


# Would you donate your body? Attitudes of students of nursing and physiotherapy towards body donation for educational and scientific purposes

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[Received: 4 March 2023; Accepted: 12 March 2023; Early publication date: 3 April 2023]

**Background:** Human body is the most perfect atlas of human anatomy. Body donation after death is, next to donation of organs for the purpose of transplantation, another most altruistic act, which significantly influences the future of medicine, as regards teaching of anatomy and clinical disciplines. Because students are mainly the beneficiaries of corpse donations, it appears important to learn about their attitudes to this altruistic act. The purpose was to assess the awareness and attitudes of students of nursing and physiotherapy towards body donation for educational and scientific purposes.

**Materials and methods:** A total of 128 Polish students (110 women and 18 men) from the faculties of nursing and physiotherapy of the Medical University of Silesia in Katowice, Poland took part in the questionnaire study. The average age in respective groups was  $19.94 \pm 0.34$  years of age in case of nursing and  $19.93 \pm 0.25$  years of age in case of physiotherapy. The first part of the proprietary questionnaire concerned classes in body dissection conducted in prosectorium and their significance for teaching anatomy. The second part applied to the programme of Conscious Body Donation, attitudes towards the body in prosectorium and the approach to body donation for educational and scientific purposes.

**Results:** The results of the study indicate that students from both faculties are in favour of body donation after death for educational and scientific purposes. Unfortunately, only a small percentage of them expressed the willingness to become body donors. The main reasons for the reluctance to do so included psychological barrier and concern for the family.

**Conclusions:** Most of students who responded to the questionnaire support the idea of body donation for educational and scientific purposes after death, yet they appear to be more willing to donate their organs for transplantation than their bodies for educational or scientific purposes after death. There are numerous factors which influence students' attitude to body donation. More emphasis should be put on educating students, which could contribute to changing their attitude toward that altruistic act, and in consequence may increase the number of donors in the future. (Folia Morphol 2023; 82, 4: 921–931)

**Key words:** whole body donation, students, physiotherapy, nursing, cadaver, anatomy

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## INTRODUCTION

Anatomy is a specific course in the curriculum, as it allows to gain thorough knowledge of human body structures. It provides the basis without which it is not possible to fathom many fields of clinical medicine, in particular those related to conducting medical procedures [9, 14, 17, 46]. Human body is the most perfect atlas of human anatomy. Donation of organs and of the entire body constitute two most significant altruistic acts, which significantly influence the future of medicine [12]. Cadaver dissection classes in prosectorium constitute the first part of encounters of students with medical sciences. In many countries, voluntary body donation is the primary act, without which it is not possible to teach anatomy in lawful manner [26]. The authors who conducted studies on body donation emphasize that encounters with the donor's body are of utmost importance for the student. Body donors are even referred to as first patients or silent teachers [18, 28]. An important role in the entire process of education and in the attitude to donors' bodies is attributed to the ceremonial burials, in the course of which students have the possibility to personally meet the families of donors [20, 23, 27].

Analysing the literature that focused on body donation, one can note that a substantial portion of such studies is devoted to the attitude of students, from both medical and non-medical faculties, to the act of donating organs for transplantation [10, 12, 15, 25, 29, 32, 33, 35, 36, 39, 43, 44, 48], to the cadaver dissection for teaching anatomy [2, 6, 24] as well as to the attitude towards body donation among university staff [4, 5, 13, 38, 47], or among the elderly [31]. There are but a few studies that deal with the attitude to whole body donation after death, particularly among the students who do not plan to become medical doctors.

In Poland, cadavers for student and post-graduate training in medical universities are obtained from donors registered in cadaver donation programmes. Those donors, when still alive, decided to make body donation for educational and scientific purposes to a specific medical university [9]. Taking a decision about body donation after death for educational and scientific purposes is extremely difficult and is influenced by numerous factors.

