




CROSS-SECTIONAL STUDY

Undergraduate nurses attitudes towards organ donation: a cross-sectional survey in a north Italian university

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Findings:

The study found mainly positive attitudes; students who completed the survey responded favorably to a proposal for an internship at the Hospital Procurement Coordination for Organ and Tissue Donation.

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ABSTRACT

BACKGROUND: Although research reveals that there are many complex factors influencing the low organ donation rate in addition to nurses, literature suggests that nurses and doctors' active engagement and support have a significant impact on donation rates. Donation rates can be influenced by a variety of factors, including health professionals' attitudes, knowledge, confidence, participation, and training.

OBJECTIVES: To investigate the attitudes of undergraduate nursing students at the University of Brescia in the Campus of Cremona regarding organ and tissue donation.

MATERIALS AND METHODS: A cross-sectional survey was conducted by administering the Organ Donation Attitudes Scale (ODAS).

RESULTS: ODAS showed that most students know someone who has donated an organ during their lifetime or after death, and over half know someone who has received an organ transplant. However, 63.3% of students indicated that they had not received specific training, and attitudes ranged from 45 to 71 with a median score of 61. Bivariate correlation analysis revealed that received academic training does not correlate with students' attitudes ($p=.37$). Knowing someone who has received a transplant correlates with having expressed willingness to donate ($p=.047$), and academic training correlates with perceived knowledge about the donation process ($p=.0001$).

CONCLUSIONS: The study found mainly positive attitudes toward organ and tissue donation among nursing undergraduate students from the Cremona campus. Further research involving nursing universities is needed to raise awareness of organ donation among the public and healthcare workers.

KEYWORDS: *Organ Donation, Donors, Transplant, Attitudes, Nursing Students*

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STUDIO TRASVERSALE

L'attitudine degli studenti di infermieristica nei confronti della donazione di organi: un'indagine trasversale in un'università del Nord Italia

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Riscontri:

Lo studio ha rilevato un'attitudine prevalentemente positiva; gli studenti che hanno completato l'indagine hanno risposto favorevolmente alla proposta di un tirocinio presso il Coordinamento ospedaliero per la donazione di organi e tessuti.

Ringraziamenti:

I nostri ringraziamenti vanno a tutti gli studenti che hanno partecipato a questo studio. In particolare, vorremmo ringraziare i coordinatori delle scuole di infermieristica che hanno aiutato a distribuire il questionario. Gli autori desiderano inoltre ringraziare i traduttori del questionario e la loro assistenza in questo progetto insieme a Elisa Pizzera, Sonia Bonoli e Alberto Bonvecchio.

ABSTRACT

INTRODUZIONE: Diversi studi in letteratura suggeriscono che la partecipazione attiva di infermieri e medici ha una forte influenza sui tassi di donazione, anche se la ricerca mostra la complessità delle ragioni per il basso tasso di donazione di organi nella popolazione. In particolare, le attitudini, le conoscenze, la fiducia, l'impegno e la formazione dei professionisti della salute sono dimostrati come fattori influenti.

OBIETTIVI: Indagare le attitudini degli studenti infermieri universitari dell'Università di Brescia sede di Cremona riguardo la donazione di organi e tessuti.

MATERIALI E METODI: È stata condotta un'indagine trasversale mediante la somministrazione della Organ Donation Attitudes Scale (ODAS).

RISULTATI: L'ODAS ha mostrato che la maggior parte degli studenti conosce qualcuno che ha donato un organo durante la propria vita o dopo la morte, e oltre la metà conosce qualcuno che ha ricevuto un trapianto di organo. Tuttavia, il 63,3% degli studenti ha indicato di non aver ricevuto una formazione specifica. Gli scores totali variano da 45 a 71 con un punteggio mediano di 61. L'analisi di correlazione rivela come la formazione accademica non correla con le attitudini ($p=0,37$). Sapere che qualcuno ha ricevuto un trapianto correla con la disponibilità ad esprimere la volontà donativa ($p=0,047$), e la formazione accademica correla con la conoscenza percepita del processo di donazione ($p=0,0001$).

