

Level of Knowledge in Relation to the Attitude of Medical Students About Organ Donation and Transplantation

Lizbeth Aguilar-Andrade, Enrique A. Sanchez-Valdivieso, Virginia G. Chavez-Montes-de-Oca

Quality Assurance Department, School of Medicine, Universidad Cristobal Colon, Campus Calasanz, Boca del Rio, Mexico

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Corresponding author:

Virginia Chavez Montes de Oca,
Quality Assurance Department,
School of Medicine. Carr Veracruz -
Medellin sn, CP 94270. Boca del Rio,
Veracruz, Mexico.
Telephone / FAX: +52 2292021260
Email: vchavez@ucc.mx

ABSTRACT

Introduction: Health care provider become a key link in the process of donating organs and tissues for transplantation and influence the perception of society about organ donation. We aimed to measure the level of knowledge in relation to the attitude of medical students about organ donation. **Methods:** A cross-sectional study was conducted among 102 medical students from year 2 to 4. **Results:** Sixty six percent were female. Mean (\pm SD =standard deviation) age of participants was 21.1 ± 2.5395 years. Most of the students barely had enough knowledge; although donation is well accepted by them, there is still a lot of ignorance on the subject, showing fear that organs will be removed before brain death is confirmed, misconceptions about organ trafficking related to ignorance of the legislation, and disagreement with donating the organs of a relative. **Conclusions:** The need for a continuous and intense education strategy to increase willingness to donate organs and tissues is evident.

KEYWORDS: Organ donation, transplants, medical students

INTRODUCTION

The limited availability of organs for donation has become a public health problem in Mexico. There is a marked disproportion between donation rates and the number of patients waiting for organ transplants. This phenomenon requires an approach that includes educational factors [1].

An investigation carried out in Madrid, Spain on the psychosocial aspects in organ donation shows that the lack of knowledge of the donation process prevents people from committing to becoming donors, specifically it was identified that there is little knowledge of the subject, there are fears and taboos, mainly biological and emotional, that have a negative impact on organ donation [2].

Health care providers must be clear about the basic aspects of organ donation and transplantation, in order to become an agent of change [3]. Health care professionals thus become a key link in the organ and tissue donation process, and therefore influence society's perception of organ donation [4] because, when families in a situation of organ donation are cared for, one must be focused on ensuring understanding of the situation through the information provided in the hospital and during follow-up.

As mentioned above, health care providers have an important role in public awareness of brain death and organ donation, [5] and thus, awareness and acceptance of the topic by medical students they are important in affecting practicing health workers and community beliefs about brain death and future organ donation, as they represent future physicians.



It has been reported that 90.8% of medical students say they are willing to donate their organs, but only 35% are the ones who actually have the legal documentation to donate [1]. It is considered that measuring the knowledge that medical students have about organ donation and what their disposition and attitude towards the problem is, could provide us with really interesting data and thus, subsequently, raise awareness about organ donation.

Few studies have evaluated knowledge and awareness of the concept of brain death among students [7]. A cross-sectional study in Spain on 9,275 medical students in 2010 indicated that 67% of the students have adequate knowledge about brain death, while 28% did not know the meaning of brain death and 5% did not believe that the brain death announced de facto death of a person [7].

A study carried out on students from Puebla, Mexico, presents us with the scenario of various consulted references, where the lack of knowledge about the legislation causes distrust and with it the number of donors does not increase for fear of the mutilation of the body, very similar to what the results show in our students. This study demonstrates in the cognitive area that the sample believes that organ trafficking exists; this has a proportional relationship with the lack of knowledge of the legislation and the body in charge of the entire donation and transplant procedure, including its distribution and traceability [2].

Thus, we see that among the few studies that exist on the subject, they inform us that students have a high level of attitude, but a low level of basic understanding about organ donation and that they lack detailed knowledge. They accept its importance and want more education to supplement their current knowledge in order to understand the issues surrounding organ donation. This supports placing greater emphasis on revising curricula in medical schools to improve the knowledge of future health workers, as this strategy may be part of the solution to the chronic shortage of organ donors for transplant [8].

The objective of this study was to determine the attitudes and knowledge of medical students regarding organ donation. We set out to measure the above through research, since they are one of the links in this important issue.

MATERIALS AND METHODS

A cross-sectional, observational, and non-experimental quantitative study was carried out in the Cristobal Colon University School of Medicine at Veracruz, Mexico. Inclusion criteria: Medical students from the second to the fourth year voluntarily responded to an anonymous questionnaire designed to determine their knowledge and opinion on organ donation. Exclusion criteria: First semester students were excluded, due to their lack of basic health knowledge. This study was approved by the local Ethical Committee.