Among the main beneficiaries of conscious body donation are students of medical universities, not only those from medical departments but also students of disciplines that belong under faculties of health

sciences, such as nursing, obstetrics, physiotherapy, or electrocardiology. Anatomy classes in prosectorium are important as, unlike a living body, cadavers "do not punish for mistakes made" [30]. Experience and knowledge gained through necropsy and body dissection are more thorough than what can be gained by means of three-dimensional atlases, models, or virtual reality. As bodies of the "first patients" are so important, it is also relevant to find out about the attitude of those who are beneficiaries of the altruistic act of body donation for educational and scientific purposes. While the students of medical departments of Polish universities have classes in anatomy only in prosectorium environment, students of other medical sciences either do not have classes in prosectorium at all, or have such classes in a limited scope. Thus, for our questionnaire study we selected students who do not plan to become medical doctors, and who, when studying medical sciences, have a limited contact with the prosectorium environment, in order to learn their opinions concerning body donation.

As has been underlined above, because students are the main beneficiaries of body donation acts, it appears substantial to learn about their attitudes to body donation. Our study is the first one of such type in Poland, and the results obtained may contribute to extending the knowledge and attitude of young people towards dead human body. Students, as future employees of the medical sector, may have an important role to play in raising social awareness as concerns body donation.

## MATERIALS AND METHODS

The study comprised students of medical sciences who do not plan to become medical doctors and who are students of the Faculty of Health Sciences in Katowice, Medical University of Silesia in Katowice, Poland. For the purposes of the study reported here, two fields of study have been selected, which differ as to the amount of hours to be spent in dissecting room during classes: nursing with the total of 35 hours of anatomy classes, including 4 classes in the dissecting room, and physiotherapy, with 60 hours of such classes, including 50 hours of anatomy lessons in the prosectorium with cadavers.

A proprietary questionnaire was used for the purpose of the study, it was voluntary to fill the questionnaire which was anonymous. The questionnaire contained questions in two parts: the first one referred to classes in the dissecting room and their

**Table 1.** Do you know where the cadavers used in body dissection classes come from? — opinions of students of nursing (n = 67) and physiotherapy (n = 61)<sup>#</sup>

| Origin of cadavers used in body dissection classes in prosectorium                            | Number of respondents selecting a given response |               | P*      |
|---|--|---------------|---------|
|   | Nursing  | Physiotherapy |         |
| They come from those who consciously donated their bodies to the university, when still alive | 54 (80.6%)                                       | 57 (93.44%)   | 0.0164  |
| They are provided by family members after a person's death                                    | 19 (28.36%)                                      | 9 (14.75%)    | 0.0314  |
| They are bodies of unidentified persons (NN)  | 10 (14.92%)                                      | 9 (14.75%)    | NS      |
| They are bodies of homeless people who do not have families                                   | 8 (11.94%)                                       | 9 (14.75%)    | NS      |
| The cadavers are bodies of prisoners who died in prisons                                      | 6 (8.96%)  | 3 (4.91%)     | < 0.001 |
| The bodies come from social care homes  | 4 (5.97%)  | 1 (1.64%)     | < 0.001 |

<sup>#</sup>A multiple choice question; \*Chi square test; NS — no statistical significance

importance in learning anatomy, the second one referred to the programme of Conscious Body Donation, attitudes towards the body in prosectorium and the approach to body donation for educational and scientific purposes. The link to the questionnaire was sent to the total of 365 students of the first year, in the abovementioned fields of study, who completed the entire course in anatomy and who were about to take the exam in this subject.

The study received approval of the bioethics committee of the Medical University of Silesia in Katowice (No. KNW/0022/KB/53/18).

### Statistical analysis

The results obtained with the use of questionnaire were statistically analysed with the application of TIBCO Statistica® 13.3 software. Descriptive statistics' calculations were made. The statistical difference among groups was accessed using chi-square tests. The threshold assumed for statistical significance was  $p < 0.05$ .

