

SOCIETAL ATTITUDES TOWARD DEATH AND AWARENESS OF DEATH CONFIRMATION: AN INTERNET SURVEY

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A – study design, **B** – data collection, **C** – statistical analysis, **D** – interpretation of data, **E** – manuscript preparation, **F** – literature review, **G** – sourcing of funding

ABSTRACT

Background: The progress and development of treatment methods and techniques have made the previous criteria for recognizing human death imprecise and insufficient. Thus, a medical line had to be drawn between life and death. Attitudes towards death and awareness concerning its confirmation, although often marginalized, undergo significant changes over time depending on the social space they concern.

Aim of the study: The aim of the study was to examine social attitudes towards death and the level of awareness concerning its confirmation.

Material and methods: This research on attitudes and knowledge regarding brain death involved 400 randomly selected respondents who were Internet users. The research was conducted from September 2019 to January 2020 using the CAWI method and a proprietary questionnaire.

Results: An older age, a higher level of education, and less frequent religious practice were significantly associated with knowledge of brain death. Of particular note, more complete knowledge of brain death was associated with greater support for organ transplantation, and this relationship was most evident in individuals willing to donate their own organs.

Conclusions: There is a clear variation in the level of knowledge about brain death. At least a high level of knowledge was held by 40.3% (161) of the respondents, and the same percentage was seen for those with at most a low level of knowledge (40.3%, 161). Regardless of who would be the organ donor, whether a loved one or a stranger, the respondents overwhelmingly supported organ transplantation after death. Acceptance of organ donation was higher when respondents had more knowledge of what brain death is.

KEYWORDS: brain death, societal attitudes, transplantation, level of knowledge

BACKGROUND

The modern approach to the phenomenon of death has changed noticeably. In earlier centuries, people became familiar with death, and tried to learn about it and the process of dying. It gave them an opportunity to sort out thoughts and feelings accompanying the loss of their loved ones. Death was a natural phenomenon affecting every family, an important element of life and a kind of ritual, beginning at the moment of dying and ending with mourning [1]. To-

day, people very often die anonymously in hospital. The traditional model has broken down, and the time of saying goodbye to loved ones in familiar surroundings has been replaced by loneliness, alienation, and a screen of intimacy [2].

The limitation of life is one of the basic determinants of human existence. Thus, any consideration of human death is very important from a personal and social point of view. Since the dawn of history, people have tried to address the issues of life, death and passing, although these topics have never been easy

for them. Often, while struggling with everyday life, a person does not think about death and does not consider it. However, as the German proverb states, "death has not forgotten anyone yet." Despite many efforts to forget about death, modern individuals – consciously or subconsciously – necessarily attempt to confront his/her attitudes with the experience of his/her own and others' passings, as well as with the relativity of all existence [3].

Thinking about death is a cognitive element of individual activity. It allows one to be aware of oneself and the social environment, which, in turn, leads to a proper encounter with reality. On the other hand, the fear of death, which is an important element of the emotional component of the attitude, develops as a component of the general interaction between the level of maturation of the individual and the characteristic events of life. According to J. Makselon, it is legitimate to distinguish thinking about death from fear of death, even though there are situations in which thinking about death can stimulate fear toward it and vice versa. Thinking is associated with reflection and distance from the phenomenon of death, while anxiety is defined as a specific emotional reflex [4].

Human attitudes toward death are determined by at least seven factors. These include cultural context, different developmental experiences, worldview, resistance to stressors, current life situation, lifestyle, preferred values, and the likelihood of death of a loved one or one's self. The processes of attention, memory, information processing, and the formation of concepts and judgments are involved in the formation of attitudes toward death, and a person's attitude toward death depends on the subjective properties of his or her functioning. The authors of various studies understand the attitude to death as the fear of death, the intensity of thinking about death and dying, the operation of defense mechanisms in this attitude, and acceptance or indifference to the phenomenon of dying [5].

AIM OF THE STUDY

The aim of this paper is to examine the social attitudes towards death and the level of awareness of its confirmation, and to find out whether they are differentiated depending on selected variables such as gender, age, education or attitude towards work.

MATERIAL AND METHODS

Study design

This study of attitudes and knowledge about brain death was carried out from September 2019 to Janu-

ary 2020 and involved 400 Internet users who were Polish citizens. This latter characteristic was an inclusion criterion for participation in the study.