The questionnaire was designed based on the literature review and validated by five referees, to later carry out a pilot study with 11 randomly selected medical students. The enquiry included 13 objectives and Likert scale questions, allowing the student to choose from the following alternatives: “agree,” “strongly agree,” “disagree,” “strongly disagree,” or to be “partially agree” to the situation proposed by the question. The questionnaire was sent by e-mail to all students.

The Mann-Whitney U test was used to compare the answers between the groups, and the chi-square test was used to analyze the answers among the different beliefs. The statistical significance was set at 0.05. All statistical analyses were performed using the SPSS software.

RESULTS

A total of 102 medical students from the 2nd, 3rd and 4th years of the career who agreed to participate by completing the Google forms, 67 females (66%) and 35 males (34%), were included. The mean age was 21.1 ± 2.5395 years (range 18 to 36 years) (Table 1).

Regarding the gender of the respondents, no significant difference was observed between the mode of responses between female and male students ($p = .6298$, Student's t test); 54 (80.6%) females and 23 (65.7%) males decided to donate ($p = 0.14$, Fisher's exact test). According to the age group, agreed to donate 79.6% ($N = 43$) of those over 20 years of age, while 70.8% ($N = 34$) of students below 20 years of age preferred it ($p = 0.36$, Fisher's exact test).

Regarding the semester taken, accepted to donate 74.4% ($N = 29$) of the first and third semester students, 75% ($N = 18$) of the fifth semester and 76.9%

(N = 30) of the seventh semester ($p = 0.96$, Chi-square test). A trend towards statistically significant difference was observed in the mode between the answers from the seventh semester students compared to those from the fifth semester ($p = 0.0686$, Student's *t* test). No significant difference was observed in the comparison between the results of respondents from the seventh semester and those from the third semester ($p = 0.4222$, Student's *t* test) or between students in the 5th semester and 3rd semester ($p = 0.2918$, Student's *t* test).

Table 1 Sociodemographic data of the students

Variable	Value	n	%
Age (year)	18	3	3
	19	21	21
	20	24	24
	21	20	20
	22	15	15
	23	8	8
	24	6	6
	25	3	3
	33	1	1
	36	1	1
Sex	Female	67	66
	Male	35	34
Religion	Catholic	102	100
Origin	Urban	102	100

Answers to the questions:

Organ donation is an act that seems very accepted by the medical student population (Q1), according to a mode of 7 (strongly agree) and a mean of 6.5, which means that most of them consider donation as a solidarity action.

A somewhat indifferent trend was observed by the student population (Q2), with a mode of 5 (partially in agreement) and a mean of 3.6; We determined that medical students prefer not to talk about this topic, or that it does not represent a relevant topic for them at the moment.

Most of the student population disagreed with the Q3 approach and it was poorly accepted, with a mode of 1 (strongly disagreeing) and a mean of 3.4; is placed as a negative answer.

The majority disagreed with the fact that the donation violates the human rights (Q4), with a mode of 2 (disagree) and a mean of 3.0; this means for us a positive attitude in the students.

Q5: A quasi-indifferent attitude is observed on the part of the student population, with a mode of 5 (partially agree) and a mean of 4.1. We cannot classify it as a positive or negative attitude.

Question that is otherwise relevant, a certainly indifferent attitude was observed in the Q6's responses; not all the information obtained by the respondents on the subject has been known through university courses. In agreement with the previous question, a mode of 5 (partially agree), and a mean of 4.8, was obtained, demonstrating a need for better preparation of students in the course of their university career in terms of organ donation.

Many surveyed students demonstrated by answering Q7 that they are interested in learning more about the subject. By obtaining a mode of 7 (strongly agree) and a mean of 6.5, an extremely positive attitude can be detected, again demonstrating the need for information and better preparation in terms of knowledge and attitude about organ donation.

We are surprised by a mode of 5 (partially agree) and a mean of 3.6 in Q8, since the student population was indifferent, and the donation should per se be considered a non-profit activity.

Q9: With a mode of 7 (strongly agree) and a mean of 5.9, these responses demonstrated a very positive attitude, since the students agree that patients really improve their quality of life and are clear that organ donation is an act with the purpose of doing good and improving the lives of people in need.

A mode of 7 (strongly agree) and a mean of 6.6 has been observed in Q10 answers which seems to be a positive attitude since as a doctor to keep bioethical principles in mind is very important; in the end, the patient should be left to make his own decision, without trying to persuade or convince him to donate the organs of his relative or himself.