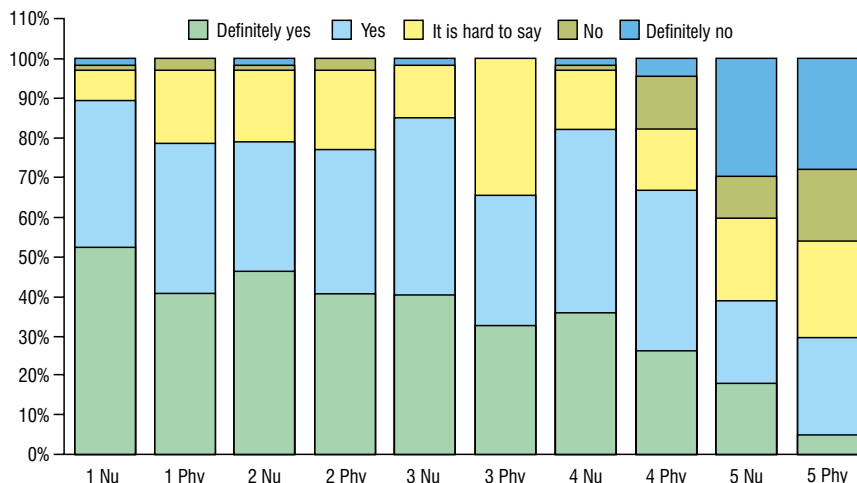
## RESULTS

The study group comprised 128 students, 67 of them studied nursing (67 females) whereas 61 studied physiotherapy (43 females and 18 males), which equals to 52.34% and 47.66% in percentage terms, respectively. Women constituted the majority of respondents, due to the female gender predominance in those fields of studies. The average age in respective groups was  $19.94 \pm 0.34$  years of age in case of nursing and  $19.93 \pm 0.25$  years of age in case of physiotherapy.

In both groups, the most often declared religion was the Roman Catholicism, in case of 80.6% students of nursing and 68.5% students of physiotherapy,

respectively. As regards religion, the second most popular response was "not religious" (nonbeliever/atheist/agnostic), with 17.91% and 18.03% declaring it, respectively. In answering the question "What or who do you consider human body to be after death?" students from both fields of study frequently selected the answer "A being that lived once" — 53.73% and 49.18%. Physiotherapy students statistically significantly more often indicated "inanimate object" — 6.56% or "container for soul" — 11.48% ( $p = 0.01$ ,  $p = 0.05$ ). Sadly, it has to be stated that as many as 5 ladies studying nursing selected the response in which the cadaver was labelled as "organic waste". Students agree that classes in the prosectorium are really needed in the course of anatomy. Such a response was provided by as many as 88.06% of the students of nursing and 95.08% of students of physiotherapy. The remaining students expressed no opinion in that matter. It needs to be stressed that none of the students in both fields of study responded as "definitely not needed". As in case of anatomical preparations, as many as 73.13% of the students of nursing and 73.38% of the students of physiotherapy considered them very useful in learning.

Students, when asked "where do the cadavers used in body dissection classes come from?" in the majority of cases (80.6% of nursing students and 93.44% of physiotherapy students) selected the response "they come from those who consciously donated their bodies to the university, when still alive". Unfortunately, students of nursing provided incorrect answers above the threshold of statistical significance, indicating that the cadavers are those of prisoners who died in prisons ( $p < 0.001$ ; Table 1). Among the respondents, 83.58% of nursing students and 73.77% of physiotherapy students replied that



**Figure 1.** Opinions (%) of students of nursing (Nu; n = 67) and physiotherapy (Phy; n = 61) concerning treatment of donors' bodies in departments of anatomy. Explanatory notes: 1. "Donors' bodies are treated properly in departments of anatomy"; 2. "In the course of dissection the cadavers are treated with due respect"; 3. "The dissected parts and remains of corpses are not properly protected after dissection"; 4. "Donors' bodies are treated with due respect by the students"; 5. "Donors' bodies may be destroyed by students in the course of anatomy classes".