CONCLUSIONI: Lo studio ha riscontrato prevalentemente attitudini positive verso la donazione di organi e tessuti tra gli studenti infermieri universitari del campus di Cremona. Ulteriori ricerche coinvolgendo le università di infermieristica sono necessarie per sensibilizzare il pubblico e gli operatori sanitari sulla donazione di organi.

KEYWORDS: Donazione di organi, Donatori, Trapianto, Attitudini, Studenti di infermieristica

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BACKGROUND

The longstanding and nearly universal sociocultural perception of death has been radically altered by the development of modern critical care units, cardiopulmonary resuscitation, and defibrillation in the 1950s and 1960s, which came into use more or less at the same time (1). Additionally, the widespread use of mechanical ventilators to prevent respiratory arrest has altered the course of terminal neurological disease. It is now possible to artificially sustain life functions after the brain stops working. Brain death was established as the total, permanent loss of brainstem function in 1976 by the Conference of Medical Royal Colleges and their Faculties in the United Kingdom (2). Brain death was established as the total, permanent loss of brainstem function in 1976 by the Conference of Medical Royal Colleges and their Faculties in the United Kingdom (2). It also referred to the brainstem as the hub of brain activity, without which there is no life, and suggested improvements to apnea testing. The majority of nations have seen an increase in deceased organ donors during the past ten years. This statement included guidelines that included refinement of apnea testing and pointed to the brainstem as the center of brain function: without it, there is no life. In the last decade, most countries have increased the number of deceased organ donors. However, waiting lists still exist (3). All adult people living in Italy are required by law to declare their intention to donate their organs after passing away. Both parents must agree on the choice in the case of minors (4). If a person has not made a declaration, organ and tissue donation can only occur if the closest relatives, including the parents, adult children, non-separated spouse, and civil partner, do not disagree to the wish of their family member. (4). All adult people living in Italy are

required by law to declare their intention to donate their organs after passing away. Both parents must agree on the choice in the case of minors (4). If a person has not made a declaration, organ and tissue donation can only occur if the closest relatives, including the parents, adult children, non-separated spouse, and civil partner, do not disagree to the wish of their family member (5,6). In 2021, the rate of opposition was 28.6% of reports and resulted in the exclusion of 730 potential donors. In Italy, from North to South, many regions have contributed to this result by showing large improvements in opposition rates, resulting in the lowest value recorded since 2012. In fact, in 2019, the percentage had been 31.1% and in 2020, 30.2%. However, the disparity between areas in the north, where rejection rates are almost always below the national average, and areas in the center-south, where rejection rates are disturbingly high and well above the Italian average, often frustrates contracting efforts. Donation levels increase, up 7.1% compared to 2020 (7). Different factors that may affect attitudes towards organ donation are reported in the literature, and over the past decade, understanding the variables that influence organ and tissue donation has been the subject of research (8). One of the most important barriers to organ donation is the refusal of family members influenced by the family's cultural characteristics. Therefore, during the identification and reporting phases of the donation process, the active involvement and support of nurses and physicians for donation constitute key factors. Donation rates can be influenced by a variety of factors, including a healthcare professional's attitude, knowledge, confidence, participation, and training (9). In many countries, organ donation may not proceed sufficiently due to cultural and social reasons (10). Literature has stated that educational training provides an opportunity to review one's attitude





through the involvement of a family member. In addition, students can also learn about the topic through bioethics lessons with reflections on life and death. These experiences were factors that positively influenced students' attitudes. Families and patients' willingness to consent to donation might be favourably impacted by the information and attitude of healthcare providers (12). Previous research has stated that nurses have a strong influence on donation rates (8). Though research demonstrates that there are many other factors besides nurses that contribute to the low organ donation rate such as the inability of healthcare workers to discover possible donors or obtain permission from bereaved relatives is thought to be a key contributor (11). Family decisions are influenced by healthcare personnel training, their intervention, and how well they interact and communicate with the family and caregivers while the patient is in the hospital. (13). In Italy, this phenomenon has been little explored. The study conducted by Zampieron et al. (11) showed a negative attitude towards donation on the part of students related to the lack of theoretical and practical knowledge of the topic. The studies that focused on student nurses were from European and British countries, making it difficult to transfer the results to our context because of differences in culture and health care systems. The results of a preliminary literature review highlighted that few studies have addressed student nurses' attitudes and knowledge about organ donation in the Italian context.

