage of cadaveric organs for transplantation is a global problem (4-8). Some studies have suggested that knowledge, attitudes and determinants concerning this issue are influenced by many factors, including gender, educational level, occupation, sociodemographic status, income level, culture and religion (2-8). Although people generally express favorable views toward organ donation, very few actually agree to donate before they die or agree to have family members' organs donated upon their deaths (8-11). The lack of organ donation to be a major limiting factor in transplantation in most countries reported (1-13).

Efforts to increase donation rates have included public awareness and professional education programs, and law that require physicians to request that families donate the organs of deceased or dying relatives (3-8). Yet, public health attitudes to cadaveric organ donation and transplantation are a major public health problem and of importance, since prior consent of the donor or of a close relative at the time of death forms the basis for cadaveric organ donation in most developed and developing countries (1-13).

The aim of this study was to explore the attitude, belief and knowledge of people on organ donation and to ascertain whether there are any correlations between socio-demographic factors.

Subjects and Methods

This is a cross-sectional study based on the Primary Health Care (PHC) Centers of Qatar. The survey was conducted among Qatari and Non-Qatari popula-

tion between 17 and 65 years of age. The sample size was determined with the priori knowledge that the awareness of organ donation in Qatar is similar to that in western countries (1,2,4) and the Saudi Arabia (13). A multistage stratified cluster sampling design was developed, using an administrative division of the Qatar into 21 PHCs in terms of number of inhabitants, but, only 15 PHC recruited for the study. These PHCs are visited mostly by 90% of the people, and remaining 5 PHC centers are excluded from our survey. Also we selected 16 PHCs which represent geographically, East, West, North, South and Central location of the Qatari population. The subjects were selected by simple random sampling among patients registered and attended 16 PHC Centers for various medical conditions (9 urban and 7 semi-urban). Qualified Nurses and Social workers were instructed to structurally interview and complete a questionnaire for randomly selected Qatari and Non-Qatari subjects, 17 to 65 years of age, attending PHC clinics. A total of 1600 subjects were approached and 1305 (81.5%) expressed their consent to participate in this study.

The questionnaire and criteria for organ donation were defined and developed by the Investigator (A. Bener). A translated Arabic version of the Organ Donation and Transplantation questionnaire was revised by a bilingual physician in Department of Organ Transplant (H. El-Shoubaki).

Statistical Analysis

The data were analyzed by using the Statistical Packages for Social Sciences (SPSS) (14). Student's t-test was used to ascertain the significance of differences between mean values of two continuous variables and the Mann-Whitney test was used for nonparametric test. Chi-square analysis was performed to test for differences in proportions of categorical variables between two or more groups. Spearman's correlation coefficient was used to evaluate the strength of concordance between variables. The level $p < 0.05$ was considered as the cutoff value for significance.

Tab. 1: Socio-demographic distribution of subjects by gender (N=1305)

Variables	Male	Female	p-value
Frequency	637	668	
Nationality			
Qatari	377(59.2)	385(57.6)	NS
Non Qatari	260(40.8)	283(42.4)	
Age Group			
<20	79(12.4)	40(6.0)	<0.001
20-34	223(35.0)	429(64.2)	
35-44	216(33.9)	164(24.6)	
≥ 45	119(18.7)	35(5.2)	
Educational Level			
Low education	269(42.2)	330(49.4)	0.009
High education	368(57.8)	338(50.6)	
Monthly Income of family			
No income	56(8.8)	111(16.6)	<0.001
<1000	49(7.7)	36(5.4)	
1000-5000	261(41.0)	333(49.9)	
5000-10000	206(32.3)	151(22.6)	
>10000	65(10.2)	37(5.5)	
Occupation			
Student	66(10.4)	59(8.8)	<0.001
Employee	538(84.5)	429(64.2)	
Manual	11(1.7)	145(21.7)	
Retired/Not working	22(3.5)	35(5.2)	

Results

A total of 1305 of 1600 enrolled subjects participated in the study, giving a response rate of 81.6%. Overall (69.1%) members of the study sample were found to be aware and having an idea on organ donation and transplantation.

Table 1 shows the socio-demographic characteristics of the study subjects by gender. 51.2% of the respondents were women and 50.6% of them had higher education. 41% of males and 49.9% of females reported an income level of 1000 – 5000. Also, there were significant differences shown between men and women in respect to their age group ($P<0.001$), educational level ($P=0.009$), monthly income ($P<0.001$) and occupation ($P<0.001$).

Knowledge

Table 2 explains the knowledge about the organ donation among subjects by gender. 67.8% of males and 70.4% of females were aware of organ donation and there was no significant difference between men and women in their knowledge about organ donation. Among the studied subjects, 20.1% of males and 15.5% of females knew that medical formalities are the main requirement for organ donation. 66% of the surveyed subjects disagreed the idea of importing organs from outside (61.4% of males versus 70.4% of females), although they were aware of the shortage of the organs in the country.

