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Evaluation of knowledge of physicians with specialty in medical clinic and surgical clinic about the process of corneas donation

Avaliação do conhecimento de médicos com especialidade em clínica médica e clínica cirúrgica sobre o processo de doação de córneas

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Abstract

Objective: *This study aims to evaluate the knowledge of physicians trained in Internal medicine and General surgery specialties about cornea donation process clinic, as well as to assess the confidence by these professionals in this process and, if there is uncertainty, the reasons for this.* ***Methods:*** *The research is based on data collected through a questionnaire with ten multiple choice questions about the process of cornea donation, in which two questions are about confidence in the donation process. The sample consists of 60 physicians of University Hospital HU-UFSC selected for convenience and non-probability.* ***Results:*** *Respondents had a mean score of 72.2%. Regarding confidence in the donation of corneas, 41 (68.66%) feel confident in the donation process and 19 (31.33%) did not reveal safety for this condition. From the total of respondents who revealed insecurity in cornea donation process, 13 of these indicated as a contributing factor little information on the subject in college. Some relevant themes on the subject are insufficient and 31.66% of the interviewees proved insecure against a situation involving the corneal donation.* ***Conclusion:*** *This finds suggest the need to improve the level of information transmitted during the undergraduate course about the process of corneal donation in order to raise awareness, improve knowledge and promote confidence when facing a potential donor.*

Keywords: *Corneal transplantation; Medical education; Eye banks; Knowledge; Ophthalmology/education; Surveys and questionnaires*

Resumo

Objetivo: Este trabalho tem como objetivo avaliar o conhecimento de médicos com formação nas especialidades de clínica médica e cirúrgica acerca do processo de doação de córneas, bem como avaliar a segurança por parte desses profissionais neste processo e, se há insegurança, os motivos para tal. **Métodos:** A pesquisa se baseia na coleta de dados por meio de um questionário com dez perguntas de múltipla escolha sobre o processo de doação de córneas, sendo duas perguntas sobre segurança no processo de doação. A amostra consiste em 60 profissionais médicos do Hospital Universitário HU-UFSC selecionados por conveniência e não probabilística. **Resultados:** Os entrevistados obtiveram uma média de acertos de 72,2%. Em relação à segurança no processo de doação de córneas, 41 (68,66%) referem se sentir seguros quanto ao mesmo e 19 (31,33%) revelam não ter segurança para essa condição. Do total de entrevistados que revelaram insegurança no processo de doação de córneas, 13 apontaram como fator contribuinte pouca informação sobre o assunto na faculdade. Alguns temas relevantes a respeito do assunto se mostraram insuficientes e 31,66% dos entrevistados se revelaram inseguros frente a uma situação que envolva doação de córneas. **Conclusão:** Esses achados sugerem a necessidade de melhorar o nível de informação transmitida durante o curso de graduação acerca do processo de doação de córneas, a fim de conscientizar, melhorar o conhecimento e promover segurança frente a um potencial doador.

Descritores: Transplante de córnea; Educação médica; Bancos de olhos; Conhecimento; Oftalmologia/educação; Inquéritos e questionários

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Introduction

Over the last 10 years corneal transplant has grown in Brazil. The numbers ranged from 8,713 in 2005 to 13,036 in 2014 and 6,585 between January and June 2015. Santa Catarina ranks seventh in total number of corneal transplants, with 326 transplants in the first quarter of 2015. Despite the increase in the number of donations, the total number of waiting patients in Brazil was 10,386 in June 2015[1].

Currently, the lack of donations and contraindications are not the only problems for the procedure[2], and the difficulty in identifying potential donors and the difficulty in obtaining the consent of the relatives are important obstacles for the non--implementation of the transplant process. This fact raises the importance of investigating doctors' knowledge regarding the process of corneal transplant. [3]

It is known that doctors in face of a potential donor, despite being in favor of the donation process, in most cases do not approach the relatives of the donor for authorization to remove the corneas. A study on the knowledge and opinion of intensivist physicians at Complexo Hospitalar das Clínicas of Fundação de Apoio à Universidade de São Paulo - FUSP/SP showed that about 80% of physicians never requested corneal removal, mainly due to forgetting to request the donation to the family members and lack of knowledge on how to proceed with a potential donor.[4] In addition, in relation to the families of the donors, the lack of knowledge about donation, literacy and socioeconomic status do not influence the donation process. In this case, the relation and the information provided by the physician or by the team are the central point for the success of the transplant, even in the face of family members with no prior knowledge about donation.[5]

Most deaths from brain death occur due to head trauma, stroke and brain tumor, which characterize medical emergencies. These conditions are often met by physicians with expertise in internal medicine and surgery, revealing the first professional to get in contact with a potential donor.[6] Due to that, physicians and hospital trained teams are the key to success of organ transplant procedures.

