

# Knowledge, Attitudes and Proposals of Medical Students Concerning Transplantations in Greece

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## INTRODUCTION

During the past decades, organ transplantation has increased and become widespread.<sup>1-3</sup> It is a form of treatment that is indispensable for certain diseases and the results in terms of life years gained and improvement in quality of life

are often positive. The issue of organ donation is complex and multifactorial, involving ethical, legal, medical, organizational, and societal factors.<sup>3,7-9</sup> Healthcare professionals' knowledge, attitudes, and behaviors are essential factors in fostering an environment that positively influ-

## ABSTRACT

**Objectives:** In Greece, there is limited research on issues related to organ donation. We aimed to study the attitudes, knowledge, and actions of local medical students regard to organ donation and transplantations of tissues and organs in Greece.

**Methods:** This cross-sectional questionnaire based survey was done in Laboratory of Hygiene and Social Medicine, School of Medicine, Aristotle University of Thessaloniki, Greece on medical students in years 1 to 6. In a sample of 600 medical students, a special anonymous questionnaire, which included data as sex, age, and semester of studies, as well as questions regarding certain aspects of transplantation, was distributed. 558 valid questionnaires were completed (men 52.3% and women 47.7%).

**Results:** The vast majority of the sample (93.6%) were in favor of transplantations whereas 32 (5.7%) of the students claimed to be organ donors. 78.9% claimed ignorance of the existing legislation concerning transplantations and organ donation in our country. 81.2% believed that the voting of law, which would consider all Greek organ donors after death will cause strong reactions. As the main causes, responsible for the shortage of transplants in our country were stated to be the inadequate public information, Greek mentality, and the lack of organized transplant centers. Public information through Media, a lifelong free health check-up for organ donors and activation of voluntary organizations that promote organ donation were proposed as the most important actions that could increase organ donation and transplantations in Greece.

**Conclusions:** The need for further informative actions stressing the importance of organ donations appears to be the only way to increase transplantations in our country and towards this direction medical students could also be activated. A new medical curriculum should increase medical students' awareness of the organ shortage problem. Public education is recommended to correct misconceptions.

**Keywords:** Transplantations, Proposals, Medical students, Greece.

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ences organ donation rates.<sup>10-12</sup> The objective of the current study was to evaluate medical students' existing level of knowledge, attitudes, observations, and proposals towards organ donation.

## METHODS

The Aristotle University of Thessaloniki is the largest university in Greece that provides undergraduate medical training. The 6-year undergraduate medical curriculum focuses on the study of basic medical science in the first 3 years and on clinical rotations in the following 3 years. Between June 8<sup>th</sup> and June 10<sup>th</sup> 2010, anonymous self-administered questionnaires were distributed to the medical students from years 1 to 6 (n = 600) before morning lectures.

The forms were collected immediately when the respective sessions finished. These questionnaires included elements such as sex, age, and semester of study. The questionnaires consisted of 8 questions, mostly in the form of multiple choice questions, where some of them included personal suggestions (Table 1).

A number of 558 valid questionnaires were filled in by 292 (52.3%) male and 266 (47.7%) female students, whereas 262 (47%) of them were students in Preclinics and 296 (53%) were students in the Clinics. 42 questionnaires were incorrectly filled or were not filled.

All statistics were carried out using the Statistical Package for the Social Sciences (SPSS, version 14.0, Chicago, IL) and Microsoft Excel (Redmond, WA).

The chi-square test was used for analysis of the results.

