Opinions and attitudes of students of public health to the issues of transplantation medicine

Boratyński W.[1 A-D*], Mularczyk P.[1 A-D], Sarnacka E. [2 B,E,F]

1. Department of Public Health, Medical University of Warsaw, Poland
2. Department of Integrated Medical Care, Medical University of Bialystok, Poland

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ABSTRACT

Introduction: The first organ transplant was carried out by the team of Dr. Joseph Murray. In Poland, the team led by Zbigniew Religa carried out the first heart transplantation on November 5,1982.
Materials and methods: The study was conducted among students of Public Health Faculty of Health Sciences at the Medical University of Warsaw (MUW) and the Faculty of Health Science at the Medical University of Bialystok (MUB) among students of three years of bachelor's degree and two years of master's degree. Test method was a diagnostic survey. We used a questionnaire compiled by the authors of the publication, containing 21 questions, and in five of them the 5-degree Likert's scale was used.
Results: When asked about promoting the pro-curement and transplantation of organs from the deceased 74.3% of students from both universities answered definitely yes, 22.2% - rather yes. When asked if in the event of death they would agree to be a donor 64.2% said definitely yes, 26.3% - rather yes, 8.7% - hard to say. 48.5% of respondents from MUW and 42.4% from MUB spoke to their relatives about their decision whether or not to remove organs after death.
Conclusions: The analysis of the study shows high acceptability of transplantation medicine in terms of saving lives, however, the desire to donate one's own organs after death or acceptance of organ donation after death of loved ones is far from the overall acceptability.
Key words: Organ donation, students of public health, opinions, attitudes

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***Corresponding author:**
Wojciech Boratyński
Department of Public Health, Medical University of Warsaw
Szpital Banacha (Kampus Banacha), blok F, Banacha 1a
02-097 Warszawa, Poland
e-mail: wojciech.boratynski@wum.edu.pl

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INTRODUCTION

For a long time, transplantation medicine has been developing in the world. Organ transplantation is often the only effective treatment for patients with end-stage organ failure. It results in significant improvement in quality of life of such patients. It allows adults to return to the vocational and social activity, enables the youth and children to have normal psychomotor development and academic or school process.

The first organ transplant was carried out 62 years ago, it was a renal transplantation carried out by the team of Dr. Joseph Murray. 49 years ago, on December 3, 1967, the most famous transplant (of heart) was performed at Groote Schuur Hospital in Cape Town, by a team led by Christiaan Bernard. Recently, we have had the 50th anniversary of the first kidney transplant in Poland, carried out by a team from the Medical Academy in Warsaw - it was the 621st operation in the world [1]. On November 5, 1985, the team led by Zbigniew Religa carried out the first heart transplantation in Poland.

Transplantations are divided by genetic similarity or location of a transplant, and the state of the body, from which it is collected. In terms of genetic similarity between donor and recipient, the grafts are divided into: autologous - carried out within a single system; isogenic/syngeneic - carried out between genetically identical individuals; allogeneic - carried out between the donor and recipient of one species, but genetically different; xenogeneic/heterologous - carried out between organisms from different species [2]. In the terms location of organ implantation, it is divided into: orthotopic - put in place that is "anatomically equivalent" to the removed tissue; heterotropic - placed in a location other than the anatomical, without removing the failing organ [3]. In terms of the state of the organism from which it is extracted, transplants are divided into: ex mortuo - from a deceased donor; ex vivo- from a living donor [4].

Legal regulations in Poland on harvesting tissues for medicinal purposes (transplantation) can be dated from the end of 1949 when the Act of 30 December 1949, on the amendment of Regulation of the President of the Republic of Poland on medical facilities, allowed harvesting tissues from the deceased within 12 hours after death, with the consent of the Head of the department, and with the statement of death by the commission of three doctors [5]. Since 1984, regulations on transplantation were included in the Statement of National Specialist Teams [6]. The next act regulating the issues of transplantation was the Act of 26 October 1995 on the procurement and transplantation of cells, tissues and organs [7] Currently, according to the applicable law in Poland, contained in the Act of 2005 [8], transplants can come from living or dead donors, and animals. In Poland, the principle of presumed consent is in effect, i.e. the assumption that the lack of reported opposition expressed in the form of an entry in the Central Register of the Opposition (within the System of National Registers), written statement with one's own signature, or an oral declaration made in the presence of at least two witnesses is equivalent to the consent to organ donation after death. Donations from the deceased require statement of a patient's death; currently, the criteria for the commission are presented in the Announcement of the Minister of Health of July 17, 2007 on the criteria and methods of determining the permanent, irreversible cessation of brain function [9] and the Announcement of the Minister of Health of August 9, 2010 on the criteria and methods of determining the irreversible cardiac arrest [10].

