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## Poziom wiedzy pielęgniarek na temat medycyny transplantacyjnej

## Level of nurses' knowledge concerning the transplant medicine

### Streszczenie

**Wprowadzenie.** Rozwój transplantologii na świecie i w Polsce związany jest z poziomem wiedzy na temat pobierania i przeszczepiania narządów. Znajomość procedur związanych z przeszczepianiem narządów jest uzależniona od wielu czynników. Należą do nich poziom: wykształcenia, środowisko życia oraz wykonywany zawód. Celem pracy było zbadanie wiedzy pielęgniarek z zakresu transplantologii w zależności od profilu oddziału na jakim pracują oraz od ich poziomu wykształcenia.

**Materiał i metody.** Badanie prowadzono przy użyciu kwestionariusza, objęto nim 100 pielęgniarek zatrudnionych na oddziałach ortopedii, chirurgii, ginekologii oraz intensywnej terapii.

**Wyniki.** Niezależnie od miejsca zatrudnienia, większość pielęgniarek prawidłowo odpowiedziała na zadawane pytania. Wszystkie pielęgniarki zdecydowanie przeciwne oddaniu swoich narządów po śmierci prawidłowo odpowiedziały na pytanie dotyczące homotransplantacji, podczas gdy najniższy odsetek prawidłowych odpowiedzi stwierdzono wśród pielęgniarek zdecydowanych na oddanie swoich narządów po śmierci. Podobnych obserwacji nie znaleziono w dostępnej literaturze. Uzyskane wyniki mogą dowodzić, że brak akceptacji wobec przeszczepiania organów prawdopodobnie wynika nie z braku wiedzy ale ze świadomego wyboru.

**Wnioski.** Poziom wiedzy pielęgniarek z zakresu transplantologii jest stosunkowo wysoki, niezależnie od oddziału na którym pracują. Wiedza z zakresu transplantologii wpływa na stanowisko wobec oddania swoich narządów po śmierci. Wiedza pielęgniarek z zakresu transplantologii nie zależy od rodzaju wykształcenia.

**Słowa kluczowe:** transplantologia, pielęgniarki, wiedza.

### Summary

**Introduction.** Development of transplantology in the world and in Poland is connected with the level of knowledge concerning receiving and transplanting organs. Acquaintance with procedures connected to organs grafting depends on many factors. They include educational level, life environment and occupation. The aim of this study was to examine the knowledge of the nurses concerning the organ and tissues transplantations with relation to the ward they work and their educational level.

**Material and methods.** The examined group consisted of 100 nurses working in the orthopedic, surgical, gynecological and anesthetic wards. The study was performed by the use of questionnaire.

**Results.** The vast majority of nurses, independently from the ward they are working on, answered correctly the questions asked in the survey. All nurses definitely opposing to giving their organs after death correctly answer the question concerning homotransplantations, whereas the lowest percentage of correct answers was stated in nurses decided to give their organs after death. Similar results cannot be found in the accessible literature sources. This result may prove that the lack of acceptance towards organs grafting does not have to result from lack of knowledge but may be a conscious choice.

**Conclusions.** Level of nurses' knowledge in the field of transplantology is relatively high, independently from the ward they are working on. The knowledge in the field of transplantology influences the attitude towards giving one's organs after death. The level of nurses' knowledge in the field of transplantology does not depend on their educational level.

**Key words:** transplantology, nurses, knowledge.

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## INTRODUCTION

Transplantology is a field of medicine which deals with the problem of transplantation i.e. grafting of organs and tissues. Transplantation (from latin *transplantare* – to graft, replant) is an operation of moving cells (f. ex. bone marrow), tissues (f. ex. skin) of organs (f. ex. heart, kidneys) within one organism or between two organisms. It is a surgical operation in which the grafted fragment is called a transplant or a graft [1, 2].

First attempts of human issues transplantations took place in the ancient times. In the middle of 14<sup>th</sup> century, two Italian physicians, Branca – father and son, carried out a skin transplantation. In the middle of 15<sup>th</sup> century, an Italian – Togliacozzi spread this field of transplantology [3]. Development of transplantology as a field of medicine took place in the 20<sup>th</sup> century. In the first half of 20<sup>th</sup> century appeared first reports concerning transplantations of various organs in people and animals, which however ended unsuccessfully in the majority of cases [4, 5]. The second half of the 20<sup>th</sup> century can be called the era of transplantology in a special way. One of the most important incidents, which influenced development of transplantology was discovery of blood groups [5]. In 1954 the first transplantation of kidney was carried out in Boston. In 1964 John Hardy grafted a heart of chimpanzee into human's body [3, 4]. In 1998 the international team of doctors led by Jean-Michael Dubernard (French) and Earl Owen (Australian) in Lyon carried out a transplantation of the right palm with a part of forearm. Less than one and a half year later Jean-Michael Dubernard with his team performed simultaneous transplantation of both palms with parts of forearms [3].