**Table 1.** Survey Questionnaire

1. Do you support organ and tissue donation?  
YES NO I DON'T KNOW
2. Are you an organ and tissue donator?  
YES NO
3. Are you aware of the current legislation concerning transplantations and organ donation in Greece?  
YES NO  
If YES, please state knowledge of the current legislation:  
Excellent Sufficient I have heard about it
4. Do you believe that a change in legislation, whereby organs can be used for transplantation after death will cause strong societal reactions?  
YES NO I DON'T KNOW
5. Have you ever heard about organ donation campaign of Hellenic National Transplant Organization?  
YES NO
6. Do you consider as sufficient the promotion of information concerning organ donation that is made by Hellenic National Transplant Organization and relevant Non Governmental Organizations (NGOs)?  
Excellent Sufficient Insufficient I don't know
7. Please state three (3) main causes responsible for the shortage of transplants in Greece:
  - a. Inadequate information regarding donation
  - b. Lack of organized transplant centers
  - c. Greek mentality
  - d. Lack of trust to Greek doctors
  - e. Lack of trust to Greek National Health System
  - f. Donation is against religious viewpoints
  - g. Ethical dilemmas
  - h. Inadequate legislation
  - i. Other: Please State
8. Please state three (3) main actions that can contribute to wide spread of organ donation and increase of transplantations in Greece:
  - a. Public information through the Media (TV, radio, conferences, leaflets)
  - b. Introduction of a relevant course at high schools
  - c. Foundation of Transplant Centers with scientific experts
  - d. Obligatory necrotomy to people dying at hospitals
  - e. Lifelong free health check up for organ donors
  - f. Precise and easily understanding definition of "brain death"
  - g. More active role of Church and Municipal Centers
  - h. Voluntary organizations that promote organ donation
  - i. Other: Please state

## RESULTS

The majority of respondents (93.9%) supported organ donation. Respondents from the Preclinics comprised 45.8% of the study sample, while the respondents of clinical studies a 54.2% of the sample ( $P < 0.05$ ). Only 5.7% of participants indicated that they had registered to be organ donors. 65.6% of them were men and 34.7% women, whereas 59.4% were preclinical students and 40.6% clinical medical students.

The vast majority of respondents (78.9%) were not aware of the current legislation concerning transplantations and organ donation in Greece. 25.7% of male students and 16.2% of female students ( $P < 0.005$ ) seemed to have knowledge of the current legislation, where 23.3% of them were students in the Preclinics and 19.3% in the Clinics ( $P > 0.05$ ). Moreover, only 4.2% of students had a deep knowledge of the current legislation, while 16.1% had some idea. The rest of the respondents (79.7%) had heard about it, somehow.

81.2% students suggested that a change in legislation, whereby organs can be used for transplantation after death, would cause strong societal reactions. Male students (52.1%) were more likely than female students to agree with it, while there were not significant differences between students in the Clinics and Preclinics ( $P > 0.05$ ). Nevertheless, it is important to note that 8.6% students strongly supported a change in legislation, while 10.2% of them did not give an answer.

20.8% of medical students knew about organ donation campaign of Hellenic National Transplant Organization. Most of them were students in the Clinics (72), while 44 of them were in

Preclinics. Moreover there was a slight difference among male (59) and female (57) students ( $P < 0.05$ ).

Many students (34.4%) expressed the opinion that insufficient promotion of and information pertaining to organ donation was made available to the general public, by Hellenic National Transplant Organization and relevant Non Governmental Organizations. A small minority of participants (5%) opined that the Hellenic National Transplant Organization and Non Governmental Organizations had provided excellent information to the public (Table 2).

The main causes responsible for the shortage of transplants in our country were stated to be the inadequate public information, the Greek mentality, and the lack of organized transplant centers (Table 3). There was no significant difference among male and female students, regarding inadequate information as the main reason for transplant shortage ( $P > 0.05$ ).

Many participants (59.5%) felt that public information through Media (TV, radio, conferences, and leaflets) was the most effective way to draw public attention to the issue. Some participants (30.5%) suggested that a lifelong free health check-up for organ donors would increase opportunities for organ donation. A few students (26.7%) urged that voluntary organizations to exert more effort in scaling up organ donation promotion. Clinical medical students supported that public information through Media ( $p > 0.05$ ) and lifelong free health check-up for organ donors ( $P < 0.05$ ), as actions, can contribute to public awareness. Male students expressed the view that voluntary organizations increase public awareness of the critical need for organ donation ( $P > 0.05$ ).