In 2000, 1028 transplantations were carried out in Poland and the number of organ transplants was slowly and systematically increasing till 2007, when quite a significant decline was noted, as only 962 organ transplantations were performed. This was associated with a decrease in the Polish society's trust in transplant procedures. Within 50 years 28,206 organ transplantations were performed, including 21,485 transplantations of kidneys, 3,845 livers, 2272 hearts [11]. Most of those procedures were performed in 2014 – i.e. 1620. Donation from the living in Poland accounts for a small percentage of all transplants, i.e. 3.56% of all transplantations (kidney - 3.33%, liver fragments - 7.51%). An important issue is to assess the needs to perform transplantation. At the end of 2015, the number of people waiting for transplantation (described as active) amounted to 935 kidneys, 171 livers, 364 hearts and 3009 corneas [12]. The average waiting time for kidney transplantation in 2008 was 2 years and 10 months, in 2012 - two years and six months, in 2015 - 2 years and 9 months. It can be estimated that the need for transplantation procedures in Poland in one million citizens is: kidney transplantation in 60 people, liver - 12- 16 people, heart 6-8 people [13].

The constantly persistent shortage of organs for transplantation should be reduced by proper preparation of personnel working in health care. Medical universities educate, first of all, healthcare professionals: doctors, nurses, midwives, paramedics and public health workers. Currently, for several years in Poland we can observe the rapid development of education of personnel in the field of public health. The training takes place primarily at medical universities - faculties of health sciences, at the bachelor or master degree. Currently, about seven hundred students are accepted for public health studies every year. Students of public health are trained in the field that integrates medical science. The aim of their education is to prepare them to lead and initiate actions aimed at

preventing disease, prolonging life and promoting health. The multidisciplinary nature of training in basic medical sciences by economics, ethics, organization and management, law, pedagogy, psychology and sociology is to enable multi-faceted and interdisciplinary approach to many issues of population health. One of the objectives of educating students in public health is to broaden the views also in the field of transplantation medicine.

The aim of this study was to investigate the students of public health in terms of:

- students' attitudes to transplantation medicine,
- consent to organ donation from a close relative or oneself,
- knowledge on the basics of law in this issue,
- communication with others in regards to this topic.

MATERIALS AND METHODS

The study was conducted among students of Public Health Faculty of Health Sciences at the Medical University of Warsaw (MUW) and the Faculty of Health Science at the Medical University of Bialystok (MUB) among students of three years of bachelor's degree and two years of master's degree between May and June 2016. During this period, at the University of Warsaw, 464 people was attending public health studies - questionnaires were filled by 390 people, i.e. 84.1%. At the University of Bialystok, it was 108 people and the questionnaire was filled by 92 of them (85.2%). In total, the study included 84.3% of students from both universities.

Test method was a diagnostic survey. The instrument used was a questionnaire compiled by the authors of the publication, containing 21 questions, and in five of them the 5-degree Likert's scale was used [14]. Two questions concerned specific knowledge relating to transplantation medicine and 7 questions related to variables of apportionment by category, and one semi-open question regarding the age of the respondents. The respondents were informed about the purpose of the study, and how to fill out the questionnaire. The participation in the survey was completely voluntary and anonymous.

The study and the questionnaire was approved by the Commission of Bioethics at the Medical University of Warsaw.

The authors have declared no conflict of interest in the presented material.

An analysis of the surveys was performed using Excel 2010 and 12.5 STATISTICA Polish version - the license for the Medical University of Warsaw. To perform statistical calculations, the chi^2 test was used.

RESULTS

The studied group consisted of 482 students of both medical universities. Table 1 presents a detailed breakdown of the respondents by year of studies and university.

A group of students from the Medical University of Warsaw involved 390 students, including 333 (86%) women at the average age of 21.9 and 57 (14.6%) men at the average age of 22.7. In the group of students from Bialystok, it was 80 (87%) women at the average age of 21.8 and 12 (13%) men at the average age of 22.7. The average age of students was 21.9 years. The study used Grubbs test for the presence of data outliers. The statistical value of $p<0.05$ was received, which indicated the presence of data outliers, therefore, the analysis used the Winsor average.

