

## EDUCATORS' KNOWLEDGE AND STANDPOINTS ON BONE MARROW DONATION

VASILIKI KARAKOSTA, NIKOLAOS NIKITIDIS\*

Department of Health Management, Hellenic Open University, Patras, Greece. Email: nikitidis@yahoo.com

Received: 20 September 2021, Revised and Accepted: 12 November 2021

### ABSTRACT

**Objectives:** The objectives of the study are what is the degree of registration of educators, what is the attitude of educators about organ donation, and what are the factors related to the decision to donate.

**Methods:** It is a quantitative cross-sectional study using a structured questionnaire. A sample consisted of 208 teachers with the greater predominance of women. Logarithmic regression was applied to determine the effect of demographics, knowledge evaluation, and evaluation of views toward the possibility of registration in the body donor register.

**Results:** Out of the participants, 7.5% are registered in the organ donor and 20.5% are active body donors. One in two wants to become an organ donor. The views evaluation on a scale with a minimum of 23 and a maximum of 115 was 87.58 (9.62). The knowledge evaluation on a scale with a minimum of 0 and a maximum of 6 was 2.17 (1.46). The underlying impression of participants on their knowledge of organ donation on a scale of 1–6 was 3.18 (1.47). The 45–50 age group is 19.9 times more likely to be registered and the evaluation of views increases.

**Conclusion:** The degree of registration in donor registers (7.5%) is considered low. The assessment of attitudes 87.58 and knowledge 2.17 (1.46) is considered also insufficient. The main source of knowledge is the media. It is necessary to increase the contribution of more reliable sources (academic studies, ministry, and information actions).

**Keywords:** Tissue and organ procurement, Organ transplantation, Attitudes, Motivation, Volunteers.

© 2022 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>) DOI: <http://dx.doi.org/10.22159/ijms.2022v10i1.43200>. Journal homepage: <https://innovareacademics.in/journals/index.php/ijms>

### INTRODUCTION

Advances in science have made it possible for the damaged organs to be replaced with new ones, received from donors. This happens, because, understanding of the factors associated with organ and tissue donation has progressed significantly [1]. It is stated in the bibliography that organ transplantation improves the quality of life of the chronically ill patients [2]. Even though cuttings are available, in most cases, they do not meet the needs [3]. The demand for organs for transplantation is greater than the supply. Some patients find transplants from their family environments, while others seek transplants from donors. Lack of organs has adverse effects and can even lead to the death of patients who have not found an implant [4].

Research has shown that perspectives and intentions regarding organ donation can increase with exposure to logical and emotional messages about organ donation [4]. Therefore, to develop public information campaigns, it is essential to understand the view points and beliefs that can affect someone's decision to become a donor.

Health professionals, doctors and nurses, are involved in organ donation [5]. Research has shown that nurses are in favor of organ donation [6]. Another group that can contribute to the promotion of this idea is educators [7]. They are the ones who have a great influence on the students and contribute to the formation of their views regarding volunteering. It is estimated that sensitized educators can impart the values of volunteering to their students, which eventually leads to an increasing number of volunteers.

Each person as a separate entity with their own personality, personal experiences, perceptions and beliefs, makes, and executes decisions in a unique way [8]. The factors that guide this decision are based on their perceptions, feelings, and social values and determine the context of their actions [8]. The final decision is usually determined by social,

cultural, and psychological factors that lead to one direction or another. The psychological state and the motivations that push someone to consent also play a decisive role [9].

Research shows that empathetic interest is highly motivating in blood donation, especially to women who are more sensitive when it comes to urgency [10]. Empathy, as well as altruism and other motivations, pushes individuals to adopt blood donation behavior. Social responsibility is a predictive factor in motivating someone to donate blood [11]. Another study proved that the moving factor in the intention to donate blood is high levels of empathy combined with social obligation [12]. In conjunction with the above, the factors that determine the decision of potential donors are social norms, religious beliefs and opinions of them, and their family environment as well as the influences from the media [13].

Despite all the information and publicity campaigns in the direction of organ donation and the positive reaction of the people to the idea, in fact, the percentage that ends up being registered or allowing the removal of the organs of their dead relatives is extremely low [14].