With a mode of 7 (strongly agree) and an average of 6.2, a totally positive response is observed in Q11 from the students surveyed, demonstrating that they are clear about the importance of raising awareness regarding donation, in order to be willing to do so. At

some point in his career, cases related to this issue were presented. Awareness can be a key point to improve communication between patients or relatives and doctors.

Q12: A large part of this student population considers it incorrect and expresses a completely contrary opinion with rejecting the action of donating organs. In this case, a mode of 1 (strongly disagree) and a mean of 2.1 were obtained. We also consider this as a very positive attitude.

A mode of 5 (partially agree) and a mean of 3.8 was obtained in Q13, interpreted as an indifferent attitude, which shows that there continues to be a lot of ignorance on the subject among medical students, showing fear that their organs will be removed before confirmation of brain death. This really becomes a worrying situation for doctors in training who will inform family members about the patient's brain death and the possibility of donating organs.

DISCUSSION

Young people between the ages of 15 and 24 are more likely to donate organs and tissues for transplant purposes [2]. Presumably, the group of medical students should have greater knowledge of organ donation by being in the medical area.

In general, the donation is well accepted by the medical student. However, medical students prefer not to talk about this topic. Results from this study show that there continues to be a lot of ignorance on the subject among medical students, demonstrating fear that their organs would be removed before confirmation of brain death. This really becomes a worrying situation for doctors in training who will inform family members about patient brain death and the possibility of donating organs.

The donation should per se be considered a non-profit activity. The lack of knowledge about the legislation causes mistrust and thus the number of donors does not increase for fear of mutilation of the body. It has been reported [2] about the opinion of the respondents that there is organ trafficking, which is related to the lack of knowledge of the legislation. Situation of family refusal (family representation of the disease):

The medical student disagreed with donating organs of a family member, even if in life he/she has not agreed, this subject was poorly accepted. In Mexico this is very recurrent.

In 2014, a study from Mexico [6] reported that among the causes of family refusal towards organ donation were found: lack of willingness and wishing to donate during the patient lifetime (26%), family conviction that must be buried the complete body (20%), and expression of refusal to donate while the patient is alive (17%).

In another study from Mexico, [7] 82% of the population would be willing to be a donor, 75.9% would be willing to donate the organs and/or tissues of a family member, but the causes for refusal would be: lack of knowledge of the donation process (35.8%), fear of the unknown (13.7%), suffering from a disease that does not allow them to be a donor (10.5%) and relatives refusal towards donation (8%).

Another interesting study [8] showed that participants exposed to central elements of the social representations of organ donation, rather than peripheral ones, ultimately reported more favorable attitudes and intentions toward organ donation. More individuals exposed to central rather than peripheral elements of the social representations produced the first target behavior (i.e., declaring themselves to be organ donors). This study [8] experimentally demonstrated that individuals follow the central route of information processing when they are exposed to the central elements of social representations. Perhaps these strategies should be implemented to modulate family representations of organ donation.

Sadly, medical students do not get information about transplants from the country media or from university courses during their career. The second largest source of information on donation in a community, follow media, is provided by health workers, [7] so misinformation and apathy from medical students in this regard is worrisome. In addition, there are universities in which there is no donation program and very few curricula subjects deal with this topic. Many surveyed students demonstrated that they are interested in learning more about the subject and are clear about the importance of raising awareness regarding donation.

Medical students should be trained, and universities should design dissemination and awareness strategies in a similar way to diabetes educators, and maybe there could be educators in organ and tissue donation in the future [9].

Although most of the students had adequate knowledge, gaps still exist in their attitude and willingness. This implies the need for an intensified and sustained education to raise attitude and willingness of the students towards organ donation [5].

Unfortunately, the hypothesis that the attitude towards organ donation is influenced mainly by level of knowledge [2] is still mentioned. High school is more indifferent to the subject and medical school is more against donation [2].

On the other hand, in relation to donation after circulatory determination of death (DCD), it appears that the only barrier to organ donation is the absence of organ donation guidelines or protocols in Emergency department staff to identify and initiate a DCD process in designated individuals [10]. Despite a favorable attitude, the students have limited knowledge about brain death and organ donation and 69% were not aware of DCD [11]. Another study found a clear lack of information and, consequently, in acceptance of DCD [12]. Total knowledge score was significantly associated with exposure to organ donation during medical studies and comfort in answering patients about organ donation [11].