First successful transplantations include kidney transplantation performed by R. H. Lawler in 1950, bone marrow (1958; G. Matheser), lungs (1959; J. Hardy), liver (1963, T. E. Starzl) and heart (1967; Ch. N. Barnard) [3].

First organs transplantations in Poland took place in the second half of the 20<sup>th</sup> century. In 1966 Jan Nielubowicz and Tadeusz Orłowski performed kidney transplantation and in 1967 Jan Moll performed a heart transplantation [3, 5].

The milestone in the Polish transplantology was the Act on Health Service Institutions from 30 August 1991. In this act the expression of constructive assent was used for the first time. It assumes that it is allowed to take organs or tissues from dead body for medicinal purposes if the person did not raise any objections to it during lifetime [5, 6]. Further development of transplantology in Poland was accelerated thanks to passing of act about taking and transplanting of cells, tissues and organs [7]. First years of 21<sup>st</sup> century were connected with dynamic development of this field of medicine and constant growth of number of performed transplantations.

Development of transplantology in the world and in Poland is connected with the level of knowledge concerning taking and transplanting organs. Acquaintance with procedures connected to organs grafting depends on many factors. They include educational level, life environment and occupation. At present, society is drawing information, also in this field, mostly from media and more and more accessible Internet. Other source of information is medical literature accessible mostly for medical professions.

The turn of the 20<sup>th</sup> and the 21<sup>st</sup> century is characterized by constantly improving access to information, in the field

of medicine as well. In this connection, the level of society knowledge has increased, in the field of transplantology as well. This knowledge is particularly accessible for medical professions, among which are physicians and nurses. The purpose of this study was to examine the knowledge of nurses in the field of transplantology.

The aim of this study was to examine the knowledge of the nurses concerning the organ and tissues transplantations with regard to the ward they work and their educational level.

## MATERIAL AND METHODS

The examined group covered 100 nurses from the Independent Public University Hospital nr 4 (SPSK) in Lublin. The biggest group comprised people aged between 36-45 years (47 people; 47%). Twenty eight people (28%) were aged 45-55 years. The smallest group (2%) among the examined were people up to 25 years of age. The vast majority were inhabitants of the countryside (71%) and twenty nine examined people were city dwellers. Seventy nurses were married, 29 were single and one was a widow. Nurses taking part in the study were working in the orthopedic, surgical, gynecological and anesthetic wards.

Regarding education, the most numerous group made up people with secondary education (69%), 21% had bachelor's degree and 10% – master's degree. In the examined population, the vast majority (73%) are determined or rather determined to give their organs after death, 12% are definitely against and 15% not having any opinion.

The study was performed with the use of survey questionnaire. Survey is a set of questions, which are presented in a written form in order to solve a given scientific problem [8]. This technique consists in filling out of questionnaires with high degree of specialization, in presence or without presence of the person carrying out the study. The survey questionnaire is a sheet of paper with printed questions and blank spaces to write answers or ready answers, among which people can choose those they perceive as correct [8].

In the present study a proper questionnaire was used and formulated for the group of nurses.

The first part of the questionnaire consisted of 30 questions that made gaining of information possible concerning the subject described in the study. The first 20 questions concerned nurses' knowledge about transplantology and further 10 questions concerned individual attitude towards the subject described in the study. The questions used in the questionnaire were closed or half-open. The second part of the questionnaire contained a set of questions characterizing a person taking part in the study, among others the questions concerned age, education, dwelling place or civil status. The survey questionnaire was filled individually by persons taking part in the study, who were informed about the aim of the study and about the fact that the results will be a basis of medical publication.

Basing on the used questionnaire the main study problem was formulated, which was the knowledge of nurses in the field of transplantation medicine as well as detailed problems in the form of following questions:

1. From what persons are the organs taken?
2. In case of what kind of death can a person become a potential donor?

3. What is constructive assent?
4. What is homotransplantations?
5. Who runs the central register of oppositions?
6. What does the tissue compatibility imply?
7. Who gives assent to take organs or tissues in case of death in the effect of an offence?
8. For whom can be the organs taken from a living donor?
9. What viral infections occur most commonly in patients after organ transplantations?
10. What is an absolute contraindication to kidneys transplantation?
11. What is the attitude of the Church to transplantology medicine?