In Europe, the situation is heterogeneous, ranging from very low levels to much higher rates, with Spain ranking first in the world in organ donation rates. For the year 2016, the percentage in Spain amounted to 43.4 donors per million population, to 28.1 for France, to 11 in Germany, and to 5 for Greece, which holds the last place in the European Union [15]. In 2001, in Greece, were registered 3.6 donors per million population, in 2008 were 8.9 and in 2014 were 4.5 [16]. Therefore there is a downward trend in the recent years.

One social group, which subjected to research on donation, is medical graduates. In a survey conducted in India in 2010, most students were positive about the idea of organ donation [17]. A USA survey of nursing students found that despite a positive attitude, only 11%

were on donor lists mostly because of negligence [18]. Another survey of students in Sweden found that although they were positive about the idea of donating, only half of them were willing to donate their organs [19]. In another similar survey conducted in Greece, it was also found that students were positive about organ donation [20]. In a Spanish survey of secondary school teachers, a large percentage was found to be in favor (up to 92%) with more positive, female teachers, teachers with children, and those who have discussed the issue with their families [21].

However, an opposite view has been reported. A 2008 survey of nursing students in Italy, examining their attitudes toward organ donation, found that most participants had a negative opinion toward donation, stemming from a lack of knowledge and awareness of the issue [22].

Lots of people do not even know where to turn to, so as to join the bone marrow donor volunteer archive, nor do they know how simple, painless, and risk free the identification process for becoming a donor, is. This ignorance often causes doubts and misunderstandings and acts as a deterrent to one's decision to volunteer [23].

Another survey of medical students in the Netherlands found that 59% were enrolled. In the same research, it was shown that knowledge and right information help to understand and accept the significance of donation and have a positive effect on shaping the decision of potential donors [24]. A similar study of nursing students in New York showed a lack of knowledge about donation consensus and ignorance of definitions that play an important role, such as those of brain and heart death. Training in dealing with the relatives of a potential donor to consent to the donation is also insufficient. This piece of knowledge could be utilized and be a precondition for modifying a negative behavior [25].

## METHODS

The purpose of this study is to present the attitudes and knowledge of educators, on the subject of organ donation. More particularly, the degree of resignation of teachers in the organ donation register is investigated, along with their views toward it, the level of knowledge, and the reliability of their sources, regarding the donation. Finally, a correlation is carried out, between demographics, attitudes, and knowledge in registering.

The study is primary, contemporary, and quantitative, using a questionnaire. By teacher in the present study, we mean anyone who teaches a subject in secondary education, either in the public or private sector. A sample that consisted of 208 teachers showed the greater predominance of women. The participants were active in the wider area of Achaia, Greece.

The questionnaire used, was based on a similar survey, on the same subject, in a peer population of another geographical area [26]. Its use was after registration, with the permission of the responsible researcher Mrs. Eleni Chronopoulou who conducted the aforementioned research. Validity and reliability were checked by the panel of experts along with test and retest correlation.

Initially, data collection is attempted concerning the general knowledge of the respondents, regarding the bone marrow donation. Through a 23 Likert 5-point questions (1: Strongly disagree to 5: Strongly agree), teachers' attitudes and knowledge about their willingness to inform, encourage, or influence their students to donate are recorded. Questions 13–19 were then formulated to demonstrate the personal perceptions, beliefs, and opinions related to donation, based on relevant bibliography [27]. Concluding, questions 20–23 were related to the dimension of altruism.

Then, through seven multiple-choice questions, more particularly questions 24–30, an attempt is made to record the teachers' general knowledge about bone marrow donation and where it comes from. A pilot study was conducted at 10% to check the questionnaire.

Regarding the statistical analysis, the continuous variables are presented with average value and the standard deviation, in parentheses, while the categorical ones are presented as relative frequencies. Logarithmic regression was used to evaluate demographic variable, in relation to the possibility of registration, in the register of organ donors. All statistical calculations were performed with the Statistical Package for the Social Sciences (SPSS) 17.0 (SPSS Inc., Chicago IL, USA).

The principles of the Helsinki Declaration were taken into account during the conduct of the study. All participants were informed about the context, the purpose, and the objectives of it and wholeheartedly agreed to take part in it. The participation was anonymous and the data collected, were used exclusively for the purposes of the research, and not transferred to third parties in any way. The researchers had no financial gain, in the conduct of the study, whatsoever.

## RESULTS

The sample consists of women by 71.4% (Table 1). The most common age group is 45–55 (40.3%) and are mainly married (69.9%) with two children. Their educational level is of the higher educational institutions (71.8%) and they are, on the most part, civil servants (71.4%).