Place of residence of the respondents before the studies is shown in Figure 1

Table 1. Respondents year of studies

Year of studies	MUW		MUB		TOTAL	
	Number	%	Number	%	Number	%
I bachelor	66	16.92	25	27.17%	91	18.88
II bachelor	83	21.28	18	19.57	101	20.95
III bachelor	71	18.21	19	20.65	90	18.67
I master	86	22.05	14	15.22	100	20.75
II master	84	21.54	16	17.39	100	20.74
All	390	100.00	92	100	482	100

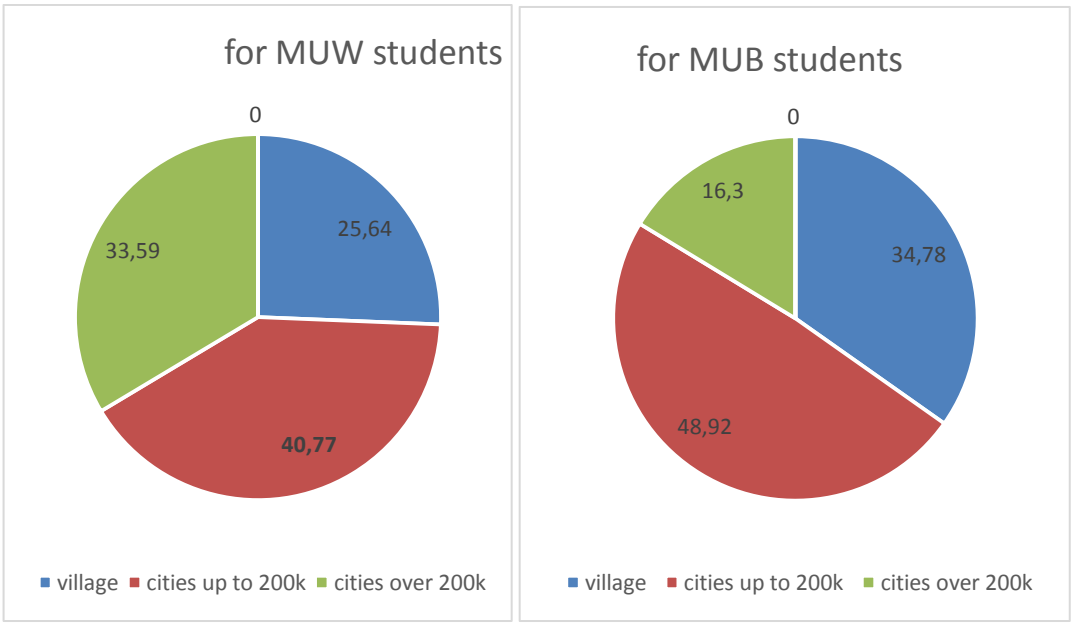

Figure 1. Place of residence of students prior to the start of study - the data presented in percentage.

It should be noted that both groups of the respondents differed in terms of the structure of residence. In the group of students of MUW many people lived in cities with more than 200,000 inhabitants prior to studies; most of MUB students came from villages.

Education of parents (guardians) of the respondents was also studied, as shown in Figure 2.