Attitude

Table 3 presents attitude of subjects towards organ donation by gender. When we examine the attitudes of respondents towards organ donation and its relationship to the decision to donate healthy organs, male respondents (31.7%) were generally less accepting of organ donation than females (39.5%). 57.3% of both men and women were willing to donate their organs after death. Over 80% of both men and women believed that the health education was the best method for increasing the number of donors.

Reasons provided by respondents for donating were similar between the two groups. The most common reasons they gave were fear of operation (16.6% of males versus 18.0% of females) and inadequate knowledge (17.1

Tab. 2: Knowledge about organ donation among subjects by gender (N=1305)

Variables	Male	Female	P value
Frequency	637	668	
Have you any idea about organ donation			
Yes	432(67.8)	470(70.4)	NS
No	205(32.2)	198(29.6)	
Know different types of organ donation			
Don't know	236(37.0)	167(25.0)	<0.001
Know one or more	206(32.3)	254(38.0)	
Know most of them	117(18.4)	191(28.6)	
Know all of them	78(12.2)	56(8.4)	
Know requirements			
Yes	358(56.2)	387(57.9)	NS
No	279(43.8)	281(42.1)	
If yes, which ones			
Legal	29(8.1)	21(5.4)	NS
Medical	72(20.1)	60(15.5)	
Consent from the donor	32(8.9)	48(12.4)	
Psychological preparing of the donors	6(1.7)	6(1.6)	
All of the above	219(61.2)	252(65.1)	
Effect of organ donation on donor's health			
No effect	192(30.1)	159(23.8)	<0.001
Harmful effect	63(9.9)	36(5.4)	
Beneficial effect	21(3.3)	28(4.2)	
Harmful to donor beneficial to recipient	132(20.7)	182(27.2)	
Don't know	229(35.9)	263(39.4)	
Should we import organs from another country			
Yes	234(36.7)	182(27.2)	0.001
No	391(61.4)	470(70.4)	
Don't know	12(1.9)	16(2.4)	
Reasons for importing organs			
Don't know	36(15.4)	24(13.2)	NS
More healthy organs	22(9.4)	6(3.3)	
Shortage of organs in country	160(68.4)	135(74.2)	
It is cheaper to buy from outside	16(6.8)	17(9.3)	
Reasons for not importing organs			
Don't know	103(26.3)	89(18.9)	0.010
More healthy organs	181(46.3)	268(57.0)	
Presence of organs in country	39(10.0)	46(9.8)	
It is cheaper to buy from outside	68(17.4)	67(14.3)	
Organ donation affects the regular activities of the donor			
Kidney			
Yes	183(28.7)	215(32.2)	NS
No	264(41.4)	272(40.7)	
Don't know	190(29.8)	181(27.1)	
Bone marrow			
Yes	142(22.3)	147(22.0)	0.005
No	207(32.5)	167(25.0)	
Don't know	288(45.2)	354(53.0)	

Tab. 3: Attitude of subjects towards organ donation by gender (N=1305)

Variables	Male	Female	P value
Frequency	637	668	
Are you willing to donate any of your organs?			
Yes	202(31.7)	264(39.5)	0.003
No	435(68.3)	404(60.5)	
If yes when?			
During life	22(10.9)	32(12.1)	NS
After death	116(57.4)	151(57.2)	
Both of them	64(31.7)	81(30.7)	
Why during life*			
More humanity	73(36.1)	97(36.7)	NS
Cause no problem	26(12.9)	43(16.3)	NS
Others will be more happy	30(14.9)	47(17.8)	NS
Easier to him/her	23(11.4)	21(8.0)	NS
Why after death*			
More humanity	77(38.1)	127(48.1)	0.028
Cause no problem	86(42.6)	114(43.2)	NS
Others will be more happy	56(27.7)	83(31.4)	NS
Easier to him/her	100(49.5)	130(49.2)	NS
Organs will be donated during life*			
Kidney	86(42.6)	112(42.4)	NS
Bone marrow	43(21.3)	35(13.3)	NS
Organs will be donated after death*			
Kidney	141(69.8)	160(60.6)	0.040
Bone marrow	108(53.5)	139(52.7)	NS
Heart	135(66.8)	168(63.6)	NS
Lungs	120(59.4)	153(58.0)	NS
Liver	121(59.9)	157(59.5)	NS
Cornea	127(62.9)	160(60.6)	NS
In your opinion what causes people not to donate organs			
Inadequate knowledge	109(17.1)	99(14.8)	NS
Afraid of operation	106(16.6)	120(18.0)	
Afraid of losing life	82(12.9)	64(9.6)	
Like to donate to close relative only	77(12.1)	72(10.8)	
All of the above	199(31.2)	255(38.2)	
Don't know	64(10.0)	58(8.7)	
Methods to increase no. of donors*			
Health education	524(82.3)	537(80.4)	NS
Privileges for donors	322(50.5)	247(37.0)	<0.001
Media (TV/Newspaper)	425(66.7)	418(62.6)	NS
Don't know	48(7.5)	46(6.9)	NS