The presented research issues were formulated as hypotheses. The zero hypothesis (H0) meant that there is no connection between variables, the alternative hypothesis (H1) meant that such a connection exists. The variables used in the study included: type of ward, where the nurses were working (orthopedic, surgical, gynecological or anesthetic ward), education (secondary, bachelor's degree, master's degree) and consent to give their organs after death (definitely yes; rather yes, but I am hesitating; definitely not; I have not considered it yet).

The main studies were preceded by a few pilot studies. The pilot study was performed in order to check if questions in the survey questionnaire are clear and understandable for the respondents. The information gathered in the pilot study were used to make corrections to the questions in the survey.

The consent of Bioethical Commission of Medical University in Lublin was obtained to carry out this study.

The statistical function chi-square enabling to calculate the relevance for more than two differences between groups was used to elaborate the results of study. Relevance level assumed in the study is  $p=0,05$ .

## RESULTS

The vast majority of study participants (74%) correctly answered the question from what persons are the organs taken, the highest percentage of correct answers were found in nurses from the surgical ward (92%) and orthopedic ward (84%) (Table 1).

**TABLE 1. From what persons are the organs taken – vs. the ward of nurses employment.**

Variable	Alives		Deceased		Both		N
Orthopedic	0	-	4	16%	21	84%	25
Surgical	0	-	2	8%	23	92%	25
Gynecological	3	12%	10	40%	12	48%	25
Anesthetic	1	4%	6	24%	18	72%	25
Total	4		22		74		100

The most correct answers to the questions: in case of what death can a person become a potential donor were recorded in nurses from surgical ward (80%). No correct answer was recorded among nurses from the gynecological ward (Table 2).

**TABLE 2. In case of what death can a person become a potential donor – vs. the ward of nurses employment.**

Variable	Biological		Clinical		Individual		N
Orthopedic	18	72%	3	12%	4	16%	25
Surgical	5	20%	0	-	20	80%	25
Gynecological	7	28%	18	72%	0	-	25
Anesthetic	6	24%	15	60%	4	16%	25
Total	36		36		28		100

The expression constructive assent was known to 68% of the whole examined population. The highest percentage of nurses understanding this expression was found in those from the anesthetic ward (96%) and surgical ward (88%) (Table 3).

**TABLE 3. Do you know what is constructive assent?**

Variable	YES		NO		I hear about it for the first time		N
Orthopedic	10	40%	11	44%	4	16%	25
Surgical	22	88%	3	12%	0	-	25
Gynecological	12	48%	12	48%	1	4%	25
Anesthetic	24	96%	0	-	1	4%	25
Total	68		26		6		100

In answering the question concerning homotransplantations, the most correct were found in nurses from the anesthetic ward (92%) and surgical ward (84%). The least correct answers were reported in the group of examined nurses from the gynecological ward (44%) (Table 4).

**TABLE 4. Homotransplantation is the tissue or organ transplantation: – vs. the ward of employment.**

Variable	From one place to another in the same patient		From one person to another of the same species		From an individual of one species to another one		N
Orthopedic	7	28%	18	72%	0	-	25
Surgical	4	16%	21	84%	0	-	25
Gynecological	11	44%	14	56%	0	-	25
Anesthetic	1	4%	23	92%	1	4%	25
Total	23		76		1		100

The question: “what does the tissue compatibility imply” was answered correctly by a highest percentage of nurses from the anesthetic ward (76%). The least correct answers were reported in the group of examined nurses from the surgical ward (24%) (Table 5).

In answering the question concerning the problem of who runs the central register of oppositions, very high percentage of correct answers was reported among nurses in anesthetic, orthopedic and surgical ward (respectively 100%, 100% and 96%) (Table 6).

While answering the question: who gives assent to take organs or tissues in case of death in the effect of an offence, nurses from anesthetic ward (84%) and surgical ward (76%) were right most often correct. The least correct

**TABLE 5. What does the tissue compatibility imply – vs. the ward of nurse's employment.**

Variable	Rh factor compatibility		Blood groups compatibility		Different HLA antigens		N
Orthopedic	9	36%	11	44%	5	20%	25
Surgical	18	72%	6	24%	1	4%	25
Gynecological	7	28%	12	48%	6	24%	25
Anesthetic	1	4%	19	76%	5	20%	25
Total	35		48		17		100

**TABLE 6. Who runs the central register of oppositions – vs. the ward of nurse's employment.**

Variable	Minister of Health		Minister of Justice		Organization and Coordination Centre for Transplantation		N
Orthopedic	1	4%	0	-	24	96%	25
Surgical	1	4%	0	-	24	96%	25
Gynecological	7	28%	1	4%	17	68%	25
Anesthetic	0	-	0	-	25	100%	25
Total	9		1		90		100

answers were given by nurses from the orthopedic ward (24%) (Table 7).

