

## Organ and tissue donation and transplantation: three health care centers' attitude

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### Abstract

**Objective:** To assess the knowledge and attitude towards organ donation within health professionals in different institutions of Nuevo Leon. **Methods:** A prospective, open, observational, descriptive study of parallel groups, through application of a survey formulated by the Hospital Universitario (HU) "Dr. José Eleuterio González". We applied 208 surveys in the HU (n = 100) and other institutions like IMSS, ISSTE (n = 108). **Results:** From all the participants, 86% had a positive attitude towards organ donation, associated to a higher education, and information regarding organ donation received by other health professionals. Though having a positive attitude toward organ donation, 14% of health professionals don't support it due to being afraid of not receiving medical assistance, knowing their status of donors, religious reasons, and fear of organ trafficking. **Conclusions:** Our study shows that, even within the health professionals, there is a need for information regarding organ donation. A well-instructed health professional shows a higher interest in organ donation; this could have a positive impact in the attitude of the population toward organ donation, as well as in the obtainment of organs inside the medical institutions. (Gac Med Mex. 2016;152:616-23)

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### Introduction

The substitution of a diseased organ with a healthy one is probably the most spectacular treatment of medicine for different reasons: one of the most important ones is that there is large disproportion between the

elevated number of candidates that require a transplant and the relatively scarce number of available donors. One of the most important functions of government and institutions is to promote and coordinate social effort to create a culture of altruistic organ and tissue donation able to satisfy the needs of hundreds of people that have lost their health and are waiting for a transplant<sup>1</sup>.

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Internationally, the list of countries with the largest rate of transplantations is lead by Norway, with 96 transplants per million population (tpmp), followed by Belgium (94 tpmp) and Croatia (92 tpmp); Mexico is at 42<sup>nd</sup> place, with a rate of 24 tpmp. On the other hand, the list of countries with the highest rates of cadaveric donation per million population (dpmp) is lead by Spain, with 35 donations, followed by Croatia and Belgium; Mexico occupies the 50<sup>th</sup> place, with a rate of 4 dpmp<sup>2</sup>.

Within the national territory, the state of Nuevo León is at fifth place with 81 donations per year (dpy), below Estado de México (507 dpy), Mexico City (279 dpy), Aguascalientes (171 dpy) and Guanajuato (95 dpy)<sup>3</sup>. Different studies have analyzed the knowledge and attitudes with regard to brain death and organ donation among healthcare professionals from hospitals that have an organ procurement and transplantation program<sup>4</sup>. Several studies have described that health personnel should have clear the basic concepts concerning organ donation and transplantation, in order to be able to become promoters of this technology<sup>5,6</sup>.

In the present work, the necessity to assess the knowledge and attitude with regard to organ donation was identified in the health personnel of three public clinical institutions of Nuevo León. Assessing the level of knowledge and attitudes with regard to organ donation by health personnel of different institutions of the state of Nuevo León was assigned as the primary endpoint, in addition to identifying the main causes why health personnel refer themselves to as non-donors, and to correlating the received information and knowledge acquired throughout their professional training with the attitude towards organ and tissue donation.

## **Material and methods**

A prospective, open-label, observational, descriptive, parallel-group study was carried out by applying 208 surveys to health personnel of the *Hospital Universitario* (HU; n = 100) and other institutions (OI) such as IMSS or ISSSTE (n = 108) during the summer of 2013.

The health personnel random and stratified sample was comprised by internal medicine and general surgery resident physicians, nursing personnel and technicians. Age average was 33 years.

Attitude and knowledge with regard to organ and tissue donation and transplantation were assessed with a 29-question population survey, which was applied by members of the ISA Organ and Tissue Donation group of the Faculty of Medicine of the Autonomous Univer-

sity of Nuevo León (UANL – *Universidad Autónoma de Nuevo León*) and anonymously answered. The answers were multiple-choice, depending on the question.

The each individual's opinion about organ donation was studied as a dependent variable, with the following being analyzed as independent variables:

- Socio-personal variables: age, gender, marital status, state of origin, religion, level of education and working status.
- Knowledge and attitude with regard to donation, knowledge of the concept of “brain death”, attitude towards a relative's organ and tissue donation of a relative, knowing or not about his/her will on the subject, and attitude of the partner towards donation.
- Concern about body manipulation/aesthetics, fear of not receiving hospital attention if the status of organ donor is known and fear of organ trafficking.

## **Statistical analysis**

Data were analyzed with version 15.0 of the SPSS software (SPSS, Inc, Chicago, Illinois). Student's t-test was employed for independent samples. Only associations with p-values < 0.05 were considered statistically significant.