MATERIAL AND METHODS

Instruments

Attitudes were investigated through the Organ Donation Attitude Scale (ODAS) a multidimensional scale consisting

of 20 items measured by a 4-point Likert scale (4 = strongly agree, 3=agree, 2=disagree, 1 = strongly disagree) based on students' salient beliefs toward becoming an organ donor, by investigating attitudes and subjective norms that considerably affect behavioral intention (14). Along with demographic questions like age, gender, ethnicity, and religion, the ODAS also asked respondents if they knew any organ donors or recipients. The ODAS is a trustworthy and accurate tool that may be used to examine how people conceptualize organ donation. Since the questionnaire has not been validated in Italian language, a process of linguistic pre-adaptation was used (15) so, in our study the scale showed good internal consistency (Cronbach's $\alpha = 0.84$). The questionnaire in electronic and anonymous form, was administered through Google Forms and then the database was exported and analyzed with IBM SPSS V.26.

Data analysis

The normality of the distribution was assessed through Kolmogorov-Smirnov and Shapiro-Wilk tests in addition to a graphical evaluation and estimation of skewness and kurtosis. To identify correlations, bivariate correlations were then performed on the variables, using Tau-Kendall's method. While qualitative variables were presented as frequencies and percentages, continuous data were presented as median and interquartile range. In order to compare two groups, the continuous variables were obtained using the Wilcoxon-Mann-Whitney tests. The categorical variables were compared using the χ^2 test, and multiple group comparisons were made using the Kruskal-Wallis test. The 5% level of statistical significance is employed.





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Ethical considerations

All participants agreed and gave their written informed consent. The study was approved by the board of the Nursing Degree Program at the University of Brescia.

RESULTS

Sample consisted of 158 among first, second and third year students. A total of 79 were returned thus achieving a

50% responsiveness rate. The study population was predominantly female (83.5%) aged 18-25 years (82%), Christian (67.1%) and Caucasian ethnicity (84.8%). The responsiveness rate was highest in first-year students (40.5%) followed by second-year (34.2%) and third-year students (25.3%). No statistically significant differences were found for the socio-demographic variables obtained by survey questions considered among the three years of course, data are shown in **Table 1**.

		I year n (%)	II year n (%)	III year n (%)	p-value
Sex	Female	27 (84.4%)	22 (81.5%)	17 (85.0%)	0.937
	Male	5 (15.6%)	5 (18.5%)	3 (15.0%)	
	Tot	32	27	20	
Age	18-25 years	27 (84.4%)	23 (85.2%)	15 (75%)	0.248
	25-40 years	1 (3.1%)	3 (11.1%)	4 (20%)	
	40-60 years	4 (12.5%)	1 (3.7%)	1 (5.0%)	
Ethnicity	African	3 (9.4%)	3 (11.1%)	3 (15.0%)	0.724
	Asiatic	2 (6.3%)	0 (0%)	1 (5.0%)	
	Caucasic	27 (84.4%)	24 (88.9%)	16 (80,0%)	
Religion	Agnostic	1 (3.1%)	0 (0%)	0 (0%)	0.790
	Ateo	8 (25.0%)	6 (22.2%)	4 (20.0%)	
	NS	1 (3.1%)	0 (0%)	0 (0%)	
	Christ	19 (59.4%)	19 (70.4%)	14 (70%)	
	In doubt	1 (3.1%)	0 (0%)	0 (0%)	
	Islamic	2 (6.3%)	2 (7.4%)	1 (5.0%)	
	Sikh	0 (0%)	0 (0%)	1 (5.0%)	