Out of the participants, 7.5% are registered in the organ donor register (Table 2) and 20.5% are active body donors. One in two wants to become an organ donor.

The views evaluation on a scale with a minimum of 23 and a maximum of 115 was 87.58 (9.62) (Table 3). The knowledge evaluation on a scale with a minimum of 0 and a maximum of 6 was 2.17 (1.46). The underlying impression of participants on their knowledge of organ donation on a scale of 1–6 was 3.18 (1.47). The main sources of knowledge for organ donation are voluntary organizations (35%) and media (34.1%) (Table 4).

Logarithmic regression (Table 5) was applied to determine the effect of the variables gender, age, education marital status, number of

Table 1: Demographics

Variable	n	%	p-value
Gender	206		<0.05
Men		28.6	
Women		71.4	
Age	206		<0.05
25–35		15	
35–45		38.3	
45–55		40.3	
55+		6.3	
Marital status	206		<0.05
Single		19.4	
Married		69.9	
Separated		8.7	
Divorced		1	
Widower		1	
Number of kids	206		<0.05
0		26.2	
1		22.8	
2		41.7	
3		6.8	
4		1	
5		0.5	
6		1	
Education	206		<0.05
Higher		71.8	
Postgraduate		27.2	
PhD		1	
Employment status	206		<0.05
Civil servant		71.4	
Deputy/hourly aged employee		9.2	
Private employee		18	
Freelancer		1.5	

children, employment status, knowledge evaluation, and evaluation of views toward the possibility of registration in the body donor register. The model explains 41.9% (Nagelkerke  $R^2$ ) of the variation in the

**Table 2: Volunteering**

	n	%	p-value
Registered in the body organ registry	199		<0.05
Yes		7.5	
No		92.5	
Blood donor	205		<0.05
Yes, I donate blood		20.5	
Yes, I used to donate in the past		27.8	
No, I was never a donor		51.7	
Desire for organ donation	204		<0.05
Yes		50	
No		8.9	
Not sure		40.2	

**Table 3: Knowledge and standpoints**

Variable	n	Min	Max	Mean (standard deviation)
Standpoint evaluation	206	23	115	87.58 (9.62)
Knowledge evaluation	206	0	6	2.17 (1.46)
Self-assessment of knowledge regarding organ donation	206	1	7	3.18 (1.47)

The min and max values refer to the minimum and maximum possible value that the variable can potentially take

**Table 4: Source of knowledge for organ donation**

Variable	n	%
Academic studies	206	7.5
Media	205	34.1
Voluntary organizations	206	35
Information actions of the ministry of health	205	19.4
Information actions of the ministry of education	206	13.1

**Table 5: Multivariate logistic regression models predicting donation decisions**

Variable	B	SEB	Wald	df	p-value	Odds ratio	95% CI	
							Lower	Upper
Gender male	-0.057	0.931	0.004	1	0.951	0.945	0.152	5.854
Age			4.896	3	0.180			
Age (25-35)	0.174	1.339	0.017	1	0.897	1.190	0.086	16.407
Age (35-45)	0.605	1.106	0.299	1	0.585	1.830	0.209	16.006
Age (45-55)	2.955	1.455	4.123	1	0.042	19.193	1.108	332.463
Marital status			0.172	4	0.997			
OK (single)	-18.829	27879.588	0.000	1	0.999	0.000	0.000	.
OK (married)	-19.257	27879.588	0.000	1	0.999	0.000	0.000	.
OK (separated)	-19.058	27879.588	0.000	1	0.999	0.000	0.000	.
OK (divorced)	-0.585	37380.268	0.000	1	1.000	0.557	0.000	.
Number of children	0.511	0.517	0.980	1	0.322	1.668	0.606	4.591
Education			0.768	2	0.681			
Γ5 (TEI/AEI)	1.260	1.906	0.437	1	0.509	3.526	0.084	147.792
Γ5 (postgraduate)	0.661	1.812	0.133	1	0.715	1.937	0.056	67.550
Employment status			0.611	3	0.894			
Γ7 (civil servant)	-17.275	21,494.904	0.000	1	0.999	0.000	0.000	.
Γ7 (depute)	-17.183	21,494.904	0.000	1	0.999	0.000	0.000	.
Γ7 (private employee)	-16.519	21,494.904	0.000	1	0.999	0.000	0.000	.
Score_1_23	-0.153	0.050	9.459	1	0.002	0.858	0.779	0.946
Score_25_30	-0.443	0.255	3.020	1	0.082	0.642	0.389	1.058
The constant	51.631	35,203.713	0.000	1	0.999	2.648E22		

CI: Confidence interval; B represents the logistic regression coefficient expressed in log-odds units, SEB represents the standard error of each coefficient, also expressed in log-odds units

registration in the organ donor register and successfully classified 93% of the cases.