they were aware of the body donation programme. The most frequently indicated sources of information about body donation in both cases were university staff members (69.64% and 62.22%, respectively). The students of nursing more often indicated, with statistical significance, that also the Internet was their source of information in that respect (48.21%) while in case of students of physiotherapy such sources of information included "other students" (44.4%), friends (17.7%) or television (11.11%). In case of physiotherapy students, the least frequently selected option in responding to this question was "other", e.g. a "radio documentary". Students agree that the most efficient way to convince people about making body donation for educational and scientific purposes is the testimony of a person who has already made the decision about body donation (68.66% and 55.74%, respectively). Future physiotherapists more frequently, with statistical significance, indicated medical personnel (64.18%) as the influencers here, while students of nursing pointed out to clergymen (44.26%) and celebrities (21.31%) as those who could convince them about making a whole body donation. When asked about the remuneration for donors or their families for making body donation for educational and scientific purposes, a majority of respondents selected the option "they do not get remuneration" with 28% selecting the response "I do not know". In the question concerning ethical assessment of the Conscious Body Donation Programme, students from

both fields of studies provided a positive response, in the majority of cases. With statistical significance, students of nursing (80.36%) more often selected a positive response ( $p = 0.0143$ ), whereas students of physiotherapy indicated the unethical nature of that program (31.11%,  $p = 0.05$ ). Yet another question concerned the opinion of students regarding the way donors' bodies are treated in departments of anatomy and the way those cadavers are treated by students themselves. The respondents were requested to assess, using a five point Likert scale, the veracity of the following statements: 1. "Donors' bodies are treated properly in departments of anatomy"; 2. "In the course of dissection the cadavers are treated with due respect"; 3. "The dissected parts and remains of corpses are not properly protected after dissection"; 4. "Donors' bodies are treated with due respect by the students"; 5. "Donors' bodies may be destroyed by students in the course of anatomy classes". The results are presented in the Figure 1. The statistical analysis performed for most of the statements revealed no significant differences in responses between the represented fields of study. Only in case of statement 1, which concerns proper treatment of cadavers, and in statement 3, referring to protection of corpses, students of physiotherapy selected the response "it is hard to say" more often, with statistical significance ( $p = 0.035$ ;  $p = 0.025$ , respectively). In case of statements 4 and 5, about treating cadavers with due respect and about destroying donors' bodies by

students, physiotherapy students selected the “no” and “definitely not” responses statistically significantly more often ( $p = 0.007$ ,  $p = 0.035$ ), in comparison with nursing students, which — in case of the statement concerning due respect for the body — poses a substantial problem that needs to be thought over.

A clear majority of students from both fields of study (58.21% of those studying nursing and 54.1% of those studying physiotherapy) believe in life after death; however, a statistically significantly higher percentage of nursing students, 28.36%, deny the existence of life after death ( $p = 0.006$ ), while 27.7% of physiotherapy students admit they have not given that question a thought ( $p = 0.021$ ). Students, although young, have been wondering about the fate of their bodies after death (73.13% of future nurses and 68.85% of future physiotherapists pondered upon that).

The question: “Do you support body donation for educational/scientific purposes after death?” received a positive answer from nursing students (79.11%) statistically significantly more often ( $p = 0.006$ ), whereas physiotherapy students statistically significantly more frequently selected the response indicating they had no opinion regarding this issue (24.59%) ( $p = 0.0043$ ) or have not given it a thought yet (16.39%) ( $p = 0.0028$ ). The respondents were also inquired about their awareness concerning whether their creed approves the body donation act. 56.72% of future nurses and 42.62% of future physiotherapists responded selecting the “I don’t know” answer ( $p = 0.055$ ). A very small percentage of responses from nursing students (4.48%) as well as physiotherapy students (8.2%) selected the negative response (“no”). When inquired about body donation and organ donation after death, the respondents provided divergent answers. Students of both fields were more willing to donate their organs for transplantation (65.67% and 52.46%, respectively) than to donate the entire body for educational/scientific purposes after death (11.94% and 24.59%, respectively). In general, most of the nursing students (44.78%) have not pondered upon donating their bodies so far. Physiotherapy students, who have more hours at the dissecting table, selected a similar answer less frequently (19.67%,  $p = 0.013$ ). The students who indicated they were not willing to make a body donation for educational/scientific purposes after death were requested to provide their reasons. In the specific question asked in the questionnaire, they could select more than one response. Students of nursing ( $n = 27$ ) most frequently selected the response: “So that the

