

Brain Death Versus Irreversible Cardiac Arrest—The Background and Consequences of Young People’s Opinions on Stating Death in Polish Transplantology

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ABSTRACT

Background. Brain death and irreversible cardiac arrest (ICA) are legally valid diagnoses obligatory for stating organ donors’ death in Poland. Their misinterpretation may affect one’s attitude toward organ donation. We assessed young people’s knowledge and attitudes toward stating death in transplantology and their impact on attitude toward organ transplantation.

Methods. A total of 400 medical and 400 nonmedical students from public universities in Kraków, Poland, participated. Data were collected with a questionnaire examining demographic factors and transplantologic issues.

Results. Brain death diagnosis has a stronger association with stating death in transplantology than ICA, although the level of trust for this diagnosis remains relatively low among nonmedical respondents (38.5% vs 78.5%). Professional knowledge about stating brain death did not correlate with the level of trust for said diagnosis as strongly as it was expected, suggesting the presence of alternate contributing factors, some identified as doubts about brain death criteria (31.5%), distrust for the medical staff’s education (25%), and objectivity (20%).

Conclusions. The number of nonpositive attitudes toward organ transplantation was significantly higher among respondents unwilling to accept brain death as the death of a human being, a statement proven to be related to one’s opinion about the reliability of said diagnosis, one’s awareness of an alternative diagnosis of ICA, and one’s general transplantologic knowledge. However, a low number of respondents acknowledging ICA as the only diagnosis valid for stating death of a cadaveric donor (7.6%) suggests that the majority of young Poles are willing to accept brain death as an equally valid, if not more significant, diagnosis.

BRAIN DEATH (BD) and irreversible cardiac arrest (ICA) are the only legally valid diagnoses obligatory for stating organ donors’ death in Poland [1]. Lack of knowledge or distrust for said diagnoses, their misinterpretation, and confusion with other medical conditions have been proven to affect attitudes toward organ donation [2]. According to numerous European and Polish field works, students are characterized by a highly supportive attitude toward organ transplantation and present multiple altruistic behaviors with a widespread social impact [3–5]. The aim of the present study was to: 1) evaluate young people’s knowledge and attitudes toward stating death in Polish

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transplantology; and 2) evaluate their impact on one's attitude toward organ transplantation.

MATERIALS AND METHODS

The sample comprised 800 academic students from 4 public universities in Kraków, Poland, divided into 2 groups:

Medical students: $n = 400$; M/F/no data, 37.25%/62.25%/0.5%; aged 18–28 years, average 21.8 ± 1.85 years; mostly living in a city (80%); 1st–6th year of medicine, Jagiellonian University Medical College; numbers of students from each year were similar ($14.29 \pm 6.36\%$; ANOVA $P = .9345$).

Nonmedical students: $n = 400$; M/F, 24.5%/75.5%; aged 19–28 years, average 21.4 ± 1.32 years; mostly living in a city (67%); 1st–5th year of studies: Jagiellonian University (42%), Pedagogic University of Kraków (24%), Kraków University of Economics (22%), and AGH University of Science and Technology (12%); numbers of students from humanist and scientific fields were equal (50%/50%).

Data were collected with the use of an anonymous questionnaire examining: demographic factors (6 questions, as previously described), general (13 questions) and professional (9 questions; medical students only) transplantologic knowledge, attitudes toward organ transplantation (7 questions), beliefs concerning transplantology (6 questions), and sources of knowledge and respondents' comments (2 questions). Respondents' knowledge and attitudes toward organ transplantation were graded according to the total score received in questions concerning knowledge and attitudes, respectively, as described in Table 1. Questions concerning other issues were not graded. Data were analyzed with the use of Microsoft Excel and Statsoft Statistica software. The survey was carried out during the academic years 2010–2011 and 2011–2012 and was cofunded by Jagiellonian University Medical College.

RESULTS

Knowledge and Attitudes (Tables 1 and 2)

One out of 3 respondents was aware of both BD and ICA as the only legally valid diagnoses obligatory for stating

Table 1. Scores and Respective Grades

Min	Max	%	Grade
General knowledge			
13	16	>75	Very good
9	12	51–75	Good
5	8	26–50	Average
–2	4	≤25	Low
Professional knowledge			
8	9	>78	Very good
6	7	57–78	Good
4	5	34–56	Average
0	3	≤33	Low
Attitudes			
13	19	>63	Extremely positive
7	12	33–63	Moderately positive
0	6	0–32	Neutral
–6	–1	–50 to –1	Moderately negative
–12	–7	<–50	Extremely negative

Note. Min, max: minimal/maximal score obtainable for answering questions concerning knowledge/attitudes. Highest/lowest scores observed among medical (M) and nonmedical (NM) respondents: general knowledge: M 13/3 (average 8.85 ± 1.84), NM 13/0 (average 7.37 ± 2.3); professional knowledge: M (only) 9/1 (average 5.72 ± 1.84); attitudes: M 19/–1 (average 13.54 ± 4.25), NM 19/–9 pt. (average 8.68 ± 6.33).

organ donors' death in Poland. Brain death was chosen as one of such diagnoses twice as often as ICA in the medical population (BD 97% vs ICA 42%), whereas an equally evident difference was not observed among nonmedical respondents (BD 77% vs ICA 67%), who chose ICA as one of the possible diagnoses or the only valid one significantly more often than their medical colleagues (+25%/+11%).

Most students are aware of the main causes of death among cadaveric organ donors in Poland, yet fail to recognize their dominant age group, stating they are either rather young (31–50 years, 46%) or young (18–30 year, 42.5%). Sixty-nine percent of medical students listed the BD criteria correctly, but 66% remain ignorant about the BD committee.

Nonmedical respondents present a relatively high level of distrust for the reliability of the BD diagnosis (61.5% vs medical 21.5%), finding its criteria disputable or easy to misinterpret (31.5%) and feeling unsure about the medical staff's appropriate education (25%) and their objectivity (20%). Among other, individually provided, reasons for said distrust, lack of knowledge about BD criteria (1%) or hearing about miraculous awakenings of comatose patients (0.6%) were also noted.

Does Brain Death Equal Death of a Human Being?

Eighty-five percent of medical students and 54% of nonmedical students considered BD as the death of a human being, and the majority of the remaining group was reluctant to form a final opinion about this statement rather than simply deny it (Table 2).

Students presenting a lower level of general transplantologic knowledge, mostly nonmedical ones, were more likely to refuse to accept BD as the death of a human being (Fig 1). A similar though weaker correlation was observed between accepting BD and professional knowledge (general knowledge: $\rho = 0.31$ [$P < .01$]; professional knowledge: $\rho = 0.16$ [$P < .01$]; where ρ is the Spearman rank-order correlation coefficient), including a specific correlation with knowledge about BD criteria ($\rho = 0.11$; $P < .01$) but excluding the one concerning BD committee (no significant correlation).

Considering ICA as the only valid diagnosis for stating donor's death correlated with a stronger distrust for BD's reliability and reluctance for accepting it as the death of a human being, while acknowledging BD as one of the diagnoses or the only one allowing cadaveric organ recovery, resulted in a greater trust and ethical support for this diagnosis (Table 3; Fig 2).

The number of nonpositive attitudes toward organ transplantation was significantly higher among respondents unwilling to accept BD as the death of a human being (medical: 35% vs 5%, respectively; nonmedical: 59.9% vs 19.6%), yet the correlations between accepting BD and positive attitudes were weaker than the correlations between accepting BD and presenting a positive level of general knowledge (Figs 1 and 3). Finally, respondents' trust

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