**TABLE 7. Who gives assent to take organs or tissues in case of death in the effect of an offence – vs. the ward of nurse's employment.**

Variable	Police		Prosecutor		Family		N
Orthopedic	0	-	6	24%	19	76%	25
Surgical	0	-	19	76%	6	24%	25
Gynecological	1	4%	11	44%	13	52%	25
Anesthetic	0	-	21	84%	4	16%	25
Total	1		57		42		100

In answering the question: for whom can be the organs taken from a living donor, the highest percentage of correct answers were found in nurses from the surgical ward (68%). The least correct answers were reported in the group of examined nurses from the gynecological ward (20%) and anesthetic ward (24%) (Table 8).

**TABLE 8. For whom can be taken the organs from a living donor – vs. the ward of nurse's employment.**

Variable	Recipient of the same tissue compatibility		Recipient indicated by the donor		Relative in a straight line, siblings or a spouse		N
Orthopedic	15	60%	0	-	10	40%	25
Surgical	8	32%	0	-	17	68%	25
Gynecological	19	76%	1	4%	5	20%	25
Anesthetic	18	72%	1	4%	6	24%	25
Total	60		2		38		100

The highest percentage of answers to the question: "what viral infections occur most commonly in patients after organ transplantations" was reported in nurses working in the anesthetic ward (96%) (Tab. 9).

**TABLE 9. Viral infections occurring most commonly in patients after organ transplantations – vs. the ward of nurse's employment.**

Variable	Zoster		CMV		Mononucleosis		N
Orthopedic	1	4%	12	48%	12	48%	25
Surgical	0	-	20	80%	5	20%	25
Gynecological	3	12%	10	40%	12	48%	25
Anesthetic	0	-	24	96%	1	4%	25
Total	4		66		30		100

In answering the question: "what is an absolute contraindication to kidneys transplantation", the correct answers – mental impairment – were found most often in nurses from the surgical ward (88%) and anesthetic ward (84%) (Table 10).

**TABLE 10. What is an absolute contraindication to kidneys transplantation – vs. the ward of employment.**

Variable	Diabetes mellitus		Hypertension		Severe psychiatric disorders		N
Orthopedic	10	40%	14	56%	1	4%	25
Surgical	0	-	3	12%	22	88%	25
Gynecological	20	80%	4	16%	1	4%	25
Anesthetic	2	8%	2	8%	21	84%	25
Total	32		23		45		100

The vast majority of nurses taking part in the study answered correctly the question concerning the attitude of the Church to transplantology medicine (80%) (Table 11).

**TABLE 11. What is the attitude of the Church to transplantology medicine – vs. the ward of nurse's employment.**

Variable	Promoting/ /supporting		Opposing		I am not interested in Church's attitude		N
Orthopedic	24	96%	0	-	1	4%	25
Surgical	15	60%	0	-	10	40%	25
Gynecological	16	64%	2	8%	7	28%	25
Anesthetic	25	100%	0	-	0	-	25
Total	80		2		18		100

Statistical analysis revealed the relevant relationship between the ward where the nurse was working with answer to the questions presented above ( $p < 0,05$ ).

While analyzing the examined group with reference to education, no significant relationship was stated between educational level of nurses and the answers to any of the presented questions. ( $p < 0,05$ )

While analyzing the group of nurses with reference to giving assent to giving their organs after death, the question "what homotransplantation is" was answered correctly in highest percentage by nurses who are definitely against giving their organs after death (100%). The lowest percentage of correct answers was reported in the examined people who decided to donate their organs after death (59%) (Table 12).

**TABLE 12. Homotransplantation is the tissue or organ transplantation – vs. the consent to donate own organs after death.**

Variable	From one place to another in the same patient		From one person to another of the same species		From an individual of one species to another one		N
Definitely yes	14	41%	20	59%	0	-	34
Probably yes, but I hesitate	7	18%	31	79%	1	3%	39
Definitely no	0	-	12	100%	0	-	12
I don't think about it	2	13%	13	87%	0	-	15
Total	23		76		1		100

All examined people hesitating when it comes to giving their organs after death know, who the central register of oppositions runs. High percentage of correct answers to this question was also noted in the group of examined nurses who decided to donate their organs after death (91%). The lowest percentage of correct answers was stated in the group of nurses who definitely opposed to giving their organs after death (67%) (Table 13).