family would not suffer again” (37.04%), or indicated fear of necropsy (37.04%) and fear that the cadaver may be destroyed by students (33.33%). In case of students of physiotherapy ( $n = 33$ ) the most frequently selected response was “psychological barrier” (36.36% of respondents). Students of nursing more often indicated, with statistical significance, the “fear of losing the chance for eternal life” ( $p = 0.004$ ), whereas students of physiotherapy selected the response option of “wasting the body” risk and absence of detailed knowledge concerning donation ( $p < 0.001$ ) (Table 2). Also, those persons who declared their willingness to become body donors after death were inquired about the reasons for making such choice. Students of both fields most often selected the response which stated the “Awareness of the need for developing medical sciences” (Table 3). That response was the option most often selected in case of the question asked to all respondents, namely “Why, in your opinion, people decide to donate the body for educational/scientific purposes after death?” (Table 4). Students of nursing selected twice as often the response indicating willingness to help in scientific research, and in enhancing education of doctors and medical personnel ( $p = 0.028$ ), whereas in case of physiotherapy students, 13% of them selected the response “to avoid costs connected with the funeral” and “to avoid the funeral ceremony”. When inquired about who can be most efficient in convincing people to make a body donation for educational/scientific purposes after death, the most frequently selected response option was: “People who have already consented to make body donation” (68.66% of nursing students and 55.74% of physiotherapy students). In response to the question: “Does, in your opinion, the attitude of the student towards the cadaver during classes in prosectorium reflect the future approach of such student to the patient?” most of the students from both fields provided an affirmative answer (73.11% and 62.3%, respectively). No statistically significant differences were observed between the fields of study. Students asked the question: “Have body dissection classes made you change your opinion concerning making a body donation for educational/scientific purposes after death?” provided a negative answer in case of a majority of nursing students (73.13%) ( $p = 0.046$ ), whereas most of physiotherapy students (48.19%) selected a response stating that classes in prosectorium influenced the way they perceive the body donation act ( $p = 0.006$ ).

**Table 2.** Why you do not want to donate the body for scientific purposes after death? — opinions of students of nursing (n = 27) and physiotherapy (n = 33)<sup>#</sup>

| Reasons why you do not want to donate the body for educational/scientific purposes after death  | Number of respondents selecting a given response |               | P*      |
|---|--|---------------|---------|
|   | Nursing  | Physiotherapy |         |
| Concern for the family, so that they would not suffer again   | 10 (37.04%)                                      | 10 (30.30%)   | NS      |
| I do not want to be dissected (I do not want my body to be cut)   | 10 (37.04%)                                      | 6 (18.18%)    | 0.0491  |
| Fear that my body will be destroyed by students   | 9 (33.33%)                                       | 7 (21.21%)    | NS      |
| Psychological barrier   | 8 (29.63%)                                       | 12 (36.36%)   | NS      |
| Fear that my body will not be treated with due respect  | 8 (29.63%)                                       | 10 (30.30%)   | NS      |
| Fear that my body will not be properly used after death   | 7 (25.93%)                                       | 10 (30.30%)   | NS      |
| I am not able to state the reason   | 5 (18.52%)                                       | 5 (15.15%)    | NS      |
| Because I love my body  | 4 (14.82%)                                       | 6 (18.18%)    | NS      |
| Reluctance of family members  | 3 (11.11%)                                       | 5 (15.15%)    | NS      |
| I am afraid   | 3 (11.11%)                                       | 7 (21.21%)    | 0.0148  |
| I believe in life after death   | 3 (11.11%)                                       | 3 (9.09%)     | NS      |
| Fear of losing the chance for eternal life  | 2 (7.41%)  | 1 (3.03%)     | 0.004   |
| My body can be wasted   | 2 (7.41%)  | 4 (12.12%)    | < 0.001 |
| Lack of thorough knowledge concerning body donation   | 2 (7.41%)  | 4 (12.12%)    | < 0.001 |
| Others:   |  |               |         |
| “I don't want people to look at my body and put their fingers in me”  | 1 (3.71%)  |               |         |
| “I want my body to be buried shortly after I die”   | 1 (3.71%)  |               |         |
| “I am not dying yet, so I do not think about it”  | 1 (3.71%)  |               |         |
| “The cadavers are destroyed sometimes, so structures are not visible, perhaps it also depends on the topics which are discussed during class” | 1 (3.71%)  |               |         |
| “I just do not want to”   |  | 1 (3.03%)     |         |
| “It's my body and I want it to stay that way forever”   |  | 1 (3.03%)     |         |