* Multiple choice questions (percentage may not add up to 100)

Tab. 3: Attitude of subjects towards organ donation by gender (N=1305) (Continued)

Variables	Male	Female	P value
Frequency	637	668	
Ideas about organ donation			
Frightening operation and very dangerous	205(32.2)	170(25.4)	<0.001
Worthwhile to do to save lives	225(35.3)	311(46.6)	
Against the humanity	25(3.9)	9(1.3)	
Forbidden by religion	28(4.4)	18(2.7)	
Don't know	154(24.2)	160(24.0)	
Willing to donate to parents			
Yes	541(84.9)	563(84.3)	NS
No	96(15.1)	105(15.7)	
Willing to donate to sons and daughters			
Yes	463(72.7)	488(73.1)	NS
No	174(27.3)	180(26.9)	
Willing to donate to brothers and sisters			
Yes	404(63.4)	417(62.4)	NS
No	233(36.6)	251(37.6)	
Willing to donate to friends			
Yes	202(31.7)	178(26.6)	0.044
No	435(68.3)	490(73.4)	
Willing to donate to relatives			
Yes	171(26.8)	159(23.8)	NS
No	466(73.2)	509(76.2)	
Willing to donate to foreigners			
Yes	90(14.1)	97(14.5)	NS
No	547(85.9)	571(85.5)	
Organ donation for money			
Strongly agree	13(2.0)	18(2.7)	NS
Agree	115(18.1)	65(9.7)	
Disagree	207(32.5)	227(34.0)	
Strongly disagree	302(47.4)	358(53.6)	

% of males vs 14.8% of females). More than males (79.9%), female respondents (87.6%) did not agree organ donation for money. The majority of men and women preferred donating organs to their close relatives and friends rather than others in different culture.

Discussion

Organ and tissue transplantation has become an integral part of health care in every nation. Organ donation is a community service, which saves lives, improves quality of life and has cost benefits for society. In recent years, the cost of transplantation has become significantly lower, and organ transplantation is one of the most effective life-

saving procedures. For example, a study conducted by the University of Maryland researchers shows that starting 2.7 years after the time of the transplant, there is a savings of about \$27,000 per year for each patient who had a kidney transplant instead of remaining on dialysis. Besides saving tens of thousands of dollars, a kidney hospital recipient is also spared the pain and inconvenience of ongoing dialysis treatment (17).

In the year 2000, more than 5,500 Americans died awaiting transplants. In the US, there are currently over 80,000 people awaiting transplants (15). Between 10000 and 12000 people die annually who are considered medically suitable for organ donation, yet only an estimated 6,000 donate (16). In the

State of Qatar, 69.1% of the surveyed subjects were aware of organ donation and there was no significant difference between men and women in their knowledge about organ donation.

Australia's transplant success (17) rates are among the best in the world. One year survival rates for most organs are about 80%. To deal with the great and growing organ shortage, the government should be alert in public awareness and professional education programs to increase the donation rates. The results of this survey revealed that over 80% of both men and women believed that the health education was the best method for increasing the number of donors.

Numerous studies document that women contribute the majority of living

kidney donors, but the reasons behind the disparity in donation rates between men and women remain obscure. A greater percentage of acceptable female donors (28.3%) compared with men (20.3%) go on to donate a kidney ($p=0.027$). However, when only first degree relatives are considered, the difference in donation rate between men and women becomes non significant (26.9% of women versus 22.2% of men; $p=0.0229$) (18). In this survey, when we examined the attitudes of respondents towards organ donation, male respondents (31.7%) were generally more accepting of organ donation than females (39.5%).

The financial incentive approach to increasing rates of organ donation has gained support from several groups and individual, including some segments of the medical community. The American Medical Association (AMA) has expressed support for limited financial incentives and the United Network for organ sharing and organ procurement and Transplantation network (UNOS/OPTN) supported for the potential incentive for organ donation (19). Majority of the studied subjects of this survey did not agree incentive based approach for donating organs. More than males (79.9%), female respondents (87.7%) did not agree organ donation for money. Summary statistics on the current state of Transplantation in the United States documented that more than 23,000 patients received an organ transplant over 17,000 from deceased donors and 6500 from living donors. During the same period, more than 6000 patients were reported to have died while waiting for a transplant (20). Fortunately in this survey, 57% of male and female respondents expressed their willingness to donate organs after their death. The majority of the world's religions support organ/tissue donation and transplantation as an act of generosity and merit. All of them strongly endorsed organ donation as a compassionate choice (19).