Ethical considerations

This study was carried out in compliance with the ethical norms set out in the relevant version of the Declaration of Helsinki (64th WMA General Assembly, Fortaleza, Brazil, October 2013) and is in line with Polish legal regulations.

Settings and participants

273 (68.3%) women and 127 (31.8%) men with an average age of 33 +/- 16.63 years participated in the study. The minimum age was 14 years and the maximum age was 78 years. Considering the location of residence, 65% (260) of the respondents resided in the city. 21.3% (85) of the respondents had a primary/high school education, 50% (200) had a vocational/secondary education, and 28.8% (115) had a higher education. 40% (160) of the respondents were pupils/students, 39% (156) were economically active, 11% (44) were unemployed, and 10% (40) were pensioners. 97% (388) of the respondents were not medically related. 36.5% (146) of the respondents were practicing believers, 24.3% (97) were believers that rarely practiced, 24.8% (99) were non-practicing believers, and 14.5% (58) were non-believers.

The apparent gender and age disparity may be due to the fact that the subject matter is of greater interest to women than men, and there is still an uneven distribution of Internet use among the population, with a larger proportion of users being young people and those living in more urban areas. Given the study design, it was not possible to confirm the age and gender of the respondents. Due to the inaccuracy of the CAWI method, taking these elements into account, the maximum sampling error, where the population consists of Internet users interested in the topic of brain death, was about +/- 5% for the assumed confidence level of 95%.

Data collection

The survey was conducted using the CAWI method, where invitations were sent to a randomly selected group of respondents on the basis of specialized mailing lists. The survey questionnaire consisted of 15 closed questions, which concerned knowledge about brain death and attitudes towards organ donation, and a metric to collect sociodemographic data. Participation in the study was anonymous and voluntary.

Statistical analysis

For the analyses of variables built on nominal scales the Chi-squared test was used, as well as the symmetrical measures phi and Cramér's V to examine relationship strength. For ordinal variables, Kendall's Tau-b correlation coefficients (for tables with the same number of columns and rows) and Kendall's Tau-c (for tables with different number of columns and rows) were used. The level of test probability "p" was estimated by the asymptotic method and the more accurate Monte Carlo method (especially recommended in cases of few samples and when, for example, the conditions of using Chi-squared test are not fulfilled). The null hypothesis of no relationship between the variables is rejected when the value of test probability "p" is less than or equal to 0.05. Calculations were performed using the SPSS 27.0 statistical package with the Exact test module.

RESULTS

The topic of death was encountered by 56.3% (225) of respondents, while the experience of death of a loved one affected the vast majority of respondents – 89% (356) – and was increased when respondents were older and retired. Associations with age ($p=0.010$, Monte Carlo $p=0.010$, Chi-square=14.99, $df=5$, Cramér's $V=0.194$) and attitude to work

($p=0.031$, Monte Carlo $p=0.030$, Chi-square=8.90, $df=3$, Cramér's $V=0.149$) were found to be statistically significant, although the strength of the association was not significant.

3.9% of respondents (22) experienced the death of a loved one as a result of an accident and 4.4% (25) as a result of illness before the age of 18. The remaining respondents (91.7%) experienced a death in their family as an adult. 33% (132) of the respondents said they had been in immediate danger of their lives as a result of illness or, for example, a traffic incident.

According to the respondents, the topic of death was raised on social media (30.4%, 126), on the Internet (33.3%, 138), when talking to friends (17.9%, 74), and during education at school or college (13.5%, 56). However, the opinion of the respondents in this regard was not clear.

87% (348) of the respondents believed that they knew what brain death is, while a significantly lower percentage of affirmative answers was visible in the group of the youngest respondents aged 14 to 17 years – 75.7%. The relationship between age and the question "do you know what brain death is" was statistically significant, but the strength of the relationship was insignificant. Also, level of education ($p<0.001$, Monte Carlo $p<0.001$, Chi-square=33.60, $df=2$, Cramér's $V=0.29$) and attitude to work ($p=0.019$, Monte Carlo $p=0.016$, Chi-square=9.90, $df=3$, Cramér's $V=0.157$) significantly differentiated respondents' answers (Table 1).

Table 1. Which statement captures the respondents' belief about the moment of human death?