**Table2.** Distribution of responses to the question regarding sufficiency of promotion and information concerning organ donation made by Hellenic National Transplant Organization and relevant Non Governmental Organizations by sex and semester of study

Responses	Sex		Semester of study		Total
	Male	Female	Preclinics	Clinics	
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
Excellent	15 (5.1)	13 (4.9)	18 (6.9)	10 (3.4)	28 (5.0)
Sufficient	67 (22.9)	72 (27.0)	53 (20.2)	86 (29.1)	139 (24.9)
Insufficient	108 (37.0)	84 (1.6)	82 (31.3)	110 (37.1)	192 (34.4)
I don't know	102 (35.0)	97 (36.5)	109 (41.6)	90 (30.4)	199 (35.7)
Total	292 (100.0)	266 (100.0)	262 (100.0)	296 (100.0)	558 (100.0)

**Table 3.** Distribution of responses to the question regarding shortage of transplants in Greece, by sex and semester of study

Responses	Sex		Semester of study		Total
	Male	Female	Preclinics	Clinics	
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
Inadequate information regarding donation	218 (74.7)	193 (72.6)	137 (52.3)	274 (92.6)	411 (73.7)
Lack of organized transplant centers	76 (26.0)	85 (32.0)	64 (24.4)	97 (32.8)	161 (28.9)
Greek mentality	107 (36.6)	114 (42.9)	109 (41.6)	112 (37.8)	221 (39.6)
Lack of trust to Greek doctors	19 (6.5)	15 (5.6)	15 (5.7)	19 (6.4)	34 (6.1)
Lack of trust to Greek National Health System	56 (19.2)	62 (23.3)	71 (27.1)	47 (15.9)	118 (21.1)
Donation is against religious viewpoints	82 (28.1)	77 (28.9)	75 (28.6)	84 (28.4)	159 (28.5)
Ethical dilemmas	65 (22.3)	59 (22.2)	68 (26.0)	56 (18.9)	124 (22.2)
Inadequate legislation	32 (11.0)	24 (9.0)	26 (9.9)	30 (10.1)	56 (10.0)
Other: Please State	3 (1.0)	1 (0.4)	2 (0.8)	2 (0.7)	4 (0.7)
Total	292 (100.0)	266 (100.0)	262 (100.0)	296 (100.0)	558 (100.0)

## DISCUSSION

In the present study, we assessed attitudes toward tissue and organ donation with the objective of aiding policy development to increase transplantations in Greece. Other studies of medical students in different countries have shown a similar trend, where the proportion demonstrating accurate knowledge about donation cards was significantly increased after education.<sup>13</sup> Having chosen students with medical background for the present study may have influenced the overall donation readiness toward a more positive attitude compared to the basic population.

In this study, the overwhelming majority of students expressed support of organ and tissue donation. Nonetheless, 5.7% of students have registered as organ donors after death. This suggests a desire on the part of students to learn more about donation, as well as an opportunity for medical schools to positively impact organ donation and transplantation by educating future physicians about this important aspect of medicine.<sup>3,8,14,15</sup> Health care professionals can serve as role models for patients and their relatives, and a higher success rate for organ procurement might be reached.<sup>16</sup> Other studies showed that patients have a more 'positive' atti-

tude towards organ donation if they know that their doctors are willing to donate organs.<sup>17</sup>

Data from this study also emphasize that 21.1% of students had a deep knowledge of the current legislation concerning transplantations and organ donation in Greece. Therefore, it might have been expected that if there was a more proper and concise legislation, there would also be a greater willingness to donate, among medical students.<sup>6,7,15</sup> Medical students from other countries had similar problems with a relative lack of knowledge in medical law,<sup>18</sup> brain death,<sup>19,20</sup> suitable candidates for organ transplantations, potential recipients, and the logistics of organ donation.<sup>21,22</sup> Possible reasons for this matter included insufficient emphasis on organ donor recruitment in the curriculum, lack of exposure and understanding about the entire transplantation process, and paucity of any large-scale organ donation public awareness campaigns in the community. Thereafter, issues related to donor recruitment as well as supply and demand of cadaveric organs should be more emphasized in the medical curriculum. A special elective course for medical students covering aspects of organ donation might be rather helpful.<sup>7,8,14,23</sup>

Moreover, our results surprisingly indicated



that (81.2%) students believe that a change in legislation, whereby organs can be used for transplantation after death, will cause strong societal reactions. This issue must be considered real and needs to be carefully addressed. In that way, awareness and education about organ donation needs to be enhanced through mainstream mass media.