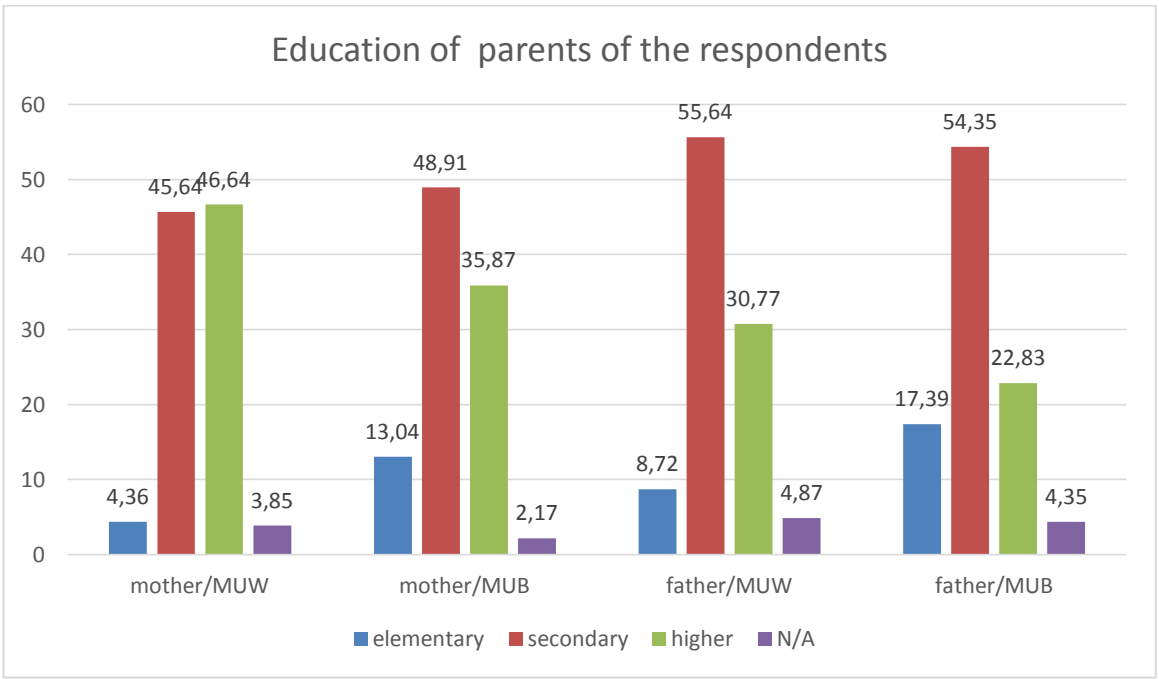

Figure 2. Education of parents/guardians of the respondents

Respondents evaluated their financial situation as very good 13.7%, good - 49.8%, satisfactory 34.7%, and 1.9% of respondents rated their financial situation as bad. The analysis using the chi^2 test did not show any relation between the financial situation of the respondents and their answers in the questionnaire.

Questions concerning transplantation medicine included in the survey concerned three areas related to this issue: attitude to the

procurement of organs from the deceased and living donors, the law regulating the procurement, and communication with the family in regards to this issue.

When asked about promoting the procurement and transplantation of organs from the deceased 74.3% of students from both universities answered definitely yes, 22.2% - rather yes. No significant differences between the year of studies and promoting procurement and transplantation of organs from the deceased donors were found.

When asked if in the event of death they would agree to be a donor 64.2% said definitely yes, 26.3% - rather yes, 8.7% - hard to say. In the event of death 94.8% of the respondents would give away kidneys, 89% - liver, 85.9% - heart, 55.1% - the least likely cornea and 50% - skin. In this question one could give more than one answer.

When asked whether in the event of the death of a loved one the respondents would agree to organ donation only 42.5% said definitely yes, rather yes - 35.7%, and 17.2% of respondents said hard to say. When asked whether they would accept the opportunity to harvest organs of loved ones after their death 79.74% of MUW students and 71,74% of MUB students said definitely yes.

Statistical analysis using the chi^2 test showed a statistically significant difference –students of master's degree studies more often gave the answer definitely yes and rather yes than the students of bachelor's degree studies to the question about the support of donations from close relatives (84.6% vs. 75.9%, $p = 0.034$).

48.5% of respondents from MUW and 42.4% from MUB spoke to their relatives about their decision whether or not to remove organs after death.

When asked whether respondents support the procurement of organs from living donors 31.7% said definitely yes, 44% - rather yes, while 24.3% of students did not support this practice. Most often the respondents would give up their own kidney or liver fragment to close family - such answer was given by 98% of MUW students and 96.7% of MUB students; next to a friend - 71.5% of MUW students and 60.9% of MUB students. Whereas, in case of a stranger without family - 40.5% of MUW students and 30.4% of MUB students would give their organs, while 32.8% of MUW students and 27.2% of MUB students would be a donor to a complete stranger.

About the knowledge of the rules governing the procurement in Poland, only 32.2% of students answered correctly - to retrieve organs from the deceased, it is enough that no objection was expressed during life, 44.6% claimed they needed their consent while still alive, and 16.6 % - that the consent of their families is needed. The students of MUW had less knowledge on the issue - the correct answer was given by 29.7% of respondents. 24.1% of the students of the second year of the bachelor's degree at MUW and 42.4% of MUB students gave the correct answers. According to MUW students, the source of information for the knowledge of transplantation medicine was: college classes - 74.7%, Internet - 65%, TV - 36.2%, and the least, radio - 7%; respectively for MUB students: classes - 65.2%, Internet – 68.5%, TV - 31.5% and radio - 5.4%. In case of this question there was a possibility of multiple choice. 76.4% of MUW students and 46.7% of MUB students confirmed the existence of activities concerning transplantation medicine during the studies.