Respondents' awareness of the moment of human death		Frequency	Percentage	Percentage of valid	Cumulative percentage
Valid	1. Human death occurs when the brain irreversibly stops working, even though the heart is still beating	116	29.0	33.3	33.3
	2. Human death occurs only when the brain stops working and the heart stops beating	202	50.5	58.0	91.4
	3. It is difficult to say	30	7.5	8.6	100.0
	Total	348	87.0	100.0	
Lack of data	999	52	13.0		
Total		400	100.0		

Source: the authors.

Clearly, respondents with higher levels of education and those who were working believed that they had more knowledge regarding brain death. However, as mentioned above, this is subjective knowledge. A comparison was made between subjective knowledge and objective knowledge about brain death (Table 2), and it was found that, of those respondents who claimed to know what brain death is, 31.4% had at most a low level of knowledge, while 46.3% had at least a high level of knowledge. The relationship between the variables was found to be statistically

significant with a significant strength of association ($p<0.001$, Monte Carlo $p<0.001$, Chi-square=194.57, $df=4$, Cramér's $V=0.697$).

An older age ($p=0.001$, Monte Carlo $p=0.001$, Kendall's Tau-c=0.127.), a higher level of education ($p=0.001$, Monte Carlo $p<0.001$, Kendall's Tau-c=0.158), and less frequent religious practices ($p<0.001$, Monte Carlo $p=0.001$, Kendall's Tau-c=0.145) were significantly associated with a higher knowledge about brain death, but the values of the correlation coefficients show a rather weak strength

Table 2. Objective level of knowledge about brain death depending on subjective assessment of knowledge of what brain death is

Subjective evaluation of knowledge of what brain death is			Do you know what brain death is?		Total
			1. Yes	2. No	
Level of knowledge about brain death	very low (0)	N	42	52	94
		%	12.1	100.0	23.5
	low (1)	N	67	0	67
		%	19.3	0.0	16.8
	medium (2)	N	78	0	78
		%	22.4	0.0	19.5
	high (3)	N	103	0	103
		%	29.6	0.0	25.8
	very high (4)	N	58	0	58
		%	16.7	0.0	14.5
	Total	N	348	52	400
		%	100.0	100.0	100.0
Cramér's V	0.697	194.571	4	0.000	0.000
coefficient	value	Chi-square	df	p	Monte Carlo p

Source: the authors.

of association. Respondents working in nursing or related professions had a higher level of knowledge about brain death compared to other respondents, but two respondents (16.7%), despite working in health care, did not know the answer to any of the four questions in the survey. The relationship between the variables was statistically significant ($p=0.009$, Monte Carlo $p=0.008$, Chi-square=13.52, $df=4$) and had a strength of association at Cramér's $V=0.184$.

It was also shown that the level of knowledge about brain death was not significantly dependent

on gender ($p=0.281$, Monte Carlo $p=0.289$), place of residence ($p=0.752$, Monte Carlo $p=0.755$), attitude toward work ($p=0.544$, Monte Carlo $p=0.545$), experience of death of a loved one ($p=0.654$, Monte Carlo $p=0.662$), or having ever been in immediate danger of life ($p=0.705$, Monte Carlo $p=0.709$).

An attitude is primarily a disposition to a certain type of behavior, thinking, and feeling about something called the object of the attitude. The phenomenon of death evokes various, usually negative emotions in respondents, regardless of whether it involves a loved one or a random person (Figure 1).