## **Results**

### **Socio-demographic variables**

Average age of the 208 surveyed subjects was 33 years. In OIs (n = 108), the survey was answered mostly by female personnel (71%) and at the HU (n = 100), the number of men who answered the survey was equal to that of women. In OIs, most surveyed individuals were married (54.6%), unlike to what was found in the HU, where the majority was single (83%). The predominant religion on both groups was Catholicism (79%), followed by Protestantism/Evangelism (11%) (Table 1).

### **Means of communication and information about donation**

The means the interviewed subjects stated as being the source of more information on organ and tissue donation was through health professionals (57%), followed by television (50%). Twenty-eight percent of OI and 13% of HU interviewed subjects did not receive

Table 1. Socio-demographic variables

Variables	OI health personnel (n = 108)	HU health personnel (n = 100)	p
	n (%)	n (%)	
Gender:			< 0.001
Male	31 (28.7)	47 (47)	
Female	77 (71.3)	53 (53)	
Marital status:			0.001
Single	49 (45.4)	83 (83)	
Married	59 (54.6)	17 (17)	
Religion:			0.235
Catholic	89 (82.4)	77 (77)	
Protestant/Evangelic	10 (9.3)	13 (13)	
Adventist	0 (0)	0 (0)	
Mormon	1 (0.9)	0 (0)	
Jehovah's Witness	0 (0)	3 (3)	
Other	4 (3.7)	0 (0)	
None	4 (3.7)	7 (7)	

OI: Other institutions

information via health personnel. With regard to the quality of the received information, 41% of the global sample rated it as good and 37% as excellent; only 22% rated it as being fair or poor. Sixty-nine percent of surveyed subjects preferred to continue receiving information on organ and tissue donation from health professionals, followed by television (63%) (Table 2).

### General concepts about donation

A high percentage of total surveyed health personnel (n = 208) was unaware that the following organs/tissues can be donated: pancreas (74%) and tendons/ligaments (72%). Both groups demonstrated knowing the term "brain death": 90.7% in OI and 95% in HU. Of the total sample, 35% had a donor card, but 28% were not interested in obtaining one. Sixty-eight percent of surveyed individuals thought that organs for transplantation should be distributed according to the degree of emergency and seriousness (Table 3).

### Other donation-related variables

Eighty-six percent of health personnel showed a favorable posture towards organ donation, since they offered a positive answer when asked if they would donate their organs for considering this a form of giving life. Sixty-four percent were willing to donate everything that was useful. Twenty-three percent of OI and 4% of HU interviewed subjects would not donate their organs.

The two main reasons whereby they would not donate were fear of organ trafficking (6%) and fear of not receiving medical attention if donor status is known (4%). Eighty-nine percent were willing to receive an organ if their life depended on it. Fifty-five percent knew the opinion of their family/partner on organ donation and it was favorable. Knowing the posture of a relative in favor of donation, 86% would donate his/her organs; conversely, without knowing the posture of the deceased, 68% would not donate the organs of their relative (Table 4).

### Discussion

Organ donation in Mexico does not cover current needs of the population that requires them. This study revealed that 86% of surveyed individuals had a positive attitude towards organ and tissue donation. Similar results have been reported in studies recently conducted in Spain and Latin America: 92% in Cuba, 85% in Costa Rica, 80% in Mexico and 73% in Spain<sup>7</sup>.

Sixty percent of assessed subjects mentioned that their families were aware of and supported their decision to donate, which was consistent with a similar study that reported 64% knowledge of the family about organ donation<sup>8</sup>. Twenty-three percent of OI and 4% of HU surveyed subjects would not donate their organs. The two main reasons whereby they wouldn't do it were: fear of organ trafficking (6%) and fear of not receiving medical attention if donor status is known