<sup>#</sup>A multiple choice question; \*Chi square test; NS — no statistical significance

**Table 3.** Why do you want to donate the body for educational/scientific purposes after death? — opinions of students of nursing (n = 8) and physiotherapy (n = 15)<sup>#</sup>

| Reasons why you want to donate the body for educational/scientific purposes after death | Number of respondents selecting a given response |               | P*     |
|---|--|---------------|--------|
|   | Nursing  | Physiotherapy |        |
| Awareness of the need for developing medical sciences                                   | 7 (87.5%)  | 12 (80%)      | NS     |
| I want to feel useful, even after death   | 7 (87.5%)  | 9 (60%)       | 0.0286 |
| To help in developing education of future doctors and medical personnel                 | 7 (87.5%)  | 9 (60%)       | 0.0286 |
| To prevent the shortage of body donors for scientific purposes                          | 3 (37.5%)  | 7 (46.67%)    | NS     |
| To help in medical research, knowledge improvement, science                             | 7 (87.5%)  | 6 (40%)       | NS     |
| To express gratitude towards doctors for life and health                                | 1 (12.5%)  | 4 (26.67%)    | NS     |
| Not to burden others with the costs of funeral  | 1 (12.5%)  | 4 (26.67%)    | NS     |
| Body donation is the only rational decision for me, and a moral choice                  | 1 (12.5%)  | 4 (26.67%)    | NS     |
| To avoid costs connected with the funeral   | 0 (0%)   | 2 (13.13%)    |        |
| To avoid the funeral ceremony   | 0 (0%)   | 2 (13.13%)    |        |
| Because they do not have relatives  | 0 (0%)   | 1 (6.67%)     |        |
| Others  | 1 (87.5%)  | 1 (6.67%)     |        |

<sup>#</sup>A multiple choice question; \*Chi square test; NS — no statistical significance

**Table 4.** Why, in your opinion, people decide to donate the body for educational/scientific purposes after death? — opinions of students of nursing (n = 67) and physiotherapy (n = 61)\*

| Reasons why people decide to donate the body for educational/scientific purposes after death | Number of respondents selecting a given response |               | P*      |
|--|--|---------------|---------|
|  | Nursing  | Physiotherapy |         |
| Awareness of the need for developing medical sciences  | 57 (85.07%)                                      | 44 (72.13%)   | < 0.001 |
| Willingness to help in medical research, knowledge improvement, science                      | 52 (77.61%)                                      | 20 (32.79%)   | 0.018   |
| They want to feel useful, even after death   | 47 (70.15%)                                      | 37 (60.66%)   | 0.004   |
| To help in developing education of future doctors and medical personnel                      | 46 (68.66%)                                      | 25 (40.98%)   | 0.016   |
| Body donation is the only rational decision for them, and a moral choice                     | 17 (25.37%)                                      | 8 (13.12%)    | 0.040   |
| To prevent the shortage of body donors for scientific purposes                               | 16 (23.88%)                                      | 13 (21.31%)   | NS      |
| Because they do not have relatives   | 12 (17.91%)                                      | 9 (14.75%)    | NS      |
| To express gratitude towards doctors for life and health                                     | 8 (11.94%)                                       | 7 (11.48%)    | NS      |
| To avoid the funeral ceremony  | 7 (10.45%)                                       | 3 (4.91%)     | NS      |
| Not to burden others with the costs of funeral   | 4 (5.97%)  | 7 (11.48%)    | NS      |
| To avoid costs connected with the funeral  | 1 (1.49%)  | 5 (8.20%)     | 0.036   |
| Others:  |  |               |         |
| “I did not think about it”   |  |               | < 0.001 |
| “Everyone can have different reasons”  |  | 1 (1.64%)     |         |
| “They want money for it”   |  | 1 (1.64%)     |         |

\*A multiple choice question; \*Chi square test; NS — no statistical significance

## DISCUSSION

The results of our questionnaire study involving first year undergraduate students of nursing and physiotherapy at the Medical University of Silesia in Katowice, Poland make it possible to extend the knowledge concerning awareness and attitudes of students towards body donation for educational/scientific purposes. No other studies of that kind have been conducted in Poland so far. The latest research study related to the topic of body donation conducted in Poland had the aim of examining donors' profile [8].