**TABLE 13. Who runs the central register of oppositions – vs. the consent to donate own organs after death.**

Variable	Minister of Health		Minister of Justice		Organization and Coordination Centre for Transplantation		N
Definitely yes	3	9%	0	-	31	91%	34
Probably yes, but I hesitate	0	-	0	-	39	100%	39
Definitely no	4	33%	0	-	8	67%	12
I don't think about it	2	13%	1	7%	12	80%	15
Total	9		1		90		100

The majority of examined nurses determined and rather determined to give their organs after death know the current attitude of the Church concerning the transplantation medicine (respectively 76 and 95%). The least correct answers were reported in the group of examined nurses definitely opposing to giving their organs after death – 58% (Table 14).

**TABLE 14. What is the attitude of the Church to transplantology medicine – vs. the consent to donate the own organs after death.**

Variable	Promoting/supporting		Opposing		I am not interested in Church's attitude		N
Definitely yes	26	76%	2	6%	6	18%	34
Probably yes, but I hesitate	37	95%	0	-	2	5%	39
Definitely no	7	58%	0	-	5	42%	12
I don't think about it	10	67%	0	-	5	33%	15
Total	80		2		18		100

The statistical analysis proved the presence of relevant relationship between the attitude towards giving organs after death and answer to the questions presented above ( $p < 0.05$ ).

In case of other questions, no relationship between the attitude towards giving organs after death and answers to the questions was stated. ( $p < 0,05$ )

## DISCUSSION

Development of transplantology as a field of medicine is connected with many factors, among which one of the major one is knowledge concerning organs grafting. The presence of issues connected with transplantology in media, especially in television and the internet may influence the acceleration of transplantology development and better accessibility of these procedures. Medical professions like physicians and nurses have a particular role in propagating the idea of treating with transplantations. The aim of this study was to examine the level of nurses' knowledge from four wards in the field of transplantology.

The vast majority of nurses, independently from the ward they are working on, answered correctly the questions asked in the survey. These results are consistent with the majority of carried out studies [9-12].

Jarmolinska *et al.* carried out a survey study in which they assessed knowledge and attitude towards organ transplantations in 246 nurses, among which 122 were working in the dialysis stations or transplantological wards and 124 on other wards. It was stated that the level of knowledge in the field of transplantology was higher in nurses from transplantological wards and dialysis stations. Differences between the level of knowledge and sex, educational level, employment period as well as dwelling place were stated as well [13].

Molzahn *et al.* carried out a similar study among physicians. Results of this study also confirmed vast knowledge of medical professions representatives in the field of transplantology [11].

It is an interesting observation that all nurses definitely opposing to giving their organs after death correctly answer the question concerning homotransplantations, whereas the lowest percentage of correct answers was stated in nurses determined to give their organs after death. Similar results cannot be found in the accessible literature sources. This result may prove that no acceptance towards organs grafting does not have to result from lack of knowledge but may be a conscious choice.

Knowledge of the examined nurses concerning attitude of the Church towards transplantology is worth mentioning. The lowest percentage of correct answers was reported in the group of nurses definitely opposing to giving their organs after death. Lack of acceptance towards this method of treatment may result from lack of knowledge towards attitude of the Church towards transplantology. The study proves a big influence of the Catholic Church on attitudes of society, also regarding methods of treatment. It seems that better defined approval for transplantology in Church can influence the decrease of percentage of people opposing to transplantology.

Why analyzing the examined group with reference to education, there were no significant differences stated between the education of nurses and the answers to any of questions

presented above. Reasons of this fact are not definitely clear. One of probable explanations may be a relatively high level of specialist knowledge in representatives of medical professions like nursing, independent from the fact if the examined people had secondary or high school degree. On the other hand, the presence of small but important group of examined people answering the questions from the survey wrongly independently from education, may suggest still too weak propagation of idea of transplantology in media. This conclusion is a unique observation, while in the most accessible publications, the dependence of knowledge in the field of transplantology from the education level was described [10-12, 14].

Development of transplantology is highly dependent from approval of this method of treatment in the society. The examined level of nurses' knowledge in this field appeared to be diverse and depending on many factors, among which one of the most relevant seem to be possible agreement to give organs after death and the kind of ward they are working on. Big influence of education in the field of transplantology in media and exposing of positive attitude of the Catholic Church should be underlined.

## CONCLUSIONS

1. Level of nurses' knowledge in the field of transplantology is relatively high, independently from the ward they are working on.
2. Knowledge in the field of transplantology influences attitude towards giving one's organs after death.
3. Opinion of the Catholic Church highly influences attitude to transplantology.
4. Level of nurses' knowledge in the field of transplantology does not depend on educational level.

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