Conclusion

Intense efforts to improve public awareness and knowledge about organ donation and transplantation are necessary to maximize donation and the overall success of transplantation. The present survey on Organ donation indicated that it is highly important that Health Care System of Qatar should be alert on this constraint and prepare educational programs to improve the awareness of the community to the importance of organ donation. Donating organs upon death can save lives, improve the quality of life for the sick and give someone a chance for a healthy life.

Acknowledgement

This work was supported and funded by the research Committee of Hamad Medical Corporation, Grant No. 239, Doha, State of Qatar.

References

1. Kececioglu N, Tuncer M, Yucetin L, Akaydin M, Yakupoglu G (2000) Attitudes of religious people in Turkey regarding organ donation and transplantation. *Transplantation Proceedings* 32: 629-630
2. Light JA, Kowalski WO, Ritchie WO (1996) New profile of cadaveric donors: what are the kidney donor limits. *Transplantation* 28: 16-20
3. Shaheen FAM, Souqiyeh MZ (2000) Factors influencing Organ Donation and Transplantation in the Middle East. *Transplantation Proceedings* 32: 645-646
4. Evans RW, Orions CE, Ascher NL (1992) A potential supply for organ donors. An assessment of the efficacy of organ procurement efforts in United States. *JAMA* 267: 239-246
5. Daniels DE, Smith K, Parks T, Gibbs T, Robinson J (1998) Organ and tissue donation: Are minorities willing to donate. *Ann Transplant* 3: 22-24
6. Shafer TJ, Durand R, Hueneke MJ et al. (1998) Texas non-donor-hospital project: a program to increase organ donation in community and rural hospitals. *J Transpl Coord* 8: 146
7. Conesa C, Rios A, Ramiex P, Rodriguez, Rivas P, Canteras M, Parrilla P (2003) Psychosocial people in favor of organ donation. *Transplantation Proceedings* 35: 1276-1281
8. Jasper JD, Nickerson CAE, Hershey JC, Asch DA (1999) The public's attitude toward incentives for organ donation. *Transplantation Proceedings* 31: 2181-2184
9. Manninen DL, Evans RW (1985) Public attitudes and behaviour regarding organ donation. *JAMA* 253: 3111-5
10. Overcast TD, Evans RW, Bowen LE (1984) Problem in the identification of potential organ donors. Misconception and associated with donor cards. *JAMA* 251: 1559-62
11. Dominguez JM, Gonzalez ZA, Morales LA et al. (1991) Knowledge and attitude about organ donation in a hispanic population. *Transplant Proc* 23: 1804-6
12. Kowalski WO, Light JA, Ritchie WO, Sasaki TN, Callender CO, Gage FA (1996) A new approach for increasing the organ supply. *Clin Transplantation* 10: 653-7
13. Aswad S, Souqiyeh MZ, Huraib S, El-Shihabi R (1992) Public attitudes toward organ donation in Saudi Arabia. *Transplant Proc* 24: 2056-2058
14. Norusis MJ (1998) *SPSS/PC+ for Windows: Base System and Advanced Statistics User's Guide. Release Version 11*. Chicago: SPSS Inc.
15. Martinex JM, Martin A, Lopez JS (1995) *Med Clin* 105: 401
16. www.cysticfibrosis.ca/page.asp?id.2111 (accessed on 23/4/2004)
17. University of Maryland Researchers, Study on cost of kidney transplantation, *Journal of Transplantation*, May 1999
18. Zimmerman D, Donnelly S, Miller J, Stewart D, Albert SE (2000) Gender disparity in living renal transplant donation. *Am J Kidney Dis* 36 (3): 534-40
19. Organ Procurement and Transplant Network (OPTN) National Waiting List, as of 2 August 2002. Available: www.unos.org/frame_Default.asp?Category-Newsdata. Accessed on 27/5/03
20. Friedrich KP (2003) Organ donation and transplantation trends in the United States, 2001. *American Journal of transplantation* 3 (Suppl. 4): 7-12

Prof. Abdulbari Bener
Advisor for WHO and
Consultant & Head of Dept. of
Medical Statistics & Epidemiology
Hamad General Hospital &
Hamad Medical Corporation &
Evidence for Population Health Unit
University of Manchester, UK
PO Box 3050
Doha - Qatar
E-Mail: abener@hmc.org.qa