Table 1: Sociodemographic factors

Analysis of survey scores showed that most students in the sample know someone who has donated an organ during their lifetime (73.8%) or after death (72.5%). The 56.3% responded that they know someone who has received an organ transplant. 63.3% (n=50) of students indicated that they had not received training regarding organ donation during their college course and previous school years, respectively. Specifically, 87% of first-year students, 66.6%

of second-year students, and 20% of third-year students responded that they had not covered the topic in their nursing course of study. 53.1% of first-year students say they have received training in their pre-college years, in contrast to second-and third-year students who confirm that they have not received education. Students' attitudes toward organ donation, ranked by ODAS scores, ranged from a low of 45 to a high of 71 with a median score of 61

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IQR [54;64]. Median score observed in the three years was for I year Me= 60.5, IQR [54;65], II year Me = 61, IQR

[55;64] and III year Me = 62, IQR [54;65.5] as seen in **Figure 1**.

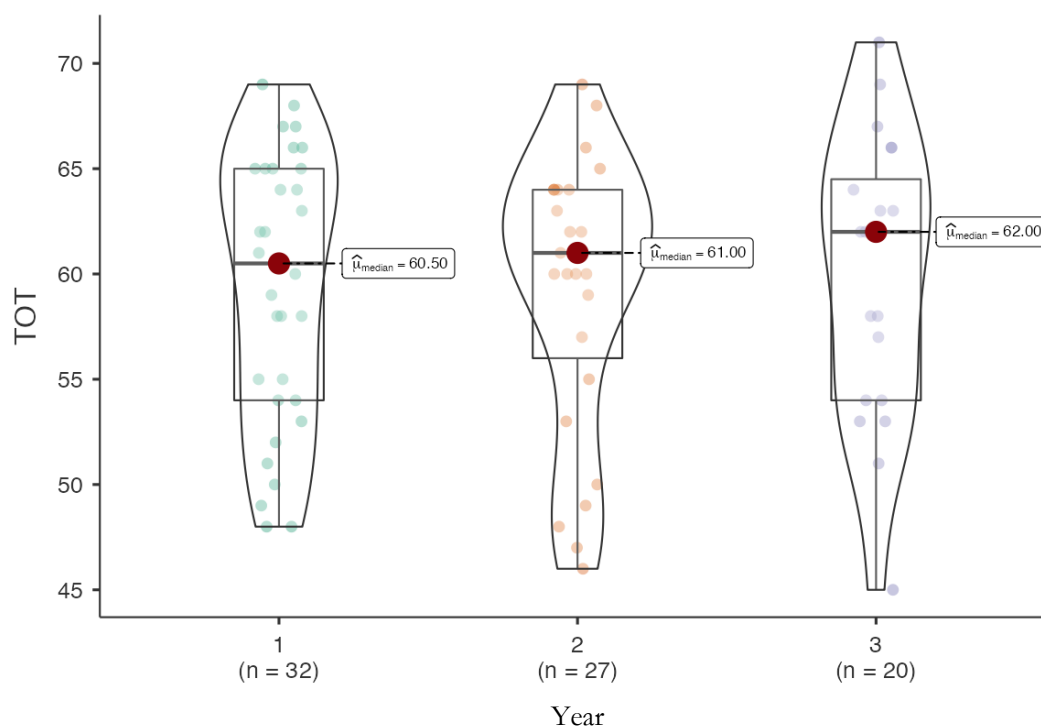


Figure 1: Violin plot of students' attitudes toward organ donation ranked by ODAS scores

No statistically significant differences were observed between the overall scores of the three groups ($p=0.66$) and no outliers were found. The items that reported lower median score were item 3 "I have knowledge about the process of organ procurement and about the organ procurement system" with a difference between first, second (median=2) and third year (median=3); item 7 "I have expressed my willingness to donate" reported lower score especially for the third year degree (Me=2.50). In contrast, the items that reported higher median scores were 4 and 19, respectively: "I am in favor of organ donation" and "In general, I think organ donation is a good thing." The overall of ODAS scores are reported in **Table 2**. Through bivariate correlation analysis using Tau Kendall's method was found that having received

academic training does not correlate with students' attitudes toward organ donation ($R=0.10$, $p=0.377$) although there is correlation with year of course ($R=0.54$, $p<0.0001$). In addition, knowing someone who has received an organ transplant correlates weakly with having expressed willingness to donate ($R=0.22$, $p=0.047$) and having received academic training correlates with perceived knowledge about the donation process ($R=0.44$, $p<0.0001$), but not that in pre-academic years ($R=0.162$, $p=0.154$). No statistically significant correlations were observed between the religion variable, gender, age and nationality and the other variables considered for the study ($p>0.05$).