When medical students asked about organ donation campaign of Hellenic National Transplant Organization strategies to promote organ donation, the lack of a promotion and awareness campaign was again brought up by the participants.<sup>5</sup> They felt that if organ donation is a commonly occurring action, more people would be willing to donate their organs.<sup>2,3</sup>

Our results indicated that most of the students considered insufficient the information provided by Hellenic National Transplant Organization and relevant authorities. Students believed that information provided to general public used a scientific oriented terminology, while most time was not renewed. It is thus important to recognize the pronounced societal and educational differences in values, attitudes, and beliefs with respect to organ donation.<sup>11,24</sup>

The above mentioned issues have a negative impact to medical students' attitudes toward organ donation. Therefore, the main cause responsible for the shortage of transplants in our country was stated to be the inadequate public information. Although, Greek mentality was the second cause in our study; Greeks in general are sensitive in medical issues but unwilling to promote organ donation. The third reason for shortage of transplants in our country was the lack of organized transplant centers. This is not true since many centers of excellence have been established in recent years.<sup>5</sup>

Our study identified that the principle respondents' source of information about organ donation was Media. General studies had also shown the importance of Media in increasing public awareness,<sup>1,3,4,10,14</sup> The lifelong free health check-up for organ donors that has been proposed is quite difficult to be implemented in Greece. Voluntary organizations that promote organ donation had been the third action proposed by medical students. Volunteer organizations may provide dynamic educational and outreach programs and services to the general public. As a consequence the active participation of medical students is strongly recommended.<sup>24-26</sup>

## CONCLUSION

In conclusion, there is a significant demand for organ donation in Greece. This demand can be alleviated by encouraging people to donate organs through efforts from relevant authorities. The undergraduate medical curriculum should include courses on organ transplantation to better equip future doctors with knowledge on organ donation issues. Health educational strategies should be targeted at personal, family, and community levels. Coordinated initiatives including information, education campaigns, and knowledge are of great importance for opening a modern public debate. Negative or ambivalent attitudes and lack of knowledge and trust in health care systems should be abandoned since potentially can cost lives. Policy developers and health care providers should increase donation consent rates in the future.

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## REFERENCES

1. Wong LP. Information needs, preferred educational messages and channel of delivery, and opinion on strategies to promote organ donation: a multicultural perspective. *Singapore Med J* 2010; 51(10): 790-5.
2. Franco A, Jimenez L, Sillero C, Trigueros M, Gonzalez D, Alcaraz E, et al. [Post-transplant lymphoproliferative disorders in renal transplantation: two decades of experience]. *Nefrologia* 2010; 30(6): 669-75.
3. Edwards TM, Essman C, Thornton JD. Assessing racial and ethnic differences in medical student knowledge, attitudes and behaviors regarding organ donation. *J Natl Med Assoc* 2007; 99(2): 131-7.
4. Dahlke MH, Popp FC, Eggert N, Hoy L, Tanaka H, Sasaki K, et al. Differences in attitude toward living and postmortal liver donation in the United States, Germany, and Japan. *Psychosomatics* 2005; 46(1): 58-64.
5. Bellali T, Papadatou D. Models related to decision making processes regarding cadaver organ donation. *Archives of Hellenic Medicine* 2002; 19(1): 40-50.
6. Bapat U, Kedlaya PG. Organ donation, awareness, attitudes and beliefs among post graduate medical