The sensitivity of the model is 60%, the specificity is 98.9%, the positive predictive value is 20%, and the negative predictive value is 98.9%. The 45-50 age group is 19.9 times more likely to be registered and as the evaluation of views increases, so is the probability of being registered.

## DISCUSSION

The degree of registration (7.5%) is higher than national and European standards, but lower, compared to the desire to register on donor lists. It is confirmed, in a sense, that the distance from the will to the action is of great importance [14].

The subjects' attitude is positive toward organ donation, as is the case in most studies. A lack of knowledge, which is a common phenomenon in bibliography, on this specific subject, was identified [25].

A study showed that lack of knowledge is highly detrimental, especially among Greek educators as the number of the ignorant ones is concerningly increased. It is pointed out that this lack is considered an inhibiting factor, for taking the initiative regarding the registration in the registers of donors [24].

In addition to the low level of information, the source itself can become a problem. Taking the research into consideration, the media occupy the 1<sup>st</sup> place, while it could be preferable for the knowledge to be provided from a more reliable source. In other relevant surveys, friends and relatives are the ones who provide the most information [28].

In the present study, logarithmic regression showed a difference in terms gender and enrollment in donor lists. Moreover, the bibliography provides conflicting evidence about the superiority of men or women, with others concluding that women have an advantage in willingness [21], others that men have the advantage [29], and others, that the gender plays no role in it [30].

## CONCLUSION

The degree of registration in donor registers (7.5%) is considered low and should be higher. The assessment of attitudes 87.58 with a

maximum of 115 is considered to be unsatisfactory, while the evaluation of knowledge 2.17 (1.46) is below average and consequently is also assessed as insufficient. The main source of knowledge is undoubtedly the media, but without a large percentage (31.1%). It is necessary to increase the contribution of more reliable sources (academic studies, ministry, and information actions). The 45–55 age group is more likely to enroll. To increase the knowledge about the subject, and consequently, the intention to register, should be organized information programs with an emphasis on social contribution [31], and actions that provide personalized information, as they seemed to be more effective [32].

#### CONFLICTS OF INTEREST

None.