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ODAS Items	N	Me	Min	Max	IQR [first-third]	
I believe in an afterlife	79	3	1	4	2.00	3.00
I have religious objections to organ donation	79	4	1	4	4.00	4.00
I am knowledgeable about organ procurement and the organ procurement system	79	3	1	4	2.00	3.00
I support organ donation	79	4	3	4	4.00	4.00
I would agree to an organ transplant, if my life were in danger without one	79	4	2	4	3.00	4.00
I am willing to have organs donated after my death	79	4	1	4	3.00	4.00
I have signed an organ donor card or the back of my driver's license	79	3	1	4	2.00	4.00
I know someone who has signed an organ donor card or the back of his/her driver's license	79	3	1	4	2.00	4.00
It is important to discuss my wishes for after my death with my family	79	3	2	4	3.00	4.00
I have discussed my wishes for after my death with my family	79	3	1	4	2.00	4.00
If needed, I would receive an organ from a person of a different race than myself	79	4	2	4	3.00	4.00
I would be willing to donate my organs to a person of a different race than myself	79	4	2	4	3.00	4.00
I believe that organ donation is against my religion	79	4	1	4	2.50	4.00
I have been taught that organ donation is against my religion	79	3	1	4	1.00	4.00
I think that organ donation is a safe, effective practice	79	3	2	4	3.00	4.00
I think that organ donation is mutilation to the body	79	4	2	4	3.00	4.00
I trust that doctors and hospitals use donated organs as they are Intended to be used	79	3	2	4	3.00	4.00
I think that doctors would try just as hard to save my life whether or not I plan to be an organ donor	79	4	2	4	3.00	4.00
In general, I think that organ donation is a good thing	79	4	3	4	3.00	4.00
Organ donation is consistent with my moral values and beliefs	79	4	1	4	3.00	4.00
Total	79	61	45	71	54.00	64.00

Table 2: Organ Donation Attitude Scale scores.

DISCUSSION

In this study, the attitudes of undergraduate nursing students towards organ donation were investigated via the ODAS (14) questionnaire. Understanding their attitudes was useful in our case, and it showed a predominantly positive attitude in agreement with the literature (16–18). In general, ODAS scores did not show any particular differences between the three course years. One of the lowest median scores was the item "I expressed my willingness to donate" This suggests that there may not be enough clarity in Italy about how to

decide to donate, or that there simply is not an active, in-depth awareness of it. Any citizen over the age of eighteen can express consent or refusal to organ and tissue donation after death through one of the following channels: at the municipal registration offices when issuing or renewing their identity card, by filling out the Italian Association for Organ, Tissue and Cell Donation (AIDO) form, by signing the form at the local health authority (ATS) that has jurisdiction over them, by filling in the National Transplant Card (NTC) or the blue card issued by the Ministry of Health or one of the donor cards





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distributed by the relevant associations, by writing down his/her own will on a blank sheet of paper, including date and signature. This statement must be kept with personal records. Additionally, as our study demonstrates, attitudes may not always translate into congruent behavior. Jaccard and Radecki (19) defined donor card signing as a required but not sufficient condition for doing so. When there is a strong positive attitude and no negative attitude regarding organ donation, there is a willingness to donate organs. Therefore, engagement with these simple rules could add value in increasing accessions. In addition, equally higher scores were found in the first, second, and third years for the items "I think organ donation is a mutilation of the body" and "I am willing to donate organs even if it is a person of a different ethnicity"; this suggests that negative ethical and moral beliefs have not emerged, but rather a broad uniformity of open-minded thinking toward others. The educational training received during the academic period has been shown to have an influence on the knowledge regarding the donation process. In particular, third-year students are found to be better prepared than first-year students. The difference lies in the course of study within the University of Brescia, which stipulates that notions are received during the "Critical Area" course with a three-hour dedicated lesson about principles and definition of BD, Italian legislation, coordination and procurement of potential donors and families, maintenance of vital signs awaiting explantation. ICU internships are only available in the third year of the course, there was generally a lack of direct clinical experience with the treatment of patients awaiting transplants or possible donors. Furthermore, it was found that receiving academic training correlates with more knowledge about the donation process, but not with a higher total attitude score. This means that the link