Thus, the present study aims to evaluate the knowledge of physicians trained in internal medicine and surgery in relation to the process of cornea donation at Hospital Universitário Professor Polydoro Ernani de São Thiago, in Florianópolis. The goal is also to evaluate the safety of these professionals with respect to cornea donation and, in case of unsafety, the reasons for that.

Methods

The study is transversal, observational, descriptive, and with primary data collection. The population evaluated consists of doctors with expertise in internal medicine and surgery at Hospital Universitário Professor Polydoro Ernani de São Thiago, in Florianópolis, Santa Catarina, in the year of 2014.

The research was based on data collection with an adapted questionnaire and pre-formulated by other authors in an article published in Arquivos Brasileiros de Oftalmologia[2]. The questionnaire (Appendix A) contains information of name, age, gender and education/residence. In addition, it has ten multiple-choice questions about the process of cornea donation. Of these, there are two questions about safety in the donation process, in which one of them may have more than one answer or be answered as an open question. The topics approached were: age limit of the donor, maximum time to remove corneas, conditions for donation, contraindications, and legal aspects of the transplant. The questionnaire was answered directly by the physician, with no intervention or explanation on the subject. Physicians who refused to participate in the study or who did not conclude residence in internal medicine and surgery were excluded. Blank and/or erased questions were considered incorrect.

The physicians were invited to participate in the study in their work environment, and those who accepted were briefly exposed the subject, objectives, and methods of the study. It was also explained the commitment of the researchers to follow the ethical precepts, to keep secrecy and anonymity, and to only disclose data after their consent. Data collection began after approval of the research project within the institution and at the national level, by the authorization of the research under the terms of Resolution CNS 466-12 and by Conselho Nacional de Ética em Pesquisa (CONEP). As the physician agreed, he was requested to sign the Free and Informed Consent.

The sample selected consists of 60 professionals, chosen for convenience and non-probabilistic. The reason for this is the difficulty to calculate the probabilistic sample in this case, since due to the lack of studies in this sense there is no data available regarding the expectations of correct or wrong answer to the questions presented in the questionnaire of this research. Although the superiority of the probabilistic sample is unquestionable, there are situations in which a well-conducted non-probabilistic sample can produce satisfactory results with greater agility and lower cost.[7]

The data derived from the questionnaires was stored in spreadsheets of the program Microsoft Excel® 2010, with the guarantee of anonymity to the participants.

Results

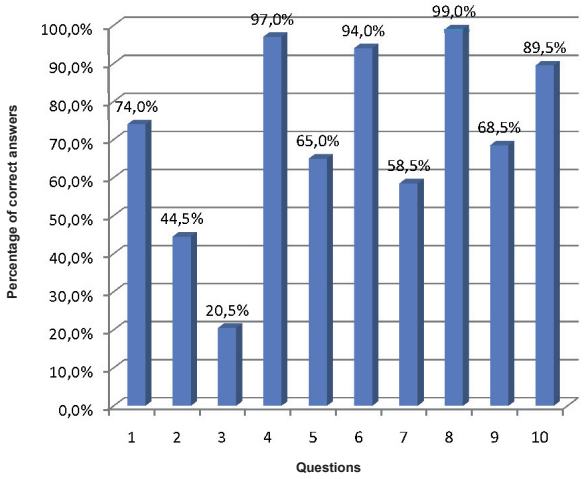
A total of 60 physicians were interviewed, of which 42 (70%) were trained in internal medicine, and 18 (30%) in surgery. The mean age was 40 years (26-62), with 37 (61.66%) males and 23 (38.33%) females. The average accuracy of the questionnaire was 72.2% among the physicians interviewed. The percentage of correct answer for each question is represented in figure 1.

If we consider the total number of interviewees, only 2 questions were identified with a percentage of correct ness of less than 50% (conditions for corneal removal and maximum time for corneal removal), 2 questions with a percentage from 50% to 70% (transplant contraindications and cornea care), and the remaining 6 questions above 70% (age limit of the donor, visually impaired persons who may donate, corpse perceptible deformity, need for the same eye color, family authorization for donation, and possibility to donate only the corneas). Table 1 presents the comparison of correct answer per question among experts in internal medicine and surgery.

Regarding safety in the cornea donation process, 41 interviewees (68.33%) reported feeling safe about the donation process, and (19) 31.66% reported not feeling safe for this condition. Of the latter, 13 (68.5%) reported as contributor factor little information about the subject during college, 4 (21%) had little contact with potential donors, and only 2 (10.5%) showed lack of interest on the subject.