**Table 2. Means of communication and information about donation**

Variables	OI health personnel (n = 108)	HU health personnel (n = 100)	p
	n (%)	n (%)	
Means of communication through which information has been received:			
Radio:			< 0.001
Yes	31 (28.7)	19 (19)	
No	77 (71.3)	81 (81)	
Television:			0.89
Yes	61 (56.5)	44 (44)	
No	47 (43.5)	56 (56)	
Newspapers:			0.61
Yes	36 (33.3)	35 (35)	
No	72 (66.7)	65 (65)	
Posters:			< 0.001
Yes	30 (27.8)	46 (46)	
No	78 (72.2)	54 (54)	
Conversation with friends/family:			< 0.001
Yes	24 (22.2)	40 (40)	
No	84 (77.8)	60 (60)	
Health professionals:			< 0.001
Yes	49 (45.4)	71 (71)	
No	59 (54.6)	29 (29)	
Internet:			< 0.001
Yes	18 (16.7)	35 (35)	
No	90 (83.3)	65 (65)	
Other:			0.82
Yes	4 (3.7)	4 (4)	
No	104 (96.3)	96 (96)	
None:			0.01
Yes	2 (1.9)	5 (5)	
No	106 (98.1)	95 (95)	
Quality of information:			0.85
Excellent	22 (20.4)	54 (54)	
Good	51 (47.2)	34 (34)	
Fair	26 (24.1)	7 (7)	
Poor	7 (6.5)	5 (5)	
Don't have information	2 (1.8)	0 (0)	
Means of communication through which would like to receive information:			
Radio:			0.003
Yes	39 (36.1)	51 (51)	
No	69 (63.9)	49 (49)	
Television:			> 0.001
Yes	59 (54.6)	72 (72)	
No	49 (45.4)	28 (28)	
Newspapers:			0.61
Yes	44 (40.7)	52 (52)	
No	64 (59.3)	48 (48)	
Posters:			< 0.001
Yes	29 (26.9)	53 (53)	
No	79 (73.1)	47 (47)	

(Continues)

**Table 2. Means of communication and information about donation (Continued)**

Variables	OI health personnel (n = 108)	HU health personnel (n = 100)	p
	n (%)	n (%)	
Conversation with friends/family			0.003
Yes	23 (21.3)	29 (29)	
No	85 (78.7)	71 (71)	
Health professionals			< 0.101
Yes	71 (65.7)	72 (72)	
No	37 (34.3)	28 (28)	
Internet:			0.002
Yes	37 (34.3)	49 (49)	
No	71 (65.7)	51 (51)	
Other:			0.194
Yes	7 (6.5)	3 (3)	
No	101 (93.5)	97 (97)	

OI: Other institutions

**Table 3. General concepts about donation**

Variables	OI healthcare personnel (n = 108)	HU healthcare personnel (n = 100)	p
	n (%)	n (%)	
To your knowledge, which organs can be donated?			
Heart:			0.23
Yes	98 (90.7)	93 (93)	
No	10 (9.3)	7 (7)	
Lung:			0.001
Yes	54 (50)	77 (77)	
No	54 (50)	23 (23)	
Bone marrow:			0.14
Yes	83 (76.9)	81 (81)	
No	25 (23.1)	19 (19)	
Kidney:			< 0.001
Yes	97 (89.8)	99 (99)	
No	11 (10.2)	1 (1)	
Liver:			< 0.001
Yes	79 (73.1)	84 (84)	
No	29 (26.9)	16 (16)	
Skin:			0.001
Yes	56 (51.9)	66 (66)	
No	52 (48.1)	34 (34)	
Bone:			0.075
Yes	74 (68.5)	75 (75)	
No	34 (31.5)	25 (25)	
Cornea:			0.045
Yes	94 (87)	82 (82)	
No	14 (13)	18 (18)	

(Continues)

**Table 3. General concepts about donation (Continued)**

Variables	OI healthcare personnel (n = 108)	HU healthcare personnel (n = 100)	p
	n (%)	n (%)	
Pancreas:			0.006
Yes	28 (25.9)	35 (35)	
No	80 (74.1)	65 (65)	
Blood:			< 0.001
Yes	65 (60.2)	88 (88)	
No	43 (39.8)	12 (12)	
Tendons/ligaments:			0.28
Yes	34 (31.5)	35 (35)	
No	74 (68.5)	65 (65)	
Have you heard the term "brain death"?			< 0.001
Yes, and I understand it	98 (90.7)	95 (95)	
Yes, but I don't understand it	6 (5.6)	5 (5)	
No	4 (3.7)	0 (0)	
According to your knowledge/opinion:			< 0.69
Do you think that patients with brain death...			
Can recover and lead normal lives?	3 (2.8)	0 (0)	
Can recover but live with sequels?	14 (13)	19 (19)	
Cannot recover and are ideal candidates for donation?	91 (84.2)	81 (81)	
Did you know there is a "donor card"?			0.267
Yes, and I already have it	31 (28.7)	41 (41)	
Yes, but I don't have it and I would like to obtain one	28 (25.9)	29 (29)	
Yes, but I'm not interested on getting one	19 (17.6)	2 (2)	
No, but I would like to obtain one	24 (22.2)	26 (26)	
No, and I'm not interested on getting one	6 (5.6)	2 (2)	
How do you believe organs should be distributed for transplantation?			< 0.001
By degree of emergency and seriousness	60 (55.6)	81 (81)	
By time on waiting list	30 (27.8)	11 (11)	
Donors should have preference at the moment of receiving a transplantation	10 (9.2)	7 (7)	

OI: Other institutions

(4%). Other studies have reported that the most common reasons to decline donation are: fear of complications (50%)<sup>9</sup>, lack of trust on the health sector (20%)<sup>9</sup>, ignorance of the term "brain death" (40%)<sup>7</sup>, fear of organ trafficking (29%)<sup>7</sup> and body manipulation after death (11%)<sup>7</sup>.