between training and students' attitudes is not strong enough to influence each other, consistent with what Martinez-Alarcón et al. (20) stated. In contrast to the findings of the study by Zampieron et al. (11), our analysis of the results did not find a direct influence between poor theoretical knowledge and negative attitude. It thus follows that improving learning is not always sufficient to alter the attitude towards donation (10).

Our experience suggests that an educational intervention combined with contextualization in internship settings could increase nursing students' positive attitudes about organ donation. Patients who decline to be considered for transplantation may do so due to religious considerations. When discussing live donation, these concerns might be just as relevant as or even more so. There are compelling arguments to support the contention that religious beliefs affect transplant decisions considerably more frequently than clinicians and transplant teams think. While some cultures hold that the spirit moves from the donor to the recipient, others argue that ancestor agreement must be gained before a donation can be made in order to prevent the remaining members of the family from ever losing their ancestral protection. Others emphasize the significance of certain rituals related to the grieving process and how organ donation is perceived as impeding this process (21). In our study, no statistically significant correlations were observed between the religion variable and the other variables considered, in contrast to what was stated by Poreddi et al. (17). The literature stresses that one of the main challenges includes the influence of cultural background and religious beliefs on individuals' attitudes, beliefs, and behaviors (22). A weak correlation emerged between those who decide to express their will to donate and knowing a donor. Having direct



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contact with someone who has donated could concretely affect an increase in students' attitudes (16). Our results imply that individuals who have donated or received an organ, as well as nurses working in organ donation organizations, can aid in fostering positive attitudes and dispelling unfavorable attitudes and beliefs. If these prospective registered nurses receive adequate training, they could promote organ donation both directly and indirectly to patients and their families, as well as to other health care workers, because exposure to the organ donation system may improve nurses' ability to spot and suggest potential donors after starting a nursing career. Additionally, greater interdisciplinary conversation might lead to even more favorable perceptions of organ donation. These methods might help to address the ongoing issue of organ shortages for transplantation.

Limitations

The present study was limited by the number of students responding to the questionnaire, and the sample size may not be sufficient to achieve statistical power. In addition, 82.5% of the respondents were women, making the sample unrepresentative for both sexes. Although the Italian form of the questionnaire was not evaluated for exploratory factorial analysis, a content validation was used to try to reduce translation bias in the questionnaire. The study should also be replicated with a larger sample and could involve more nursing universities to foster the generalizability of results.

CONCLUSIONS

This study investigated the attitudes of nursing students at the University of Brescia, Cremona Campus, toward organ donation. A predominantly positive attitude toward organ and tissue donation was found. Our results indicate that

teaching methods on brain death and organ transplantation need to be reconsidered. An educational intervention should include background information on organ donation and brain death, criteria for eligibility as a potential donor, guidelines, the role of the intensive care nurse, and the organ procurement organization. The Hospital Procurement Coordination for Organ and Tissue Donation (COP), born in 2022, proactively monitors neurolesion patients with the use of the NIT platform to follow their hospitalization and identify potential donors among them. The goal of this platform, which is accessed directly by the local procurement coordinator (CLP), is to facilitate the activation of the COP for the implementation of still-heart and multi-tissue donor pathways where hospital admission is followed by death. The CLP stimulates and fosters the culture of organ and tissue donation, collaborates with the College for brain death assessment, and supports whole-hearted donation of both organs and tissues. The facility offers staff training and awareness-raising courses inherent to donation, collaborates with the communication facility and patient associations, promoting moments of awareness aimed at users and the public. It collaborates with healthcare personnel identified by the directorates of the public and private accredited health facilities that belong to the COP. All students who completed the survey responded favorably to a proposal for an internship at the COP, which could provide them with a broader view of the procurement and donation process.

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