- students. *Saudi J Kidney Dis Transpl* 2010; 21(1): 174-80.
7. Edwards AG, Newman A, Morgan JD. Exposure to the field of renal transplantation during undergraduate medical education in the UK. *BMC Med Educ* 2005; 5: 32.
  8. Edwards AG, Weale AR, Morgan JD. A survey of medical students to assess their exposure to and knowledge of renal transplantation. *BMC Med Educ* 2004; 4(1): 32.
  9. Ghods AJ. Ethical issues and living unrelated donor kidney transplantation. *Iran J Kidney Dis* 2009; 3(4): 183-91.
  10. Rithalia A, McDaid C, Suekarran S, Norman G, Myers L, Sowden A. A systematic review of presumed consent systems for deceased organ donation. *Health Technol Assess* 2009; 13(26): iii, ix-95.
  11. Rithalia A, McDaid C, Suekarran S, Myers L, Sowden A. Impact of presumed consent for organ donation on donation rates: a systematic review. *BMJ* 2009; 338: a3162.
  12. Mekahli D, Liutkus A, Fargue S, Ranchin B, Cochat P. Survey of first-year medical students to assess their knowledge and attitudes toward organ transplantation and donation. *Transplant Proc* 2009; 41(2): 634-8.
  13. Afonso RC, Buttros DA, Sakabe D, Paranhos GC, Garcia LM, Resende MB, et al. Future doctors and brain death: what is the prognosis? *Transplant Proc* 2004; 36(4): 816-7.
  14. Essman CC, Lebovitz DJ. Donation education for medical students: enhancing the link between physicians and procurement professionals. *Prog Transplant* 2005; 15(2): 124-8.
  15. Chung CK, Ng CW, Li JY, Sum KC, Man AH, Chan SP, et al. Attitudes, knowledge, and actions with regard to organ donation among Hong Kong medical students. *Hong Kong Med J* 2008; 14(4): 278-85.
  16. Boey KW. A cross-validation study of nurses' attitudes and commitment to organ donation in Hong Kong. *Int J Nurs Stud* 2002; 39(1): 95-104.
  17. Rumsey S, Hurford DP, Cole AK. Influence of knowledge and religiousness on attitudes toward organ donation. *Transplant Proc* 2003; 35(8): 2845-50.
  18. Laederach-Hofmann K, Gerster BI. [Knowledge, attitude and reservations of medical students about organ transplantation: results of a survey during the first year of study]. *Schweiz Med Wochenschr* 1998; 128(47): 1840-9.
  19. Bardell T, Hunter DJ, Kent WD, Jain MK. Do medical students have the knowledge needed to maximize organ donation rates? *Can J Surg* 2003; 46(6): 453-7.
  20. Afonso RC, Buttros DA, Sakabe D, Paranhos GC, Garcia LM, Resende MB, et al. Future doctors and brain death: what is the prognosis? *Transplant Proc* 2004; 36(4): 816-7.
  21. Dutra MM, Bonfim TA, Pereira IS, Figueiredo IC, Dutra AM, Lopes AA. Knowledge about transplantation and attitudes toward organ donation: a survey among medical students in northeast Brazil. *Transplant Proc* 2004; 36(4): 818-20.
  22. Dhaliwal U. Enhancing eye donation rates. Training students to be motivators. *Indian J Ophthalmol* 2002; 50(3): 209-12.
  23. Ozdag N. Public awareness and acceptance of tissue and organ donation. *EDTNA ERCA J* 2004; 30(4): 188-95.
  24. Hong JL. A brief introduction of the Chinese Marrow Donor Program. *Hong Kong Med J* 2009; 15(3 Suppl 3): 45-7.
  25. Kodera Y, Morishima Y, Hirabayashi N, Tanimoto M, Matsuyama T, Horibe K, et al. Analysis of 55 transplantations from unrelated volunteer donors facilitated by Tokai Marrow Donor Bank. *Intern Med* 1996; 35(1): 78-83.
  26. Gillon R. On giving preference to prior volunteers when allocating organs for transplantation. *J Med Ethics* 1995; 21(4): 195-6.