#### REFERENCES

- Kent BC. Protection behaviour, a phenomenon affecting organ and tissue donation in the 21<sup>st</sup> century? *Int J Nurs Stud* 2004;41:273-84.
- Ríos A, López-Navas A, Ayala-García MA, Sebastián MJ, Abdo-Cuza A, Martínez-Alarcón L, *et al.* Attitudes toward living kidney donation in transplant hospitals, a Spanish, Mexican, and Cuban multicenter study. *Transplant Proc* 2010;42:228-32.
- Glasgow ME, Bello G. Bone marrow donation, factors influencing intentions in African Americans. *Oncol Nurs Forum* 2007;34:369-77.
- Canova D, de Bona M, Ruminati R, Ermani M, Naccarato R, Burra P. Understanding of and attitudes to organ donation and transplantation, a survey among Italian university students. *Clin Transplant* 2006;20:307-12.
- Shroff S, Navin S, Abraham G, Rajan PS, Suresh S, Rao S, *et al.* Cadaver organ donation and transplantation an Indian perspective. *Transplant Proc* 2003;35:15-7.
- Aghayan HR, Arjmand B, Emami-Razavi SH, Jafarian A, Shabanzadeh AR, Jalali F, *et al.* Organ donation workshop a survey on nurses' knowledge and attitudes toward organ and tissue donation in Iran. *Int J Artif Organs* 2009;32:739-44.
- Reubsaet A, Reinaerts EB, Brug J, van Hooff JP, van den Borne HW. Process evaluation of a school-based education program about organ donation and registration, and the intention for continuance. *Health Educ Res* 2004;19:720-9.
- Hall C, Ariss L, Todorov A. The illusion of knowledge: When more information reduces accuracy and increases confidence. *Organ Behav Hum Dec Proc* 2007;103:277-90.
- Cleiren M, van Zoelen AA. Post-mortem organ donation and grief, a study of consent, refusal and well-being in bereavement. *Death Stud* 2002;26:837-49.
- Steele WR, Schreiber GB, Guiltinan A, Nass C, Glynn SA, Wright DJ, *et al.* Role of altruistic behavior, empathetic concern, and social responsibility motivation in blood donation behavior. *Transfusion* 2008;48:43-54.
- Karacan E, Seval GC, Aktan Z, Ayli M, Palabiyikoglu R. Blood donors and factors impacting the blood donation decision, motives for donating blood in Turkish sample. *Transfus Apher Sci* 2013;49:468-73.
- Schlumpf KS, Glynn SA, Schreiber GB, Wright DJ, Steele WR, Tu Y, *et al.* Factors influencing donor return. *Transfusion* 2008;48:264-72.
- Russell-Bennett R, Smith G, Chell K, Goulden J. Social influence and blood donation, cultural differences between Scotland and Australia. In: Wymer W, editor. *Innovations in Social Marketing and Public Health Communication: Improving the Quality of Life for Individuals and Communities*. Cham: Springer International Publishing; 2015. p. 133-58.
- Siegel JT, Alvaro EM, Malden MA. *Understanding Organ Donation*. Hoboken, New Jersey: Wiley Online Library; 2010.
- Karabinis A. Transplantation Activity in Greece 2006-2016. Why we are the Last of the European Union; 2016.
- Council of Europe. International Figures on Organ Donation and Transplantation. Vol. 19. Newsletter Transplant; 2014. p. 447-56.
- Bapat U, Kedlaya PG. Organ donation, awareness, attitudes and beliefs among post graduate medical students. *Saudi J Kidney Dis Transpl* 2010;21:174-80.
- Feeley TH, Servoss T. Examining college students' intentions to become organ donors. *J Health Commun* 2005;10:237-49.
- Sanner MA. A Swedish survey of young people's views on organ donation and transplantation. *Transpl Int* 2002;15:641-8.
- Voudouri E, Zkeris A, Kyriakopoulou M. Attitudes of Health and Welfare Students towards Organ Donation. Heraklion: Technological and Educational Institute of Crete; 2005.
- Galanis PA, Sparos LD, Katostaras T, Velonakis E, Kalokerinou A. Factors that influence Greeks' decision to register as potential bone marrow donors. *Transplant Proc* 2008;40:1271-4.
- Zampieron A, Corso M, Frigo AC. Undergraduate nursing students' attitudes towards organ donation, a survey in an Italian university. *Int Nurs Rev* 2010;57:370-6.
- Barkworth L, Hibbert S, Horne S, Tagg S. Giving at risk? Examining perceived risk and blood donation behaviour. *J Market Manag* 2002;18:905-22.
- Figueroa CA, Mesfum ET, Acton NT, Kunst AE. Medical students' knowledge and attitudes toward organ donation, results of a Dutch survey. *Transplant Proc* 2013;45:20937.
- Anker AE, Feeley TH, Friedman E, Kruegler J. Teaching organ and tissue donation in medical and nursing education, a needs assessment. *Prog Transplant* 2009;19:343-8.
- Chronopoulou E. Intentions and Attitudes of Secondary School Teachers in Kalamata Regarding Bone Marrow Donation and Factors Affecting it. Kalamata: Hellenic Open University; 2017.
- Katsari V, Domeyer PJ, Sarafis P, Souliotis K. Giving your last gift, a study of the knowledge, attitude and information of Greek students regarding organ donation. *Ann Transplant* 2015;20:373-80.
- Sojka BN, Sojka P. The blood donation experience, self-reported motives and obstacles for donating blood. *Vox Sang* 2008;94:56-63.
- Briggs NC, Piliavin JA, Lorentzen D, Becker GA. On willingness to be a bone marrow donor. *Transfusion* 1986;26:324-30.
- McCullough J, Rogers G, Dahl R, Therkelsen D, Kamstra L, Crisham P, *et al.* Development and operation of a program to obtain volunteer bone marrow donors unrelated to the patient. *Transfusion* 1986;26:315-23.
- Feeley TH, Moon SI. A meta-analytic review of communication campaigns to promote organ donation. *Commun Rep* 2009;22:63-73.
- Reubsaet A, Brug J, Kitslaar J, van Hooff JP, van den Borne HW. The impact and evaluation of two school-based interventions on intention to register an organ donation preference. *Health Educ Res* 2004;19:447-56.