In an Australian study, 25% of personnel referred not having received information on donation. In our study, 28% of OI and 13% of HU surveyed individuals did not receive information from health personnel<sup>8</sup>. Thirty-five percent of surveyed subjects had a donator card, in comparison with 45% of participants in a German study<sup>7,10</sup>.

Ríos et al. claimed that comprehension and understanding of the concept of "brain death" is vital, since fear of apparent death is the main reason for not donating organs<sup>11,12</sup>. In this study, both groups demonstrated knowing the term "brain death", 90.7% of OI and 95% of HU. Some authors have documented that the creation of informative protocols on the diagnosis of "brain death" increases the knowledge on this concept<sup>13</sup>.

No analysis has been found on religion, level of education and children variables, but when analyzed in our group of surveyed subjects, no significant differences were found for each one of them.

Table 4. Other donation-related variables

Variables	OI health personnel (n = 100)	HU health personnel (n = 100)	p
	n (%)	n (%)	
Would you donate your organs?			0.001
Yes	83 (76.9)	96 (96)	
No	25 (23.1)	4 (4)	
Does your family/partner know?			0.022
Yes and they support my decision	57 (52.8)	68 (68)	
Yes, but they disagree	14 (13)	9 (9)	
No	37 (34.2)	23 (23)	
For which of the following reasons would you donate your organs?			< 0.001
For considering it to be a moral obligation	10 (9.3)	15 (15)	
For religious reasons	7 (6.5)	0 (0)	
Because I think it is the right thing to do	5 (4.6)	22 (22)	
Because I think it is a way of giving life	61 (56.5)	59 (59)	
I would not donate	25 (23.1)	4 (4)	
Which organs or tissues would you be willing to donate?			< 0.001
Everything that was useful	45 (41.7)	89 (89)	
Only some	38 (35.2)	7 (7)	
I would not donate	25 (23.1)	4 (4)	
For which of the following reasons would you not donate your organs?			0.077
Due to rejection of the idea of body manipulation/esthetics	2 (1.9)	1 (1)	
Out of fear of not being adequately attended to if my status of donor is known	8 (7.4)	1 (1)	
For religious reasons	2 (1.9)	1 (1)	
Out of fear of organ trafficking	12 (11.1)	1 (1)	
Other reasons	1 (0.9)	0 (0)	
I would donate	83 (76.8)	96 (96)	
Would you be willing to receive an organ if your life depended on it?			< 0.001
Yes	90 (83.3)	95 (95)	
No	18 (16.7)	5 (5)	
Do you know your family/partner opinion on organ donation?			0.22
Yes, and it is favorable	54 (50)	62 (62)	
Yes, but it is against	8 (7.4)	5 (5)	
Yes, but opinion is divided in the family	20 (18.5)	16 (16)	
Don't know it	26 (24.1)	17 (17)	
Would you donate the organs of a deceased relative knowing that he/she was in favor of donation since he/she had expressed so when alive?			< 0.001
Yes	87 (80.6)	92 (92)	
No	21 (19.4)	8 (8)	
Would you donate the organs of a deceased relative without knowledge of his/her wishes?			< 0.001
Yes	21 (19.4)	45 (45)	
No	87 (80.6)	55 (55)	

OI: Other institutions

## Conclusions

It is necessary to urgently consider the possibilities to increase the donation rate. An exhaustive evaluation of the knowledge and attitudes with regard to organ and tissue donation on health systems and general public is required. The organ procurement process represents a challenge for health professionals. Therefore, detection and management of a potential donor involve an intense task; approaching relatives with a request for organ donation is an emotionally demanding process for doctors and nursing personnel.

The present study has demonstrated that there are areas for improvement in the implementation of different educational interventions to increase health personnel knowledge on organ donation. The difference in health professionals' knowledge on organ donation is likely to have repercussions on the process to obtain them. Better knowledge can promote a positive attitude towards organ donation and, consequently, an increase in the rate of settled donations, which would increase transplantation rates in hospitals of the state of Nuevo León and Mexico, thus saving a larger number of lives.

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