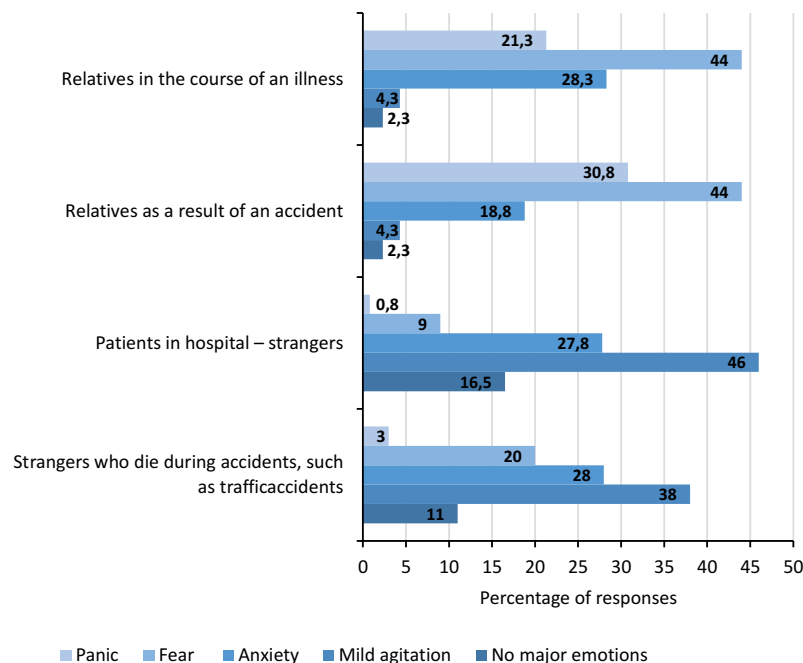


Figure 1. Type of emotions that accompany respondents when other people die

Source: the authors.

Also extremely important to the topic of the study is the respondents' attitudes toward organ donation at the time of brain death. Regardless of who would be the organ donor, be it a loved one or a stranger, the respondents overwhelmingly supported organ transplantation after death. It was also shown that a higher

level of knowledge about brain death is associated with greater support for transplantation and this is most evident when willing to donate one's own organs (Table 3). Although the correlation coefficient value was quite weak (Kendall's Tau-b=-0.20), it is significantly different from 0 ($p < 0.001$, Monte Carlo $p < 0.001$).

Table 3. Ratio of support for donation of own organs after death according to level of knowledge about brain death

What is your attitude toward supporting the donation of organs after death that belong to:			Level of knowledge about brain death					Total
			very low (0)	low (1)	medium (2)	high (3)	very high (4)	
3. My own person	1. I strongly support	N	39	34	39	61	44	217
		%	41.50	50.70	50.00	59.20	75.90	54.30
	2. I rather support	N	27	12	18	27	13	97
		%	28.70	17.90	23.10	26.20	22.40	24.30
	3. It is hard to say	N	19	16	17	10	1	63
		%	20.20	23.90	21.80	9.70	1.70	15.80
	4. I rather not support	N	4	3	1	3	0	11
		%	4.30	4.50	1.30	2.90	0.00	2.80
	5. I definitely not support	N	5	2	3	2	0	12
		%	5.30	3.00	3.80	1.90	0.00	3.00
	Total	N	94	67	78	103	58	400
		%	100.00	100.00	100.00	100.00	100.00	100.00
Kendall's Tau-b	-0.200	0.038	-5.169	0.000	0.000			
coefficient	value	standard error	approx. T	p	Monte Carlo p			

Source: the authors.

In Poland, the vast majority of the population identifies with the Catholic Church, but more than half of the respondents with varying degrees of religious practice do not know whether the church to which they belong accepts organ transplants after death. It was also observed that lower religiosity was associated with a higher belief that the Catholic Church does not accept organ transplants after death. The correlation between the variables was statistically significant ($p < 0.001$, Monte Carlo $p < 0.001$) and had a strength of association at Kendall's Tau-c level=0.228.

DISCUSSION

The fact of death is empirically experienced, for it ends the biological rhythm of life. Death itself in modern society is a taboo subject, a natural phenomenon experienced in isolation. However, despite the fact that it is inevitable and we do not consider its existence, we try to postpone it as much as possible. Still, the most controversial questions are: when does human death occur and is it possible to precisely determine its moment? This is "the most debatable issue in modern bioethics, raising serious doubts in

the minds of ordinary people: when can a person be considered to have died with certainty?" [6]

The presented study aimed to find out the level of knowledge of the respondents about brain death and their awareness about its determination. The results showed an apparent variation in the level of knowledge about brain death. At least a high level of knowledge was possessed by 40.3% of the respondents, and the same percentage (40.3%) showed at most a low level of knowledge. The results of the current study are consistent with the studies of other authors, of which, unfortunately, there are few. Rabiun, Oshola and Adebayo conducted a survey among neurosurgical patients assessing their knowledge of brainstem death. According to the authors, this was the first study of its kind among the neurosurgical patient population in Nigeria. A total of 127 respondents participated in the study and awareness of brainstem death was low among them, although most of them would agree with the doctor if given such a diagnosis [7].

Strupp et al. conducted a representative online survey (N=997) on aspects of end of life. The study found that the public was open to dealing with the topic of death, and attitudes and perceptions were related to age, subjective health status, religion, and gender [8]. Leclerc et al. in their publication stated

that death should be better understood, accepted, and prepared for with a mature attitude. Social attitudes towards death are to some extent based on faith, ethnicity, education, and other socio-economic and religious characteristics [9].