In our study, as in other similar studies, women constituted the dominating group [1, 11, 19, 41]. It is due to the fact that the fields of study we dealt with women dominate. Other authors conducted research on groups of students composed mainly of men [40, 45]. The age of respondents in our research did not exceed 21 years of age, as in case of research performed by other authors [7, 19]. Perry and Ettarh [40], in their paper reported a much higher percentage of respondents 21 years of age.

The analysis of questionnaires reveals that Catholicism was the dominating religion among students in Poland, which reflects the cross-section of Polish society in terms of religious beliefs. According to the research of other authors, the majority of respondents were also Christians, with Catholics prevailing [19,

41]. There are also studies conducted on students of other creeds [1, 3, 21, 37, 42].

Analysing the responses of students, which referred to the importance of classes in prosectorium, it has been found that a clear majority of them considered such classes to be undoubtedly needed in the course of studies at medical universities. It has been also found in other studies, in which most students considered cadaveric dissections, and thus classes at dissection table, to be a significant element of studies in normal anatomy [11, 19, 34].

Students of both nursing and physiotherapy positively assessed the usefulness of various sources of knowledge concerning human anatomy. In their opinion, anatomical preparations were the most useful ones. The study of Vertemati et al. [49] resulted in somewhat different responses, which entailed that artificial anatomical models are the most useful aids for learning anatomy. Azer and Eizenberg [7] inquired first year students of medical faculties about the same. The answers no doubts, the future medical doctors were of the opinion that cadavers prepared for learning human anatomy were the most useful teaching aids [7].

The knowledge concerning body donation for educational and scientific purposes was sufficient among Medical University of Silesia students of both

nursing and physiotherapy. Most respondents were aware of the Conscious Body Donation Programme, their main source of information was the University staff. Abbasi Asl et al. [1] obtained similar results in their study. Mwachaka et al. [37] conducted a study involving first year medical students from the University of Nairobi, Kenya, which revealed that the majority of study subjects have not heard about any local programme of body donation after death. In another study, conducted in Nigeria, the researchers asked medical students about their knowledge concerning body donation after death. The research conclusion was the most of them had no knowledge about it [22].

Body donation for educational and scientific purposes after death plays a significant role in educating the future representatives of the health care sector. The analysis of results obtained via questionnaire studies demonstrated that quite a low percentage of students declared willingness to become body donors after death. It can also be concluded from the responses of both groups that almost twice as many students of physiotherapy (24.59%) in comparison with the students of nursing (11.94%) declared readiness to become body donors. Similar results were obtained by researchers from other countries. This may have resulted from more hours devoted to teaching anatomy at the dissecting table. Two studies have been conducted in Nigeria. In the first, 13% of subjects supported body donation after death, with only 4.1% declaring the same in the other [3]. In the study involving students of medical university in Kenya, those who opted for making a body donation amounted to 22.2% of subjects [37]. Research by De Gamma et al. [21] among South African students indicated that a mere 14.7% of students there would agree to make a body donation after death. Biljana et al. [11] published a paper which reports that only 20% of students from the Serbian University of Novi Sad would be willing to be body donors. In the study performed in Iran, only 25.4% of students would agree to make a body donation after death [1]. There were also studies reporting quite different results. In India, a study was published which reported that a majority of students would agree to become body donors [45], a likewise declaration was made by 78% of Spanish students of nursing [32]. Quiroga-Garza et al. [41] conducted their research using students of a Mexican medical university as subjects, they also received similar results, with as many as 63.5% of students declaring

to make body donation for educational and scientific purposes after death. In the study performed by Jenkin et al. [29], 82.5% of Australian students declared support for organ donation, with only 26.5% being positive about body donation. Similar results have been obtained by Parsa et al. [39].