Discussion

There is a relative difference between the number of potential donors and the number of donations carried out. A study at



1) Donor age limit
2) Maximum time to remove the corneas
3) Conditions to remove the corneas
4) Visually impaired can donate
5) Care with the corneas
6) Deformity perceived in the corpse
7) Contraindications of transplant
8) Need for the same eye color
9) Authorization for donation
10) Possibility to donate only the corneas

Figure 1. Average percentage of correct answers to questions of the adapted questionnaire

Table 1

Comparison of the percentage of correct answers between Internal Medicine and Surgery professionals

Questions	Internal Medicine %	Surgery %
1) Donor age limit	76	72
2) Maximum time to remove corneas	45	44
3) Conditions for the cornea removal	24	17
4) Persons with visual impairments can donate	100	94
5) Care with the corneas	52	78
6) Perceptible body deformity of the corpse	88	100
7) Transplant contraindications	45	72
8) Need for the same eye color	98	100
9) Family authorization for the donation	81	56
10) Possibility of donating only corneas	90	89

Hospital Universitário de Curitiba with 64 relatives of potential dead corneas donors interviewed demonstrated that 60 of these (93.75%) had not been approached regarding donation at the time of death, and 33 (53,3%) would have allowed the transplant.(8) Given this, we can estimate that the lack of increased donations may be a reflection of physicians' lack of preparation to identify potential donors, approach the family, and communicate the transplant coordination.(9)

In the study presented here, the overall average of correct answers among physicians was 72.2%. If we analyze the questions separately, only 23% of the interviewees answered the question regarding conditions for cornea removal, followed by 47% correct answers in the question that addresses the maximum time limit for cornea removal. On this regard, corneas and bone tissue can be removed within 6 hours after unrecoverable cardiorespiratory arrest. Unlike donation of organs with a diagnosis of brain death, in which cardiac activity is maintained, the donor with absence of heart beat may have brain death or irrecoverable brain damage associated, but in the latter, still not meeting criteria for brain death. Most of the interviewees stated that corneas could only be removed after diagnosis of brain death, that is, they did not consider corneal removal within 6 hours after cardiorespiratory arrest.(9,10) This shows another advantage of corneas over others organs, and the importance of such knowledge to facilitate the donation process.

In the question addressing infectious causes as one of the factors for contraindication to transplant, only 53% of interviewees answered it correctly. A study carried out at Hospital São Paulo to evaluate the reason for discarding corneas revealed that of the 518 eyeballs with a contraindication to be preserved 224 (43.24%) had an infectious agent in the cause of death of their donors. This is the main variable for transplant contraindication in the study. After removal, 28 (8.83%) corneas were discarded because they presented positive serology for markers that contraindicated tissue use.(11) If we take this fact into account, we have the most important reason to know in order to exclude one potential donor, and analyzing the question only about half had knowledge on that subject.

The age limit of the donor could become another impediment to the transplant process. A prospective study with a double blind controlled clinical trial which investigated the safety and efficacy of older donor tissue compared to young donor tissue demonstrated that if endothelial cell counts are satisfactory and storage is performed correctly, the age of the donor does not interfere with the success of the procedure.(12) Thus, about 77% of the interviewees answered the question about this subject, in which the donor's age did not influence the process, but only the condition of the corneas and their post-removal care.

The question about perceptible deformation in the corpse after eye enucleation is liable to criminal penalties, that is, failure to recompose the corpse and give it a proper appearance to be buried, or failure to deliver or delay its delivery to the family is provided for in Article 19 of Law No. 9,434 of 1997.(13) The rate of correct answer for this question reached 92% of the interviewees, which is very important, since one of the main causes of non-authorization of the family for the donation process is the fear of mutilation of the corpse.(14)

When we address questions about visually impaired people and the need to have the same eye color to be a cornea donor, we have a rate of 98% correct answer for both questions. Despite the small the number of interviewees who did not know about

said conditions, this subject is related simply to the anatomy of the eyeball, that is, a subject addressed in the academic formation during the graduation period. However, when these two questions were applied to medicine students divided into two groups (one who had already studied ophthalmology and other who hadn't), the results showed a greater number of correct answers among those who had already studied the subject for the question about the need to have the same eye color for the transplant. When analyzing the visual impairments in the donation process, there are no statistical differences between the groups.[2]

Regarding family authorization, it was from Law No. 10.211 of 2001 that the authorization of the spouse or relative of legal age, extended to the second degree to decide about the transplant after death, was necessary. It is also provided in article 2 of the same law that the manifestations of will related to the postmortem removal of tissues and organs mentioned in the civil identity card and the national driver's license lose their validity.[15] The question addressing this issue had 73% of correct answers, but about 27% answered that the patient should leave an authorization in life to be a cornea donor. The wrong answers in this question may be related to a law change, because since 2001 the informed consent is in force in Brazil, that is, the decision to donate organs is made by the closest relatives of the potential donor, not by the patient's decision in life, even if expressed in identity documents.[15] In the question about the possibility of donating only corneas, about 90% were aware of this condition. In a study about the intention to donate organs after brain death, of the 136 individuals interviewed, 72% were favorable both to donating their own organs and to donating organs from first-degree relatives.[16] Thus, family authorization is mandatory for organ donation from a cadaver donor.