Talking about a successful organ donation process would imply having trained, sensitive professionals willing to honestly provide information to the family of patients with brain death. This, even today, constitutes a barrier for several reasons: ignorance, lack of time, feeling of therapeutic failure, among others, which makes it less likely that potential donors will be identified and get involved in the process [4]. Guerra et al. in Brazil implemented a course aimed at undergraduate medical students where topics such as diagnosis of brain death, maintenance of the potential donor, legal aspects, and transplantation of major organs were addressed [12]. Similarly, in Spain, the University of Barcelona and the National Transplant Organization developed an international educational project (Transplant Procurement Management) on donation and transplantation to educate and motivate

professionals involved in the donation and transplantation process. The main goal was to increase the availability of organs and tissues by raising awareness that organs are social goods. The factors that are most associated with donor status (be it or not), apart from the cognitive ones, are those of social order, altruism, solidarity, participation in non-governmental associations or other social works [13]. Another project created by universities in Barcelona was the PIERDUB project with the aim of disseminating knowledge about the donation process and stimulating positive attitudes towards donation. Since 2005, PIERDUB have annually offered a 45-hour Elective Credit Course to medical students, and open donation sessions and promotion campaigns in medical schools and other health sciences [14]. In China, a curriculum related to organ donation, especially for medical students, has been developed. This project aimed to define core content for organ donation curriculum that could be useful for international organ donor agencies and educational institutions [15].

Today, individuals have adopted trends marked by social networks, which can have a positive impact on organ donation, attracting the population to become donors. Studies conducted at Johns Hopkins Hospital describe that donor registration rates increased once Facebook allowed users to specify "Organ Donor" as part of their profile starting in 2012. [16] Pediatric Intensivists in Saudi Arabia expressed low levels of comfort with organ donation competencies that are essential to maximizing donation rates. In that study [17] authors conclude that the adaptation of mandatory comprehensive donation education programs and dedicated medical specialists can be beneficial in intensive care units that seek to increase donation rates [17]. The expansion of these issues in the population from an early age, emphasizing during the training stage of health care providers, should be a key factor to be able to increase donation in the future in Mexico, since the physician will play an important and fundamental role in this process.

CONCLUSION

Although donation is well accepted by medical students, there is still a lot of ignorance and misconceptions, and the need for continuous and

intense education strategy to increase the willingness to donate organs and tissues.

We propose that medical students should be trained, and universities should design dissemination and awareness strategies in a similar way to diabetes educators, and maybe there could be educators in organ and tissue donation in the future, [9] similar to the undergraduate medical course implemented in Brazil [12] or the international educational project (Transplant Procurement Management) of the University of Barcelona and the Spain National Transplant Organization [13].

Conflict of interest

Authors declare none.

Authors' Contribution

LAA, VCMDO and EASV were involved in:

Conception and design, acquisition of data, data analysis and interpretation, drafting the article, critical revision of the article and final approval of article.

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APPENDIX

Questionnaire:

Q1. Is the donation an act of solidarity?

a) strongly agree b) agree c) partially agree d) disagree e) strongly disagree

Q2. Should doctors avoid getting involved in the act of donating?

a) strongly agree b) agree c) partially agree d) disagree e) strongly disagree

Q3. Would I donate the organs of my family member, even if in life he / she has not agreed to donate?

a) strongly agree b) agree c) partially agree d) disagree e) strongly disagree

Q4. Does the donation violate the rights of the person?

a) strongly agree b) agree c) partially agree d) disagree e) strongly disagree

Q5. Did you get the information you have about transplants in our country from the media?

a) strongly agree b) agree c) partially agree d) disagree e) strongly disagree

Q6. Did you obtain the information you have about transplants in our country from university courses during your career?

a) strongly agree b) agree c) partially agree d) disagree e) strongly disagree

Q7. Do you feel like you need more information about organ donation?

a) strongly agree b) agree c) partially agree d) disagree e) strongly disagree

Q8. Is organ and tissue donation a lucrative activity?

a) strongly agree b) agree c) partially agree d) disagree e) strongly disagree

Q9. Do transplant patients improve their quality of life?

a) strongly agree b) agree c) partially agree d) disagree e) strongly disagree

Q10. Is the decision to donate organs and tissues a personal one?

a) strongly agree b) agree c) partially agree d) disagree e) strongly disagree

Q11. Is it necessary to sensitize medical students in favor of organ and tissue donation?

a) strongly agree b) agree c) partially agree d) disagree e) strongly disagree

Q12. Is it better to refuse the action of donating organs and tissues?

a) strongly agree b) agree c) partially agree d) disagree e) strongly disagree

Q13. Do I refuse the donation for fear that the organs will be removed before the confirmation of the diagnosis of brain death?

a) strongly agree b) agree c) partially agree d) disagree e) strongly disagree