Xu et al. conducted a survey among 357 nurses in China on attitudes toward death. Data were collected on demographic characteristics and attitudes toward death in five domains, including fear of death, death avoidance, natural acceptance, approach acceptance, and escape acceptance. Compared to norms, nurse interns scored significantly higher in the domains of death avoidance, approach acceptance, and death anxiety, but showed significantly lower scores in the domains of natural acceptance and escape acceptance. Religious belief, experience of a deceased relative in the family, death education, and a family atmosphere of death discussion were positively associated with one or more of the death attitude domains. Ratings of attitudes toward death among the Chinese nurses surveyed were at a moderate level and required expansion of death education [10]. Another cross-sectional study was conducted among 213 randomly selected nurses working in one of the first level university hospitals in Nigeria. Attitudes towards death and dying were collected using the Frommelt Attitude Care of the Dying and Death Attitude Profit-Revised questionnaires. The study showed that most of the nurses had negative attitudes towards the concept of death. Also, nurses' age and professional qualifications were significantly related to their attitudes towards death [11].

Majchrowicz and Kalita studied the opinion of inhabitants of the Podkarpackie region on the problem of transplantation and showed that respondents expressed positive attitudes towards transplantation as a method of treatment. The data analysis found that gender was statistically significant in the decision to donate organs from a loved one in the event of death ($Z=-2.37$, $p=0.02$). Men were more likely to donate a loved one's organs for transplantation (mean 2.75) compared to women (mean 2.37). Women were more likely than men (women – mean 3.45, men – mean 3.18) to believe that a person has the right to choose and can decide on the purpose of their organs and body both during life and after death ($Z=2.40$, $p=0.02$) [12]. A study conducted by Majder et al. involved 200 students of the University of Rzeszow. The authors showed that a higher level of knowledge about transplantation was found among medical students ($p<0.001$). Students of humanities were more skeptical about the intention to donate organs in the case of death of a loved one who did not object during life ($p<0.001$). A total of 44% affirmed their consent to be an organ/tissue donor [13].

Longbottom and Slaughter presented very interesting conclusions concerning the shaping of knowledge and attitudes towards death after examining

sources of children's knowledge about death and dying. The authors claim that modern children have limited access to realistic information about death and dying. In addition to socio-cultural trends that have removed death from everyday life, many adults espoused attitudes of protecting children from the reality of death. Moreover, it seems that parents tend to underestimate what their children know about death and often discuss the topic using euphemisms that actually deny the biological facts. Although media exposure has an increasing impact on children's learning, to date there has been no research examining how media representations affect children's developing conceptions of death [14]. These considerations lead to the conclusion that further research on this topic should be conducted among specific populations.

Limitations of the study

Our initial intention was to survey a larger number of respondents, but the epidemiological situation in our country resulted in significant limitations in contacting a wider group of respondents. The selected CAWI interview method does not guarantee the determination of a representative target group, and sometimes it is very difficult to ensure that the respondents meet selection criteria. Due to a marked decrease in the number of transplants related to the pandemic and a long waiting list for transplantation, continuous education, especially among young people, about death and organ transplantation is of great importance.

Key results

Thematic topics in the field of death were encountered when using social media, the Internet, or during education at school or university. However, the opinion of the respondents in this respect was not clear. An older age, a higher level of education, and less frequent religious practices were significantly associated with knowledge of brain death. Of particular note, a more complete knowledge of brain death was associated with greater support for organ transplantation. There is a need for widespread public education related to the topic of death.

CONCLUSIONS

Attitudes formed as a result of personal experience with their object are stronger, more secure, less prone to change, and more likely to control a person's actions than attitudes formed from secondhand information. However, not all objects lie within the reach of direct experience. Consequently, we acquire

most of our attitudes in a more or less ready form from other people [15]. Death is a multidimensional and existential category because it belongs to the basic properties of human destiny. Regardless of the individual's views on the spiritual life after death, the very fact of dying and leaving is deeply existential for

both the dying person and the environment in which he/she lives. In addition, the passing away of a loved one or the approaching inevitably of one's own death, includes the tendency for reflection or provokes to one to undertake specific behaviors associated with certain attitudes [16].

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