DISCUSSION

Decisions about transplanting organs cause a lot of controversy in many aspects: moral, philosophical, legal. Despite this, the number of transplantations increases. In the United States, since the first transplantation performed by Dr. Murray, over half a million transplantations were carried out [15], in Poland, since the first kidney transplantation there were performed more than 28,000 transplantations. In 2014, 119 873 transplantations were carried out in the whole world, mostly kidneys 79948 [16]. Despite such a large number of transplantations the waiting period for treatment is getting longer.

For many years, there has been conducted public opinion research on organ donation, organ transplantation in order to get to know views on this matter. In Poland, for over twenty years, such researches have been conducted by CBOS. In a study of 1995, the acceptance for transplanting organs from the deceased was expressed by 83% of Poles, 67% agreed to harvesting of their organs after death, and 58% agreed to organ donation from their loved ones after their death [17]. A similar study in the same period involving the Spanish population showed that 65% of the respondents expressed consent to organ donation after their death, 93% - to organ donation after the death of their loved ones [18]. Public opinion research conducted in 2016 by CBOS showed that the idea of transplantation of organs from the deceased was supported by 93% of the respondents, 80% accepted organ donation after their death, and 69% - organ donation after the death of the loved ones [19]. Also, surveys concerning opinions about transplantation medicine among college students in Poland were conducted. A research at Szczecin universities: University of Szczecin, Pomeranian Medical University, Technical University have shown that in case of death organs would be given respectively by 83.8%, 88%, 67.7% of the respondents [20]. In a study conducted in 2013 at the universities of Opole among students of medical and sports departments, organs would be given by 66% of the respondents; students of humanities,

social, and technical faculties - 56% [21]. The author's examination showed that in a population of students donation of their own organs was approved by 90.8% of MUW students and 79.4% of MUB students.

Procurement of organs from the deceased donors is also inextricably associated with the problem of communication between family members and passing this information to the closest ones. In a survey conducted by CBOS in 1995, asking if people spoke to their families about donating organs for transplant to other people, only 21% answered yes, [17] in 2016 such answer was given by 25% of Poles. In the authors' study 48.5% of MUW students, and 42.4% of MUB students said yes. Carrying out such talks should contribute to the family's acceptance to donate organs. One organ donor can give life to 8 people waiting for transplantation.

An important element in the modern transplantation medicine is the need to improve the rate of donations from the living. In 2015, in Poland only 60 kidneys and 22 liver fragments were transplanted, which is only 7% of all such transplantations. In the United States or Sweden donations from the living donors are nearly 40% of all transplantations. In the nationwide survey by Ipsos-Demoskop in 2002 the approval was given by 86% of Poles, 99% of non-medical students and 97% of medical schools students [22]. In the authors' study, the acceptance of donations from the living donors was expressed by 77.9% of the respondents from MUW and 70.7% of MUB students. Most likely, the students would give their kidney or a part of liver to the immediate family - 98% or to a friend - 71.5% (MUW), 60.8% (MUB), the willingness to donate to others was significantly lower – about 40%. The level of acceptance of family donation presented in the authors' material is similar to that presented in the survey conducted among students in Szczecin; for students of medical schools it was 97%, 40% - university, technical college - 66% [20]. In a study conducted in Tehran there was reported a very high level of acceptance for organ donation, in particular, to the family [23]. However, the solution to the problem of donation rates must go hand in hand with solutions related to altruistic donations and organizing chain transplantations between multiple pairs. In this case there may appear a dilemma of the possible sale or trafficking of organs, or any forced organ donation. The creation of adequate security in this respect is an extremely difficult task.

Another element of training of medical universities students is the need to know the law on organ procurement for transplantations. In a study by Iskra-Trifunović in 2014 among the students of the Pomeranian Medical University 75% of female and 59% of male students of the first year of studies knew what is the presumed consent; among the students of the fourth year it was 95% for both sexes [24]. The study among Brazilian students also showed a similar knowledge of Brazilian law on the discussed issue [25]. In the authors' material knowledge on the law in the Polish legislation and the existence of presumed consent in the group of university students in Warsaw amounted to 40.5%, and among students of Bialystok - 42.4%. It seems necessary to introduce more intensive education in law relating to the issues of transplantation medicine.

CONCLUSIONS

The analysis of the study shows high acceptability of transplantation medicine in terms of saving lives, however, the desire to donate one's own organs after death or acceptance of organ donation after death of loved ones is far from the overall acceptability. It seems necessary to conduct the appropriate type of classes aimed at changing the approach to the discussed issue. It is also necessary to increase knowledge of the Polish law in terms of presumed consent, especially since there is no clear opinion in the Polish medical community on transplantations.

Conflicts of interest

The authors declare no conflicts of interest for this research work.

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