We compared students' attitudes towards body donation after death with the attitude towards donation of organs for transplantation. The results demonstrated that the majority of students, both from the field of nursing (65.67%) and physiotherapy (52.46%) have the preference for being donors of organs for transplantation, rather than making body donation for educational and scientific purposes. Those result appear to confirm that in Polish society body donation for the purpose of organ transplantation is more publicized and popularized. Researchers from other countries obtained similar results [3, 41, 45].

The main reason in case of reluctance to make body donation for educational and scientific purposes that was provided by physiotherapy students was the psychological barrier, whereas the most often cause of reluctance among physiotherapy students was the concern regarding family; students do not want family members to suffer anew. Students' responses given in other studies differed from those provided in the study reported here. Saha et al. [45] reported the condition of cadaveric dissections as the main course of reluctance. De Gama et al. [21] published a study which points out to religious beliefs as the main reason for reluctance in making body donation for educational use after death among South African students. Serbs, in the results of their studies, noted that most students would not decide to make a body donation due to possible lack of respect for the cadaver [11].

Students of nursing who were ready to make body donation after death would be willing to do so mainly because of their awareness of the need for development of medical sciences, their willingness to help in advancing medical research, knowledge, science, as well as fostering the education of future doctors and medical personnel. What motivated the students of physiotherapy was the awareness that medical sciences need to develop. In other studies published on that topic, responses were pretty similar. De Gama et al. [21] noted that in case of most students the decision of becoming a body donor is motivated by the eagerness to help in teaching anatomy and conducting research. Biljana et al. [11]



published quite comparable results, where most people provided being of assistance in medical research as the main reason, along with being of use after death, and helping others.

In our study, the majority (73.13%) of nursing students expressed the opinion that classes held in prosectorium have not influenced their attitude towards making body donation for educational or scientific purposes after death. The responses of physiotherapy students were different, with more than half of them (50.82%) stating that those classes influenced their attitude towards body donation. The reason for differences in the attitude between students from those two fields may be connected with the amount of classes at dissecting table, planned in their curricula. Future physiotherapists definitely have more numerous opportunities to use cadaveric dissections than future nurses.

Research that has been published worldwide also suggests that classes at dissecting table may influence the attitude of students towards making body donation for educational or scientific purposes after death. Perry and Ettarh [40] as well as Cahill and Ettarh [16] conducted studies involving students of medical universities using three questionnaires: the first one was distributed before students began their classes in prosectorium, the second one after the first class, and the third one after the second class. The results of both studies occurred to be similar. Cahill and Ettarh [15, 16] noted that before the class was held in prosectorium environment, 23.4% of subjects were reluctant to become donors, 7.1% definitely did not want to be donors, while 31.5% opted for becoming body donors after death. Ultimately, in the third questionnaire, the results changed significantly: reluctance towards making the donation increased from 23.4% to 40.2%, definite refusal percentage went up from 7.1% to 18.6%. The percentage of respondents who would agree to make the donation dropped from 31.5% to 19.6% [16]. Perry and Ettarh [40] also reported a similar decrease. The willingness of persons who before classes at dissection table wanted to become cadaver donors (35.1%) ultimately dropped to 24.3%, whereas the reluctance to make body donation after death increased, from initial 16.25% to 27% [40]. Martinez-Alarcon et al. [32] analysed the attitude of Spanish students of nursing towards cremation, burial, and autopsy. They have analysed a total of 750 students as regards responses given. 71% accept cremations, mainly those who are

not afraid of body mutilation, 86% of them accept autopsies [32]. Singh et al. [48] assessed the attitude to body donation among students of nursing coming from Nepal. Forty-three per cent of those students are prepared to donate their bodies. In the opinion of those students, the motivators for donating the corpse after death include celebrities, family members, as well as lecturers [48].

## CONCLUSIONS

In summary, it can be stated that numerous factors influence the attitude of students to body donation for scientific purposes. More stress on educating students is required, which could contribute to changing their attitude towards that altruistic act, thus increasing the number of donors in the future.

### Founding

The study was financed from contract for statutory purposes of the Medical University of Silesia, No. KNW-1-025/N/8/P.

**Conflict of interest:** None declared

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