When we discuss the theme of safety for donation, 68.33% of interviewees felt safe to engage in a cornea donation process. A study carried out with intensivist physicians revealed that 64% felt capable of clearing the doubts of donors involved in the transplant, and 57% of the interviewees had already made a request involving the process of cornea donation.[17] In our study, of the 31,66% physicians interviewed 19 feeling insecure, 13 pointed out that this topic was not discussed in college, 4 had no contact with potential donors, and only 2 had no interest on the subject. Although part of the respondents feel safe regarding the donation process, we can deduce that there is a deficiency on the subject at medical schools. In another study with intensivist physicians, about 80% of interviewees had never participated in a donation process. The reasons for this would be forgetting to address the family and lack of knowledge that grant conditions to deal with a potential donor.[4]

Although there is a high rate of correct answers to some questions, there is a low average of correct answers on key topics about the cornea transplant process. This confirms the need to improve the discussion in medical education to promote knowledge and safety in face of a donation situation. It has been shown that a high positive response (71.5%) can be obtained from the donor family when a trained and motivated group manages the post-mortem cornea donation request. This acceptance was mainly facilitated by the awareness and motivation of the employees of the hospital and the doctor's experience on the subject after the death of the donor.[18]

Conclusion

Although this study has obtained an average of satisfactory correct answers in the questionnaire about the cornea donation process, some relevant topics on the subject proved insufficient, and one third of the interviewees has proved insecure facing a situation involving cornea donation. The main reason of this insecurity would be the lack of information during college. This fact implies the need to discuss the subject in the ophthalmology course during graduation, in order to raise awareness, improve knowledge and give safety when facing a potential donor. This way, we will have the bases to increase the number of cornea transplants.

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Appendix A

Questionnaire

Universidade Federal de Santa Catarina
Health Sciences Center
Graduation Course in Medicine

Study: Evaluation of knowledge of physicians with specialty in medical clinic and surgical clinic about the process of corneas donation.
This questionnaire seeks to obtain information about the epidemiological profile of the interviewee, such as sex, gender, education/residence, as well as to evaluate their knowledge regarding the cornea donation process through 10 multiple choice questions on the subject. Each question contains only one correct answer and, if erased, it will be considered wrong. There are two questions about safety in the donation process, in which one of them may have more than one answer or be answered as an open question.

Number of the interviewee: _____
Name: _____
Name of interviewer: _____

Gender of the interviewee — **Gender** ( )
(1) Male
(2) Female

Age of the interviewee — **Age** ( )

Education/Residence — **Education**

Qual o limite de idade para ser doador de córneas? — **Limit** ( )
(1) 20 years
(2) 40 years
(3) 60 years
(4) There is no limit

What is the maximum time for the corneas to be removed from a donor? — **Time** ( )
(1) 1h
(2) 2h
(3) 6h
(4) 24h
(5) There is no maximum time

What are the conditions under which the corneas can be removed for donation? — **Removal** ( )
(1) In living donor
(2) When the donor is in a coma
(3) They may be removed in case of cardiorespiratory arresta
(4) Only in case of brain death

Can a visually impaired (eg.: myopia, hyperopia, astigmatism) be a donor? — **Impaired** ( )
(1) Yes
(2) No

When a donor dies, what care is needed to keep the corneas proper for transplant? — **Care** ( )
(1) Keep the eyelids closed
(2) Keep the eyelids open and covered with gauze soaked in saline solution
(3) No need for special corneal care

Is there noticeable deformation of the corpse after corneal removal? — **Removal** ( )
(1) Yes
(2) No

Which of these diseases contraindicate cornea donation? (1) Myocardial infarction (2) Diabetes mellitus (3) Arterial hypertension (4) Infectious diseases (5) No disease makes donation impossible	**Contraindication** ( )
Does the donor's eye color need to be the same as the recipient's? (1) Yes (2) No, but they must have similar shades (3) No	**Eye color** ( )
How can I be a cornea donor? (1) Inform my family of my desire, as authorization depends on it? (2) Written authorization of the donor in a document registered at a notary's office or in a driver's license (3) Authorization is not required because removal is imperceptible by the family	**Donor** ( )
Can I be a donor exclusively for corneas, and not other organs and tissues? (1) Yes (2) No, because when you are a donor all tissues and organs that can be transplanted are removed.	**Exclusively** ( )
Do you feel safe in proceeding with a cornea donation process? (1) Yes (2) No	**Procced** ( )
If you are insecure, which of the factors contribute to this? (More than one item can be marked).. (1) Little contact with potential donors (2) Little information on the subject in College (3) Lack of interest by the subject. Other, which?	**Insecuritya** ( )