

ORIGINAL ARTICLE

WEAKNESSES IN THE KNOWLEDGE OF CRITICAL CARE UNIT TEAMS RELATED TO THE PROCESS OF ORGAN AND TISSUE DONATION

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ABSTRACT

Objective: To assess the weaknesses of the teams of the critical care units related to the donation process.

Method: A cross-sectional study conducted with 150 health professionals. Data collection took place between 2017 and 2018 in two public hospitals in Santa Catarina, with the aid of a specific instrument on the stages process of organ and tissue donation. Data was analyzed by absolute and relative frequencies, Kolmogorov-Smirnov and Mann-Whitney tests.

Results: Hit rates: criteria for starting the diagnosis of brain death 137 (91.3%) and clinical signs of brain death 126 (84%). Weaknesses: criteria that prevent the diagnosis of brain death 36 (24%) and sequence of the stages of the donation process 56 (37%). There was a correlation between the length of professional activity in the unit and the criteria that prevent the diagnosis of Death $p=0.039$.

Conclusion: The results can support actions in the face of the weaknesses, impacting on the improvement of the organ and tissue donation and transplantation process.


DESCRIPTORS: Brain Death; Tissue and Organ Procurement; Nursing; Patient Care Team; Intensive Care Units.


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FRAGILIDADES DO CONHECIMENTO DAS EQUIPES DE UNIDADES DE CRÍTICOS RELACIONADAS AO PROCESSO DE DOAÇÃO DE ÓRGÃOS E TECIDOS

RESUMO

Objetivo: avaliar fragilidades das equipes das unidades críticas relacionadas ao processo de doação.

Método: estudo transversal, com 150 profissionais de saúde. Coleta de dados entre 2017 e 2018 em dois hospitais públicos de Santa Catarina, com auxílio de instrumento específico sobre as etapas do processo de doação de órgãos e tecidos. Dados analisados por frequência absoluta e relativa, testes de Kolmogorov-Smirnov e Mann-Whitney.

Resultados: índices de acertos: critérios para iniciar o diagnóstico de morte encefálica 137 (91,3%) e sinais clínicos de morte encefálica 126 (84). Fragilidades: critérios que impedem o diagnóstico de morte encefálica 36 (24%) e sequência das etapas do processo de doação 56 (37%). Houve correlação entre tempo de atuação na unidade com os critérios que impedem o diagnóstico de Morte $p=0,039$.

Conclusão: os resultados podem embasar ações frente às fragilidades, impactando na melhora do processo de doação e transplante de órgãos e tecidos.

DESCRITORES: Morte Encefálica; Obtenção de Tecidos e Órgãos; Enfermagem; Equipe de Assistência ao Paciente; Unidades de Terapia Intensiva.

DEBILIDADES EN EL CONOCIMIENTO DE LOS EQUIPOS DE UNIDADES DE CUIDADOS CRÍTICOS RELACIONADAS CON EL PROCESO DE DONACIÓN DE ÓRGANOS Y TEJIDOS

RESUMEN:

Objetivo: evaluar las debilidades de los equipos de las unidades de cuidados críticos relacionadas con el proceso de donación.

Método: estudio transversal realizado con 150 profesionales de la salud. Los datos se recolectaron entre 2017 y 2018 en dos hospitales públicos de Santa Catarina, con la ayuda de un instrumento específico sobre las etapas del proceso de donación de órganos y tejidos. Los datos se analizaron por frecuencia absoluta y relativa, y mediante pruebas de Kolmogorov-Smirnov y de Mann-Whitney.

Resultados: índices de respuestas correctas: criterios para iniciar el diagnóstico de muerte encefálica, 137 (91,3%), y señales clínicas de muerte encefálica, 126 (84%). Debilidades: criterios que impiden el diagnóstico de muerte encefálica, 36 (24%), y secuencia de las etapas del proceso de donación, 56 (37%). Se registró una correlación entre el tiempo de trabajo en la unidad con los criterios que impiden el diagnóstico de muerte: $p=0,039$.

Conclusión: los resultados pueden servir de base para implementar acciones frente a las debilidades, con un buen efecto sobre la mejora del proceso de donación y trasplante de órganos y tejidos.

DESCRIPTORES: Muerte encefálica; Obtención de tejidos y órganos; Enfermería; Equipo de atención al paciente; Unidades de Cuidados Intensivos.

INTRODUCTION

Despite countless advances in the process of organ and tissue donation for transplants, there are still several difficulties for the health professionals working in this context⁽¹⁻³⁾. The Brazilian legislation defines distinct stages for conducting this process since 1997, updated in 2017^(4,5).

The health teams of the Critical Care Units (CCUs), which correspond to the Intensive Care Unit (ICU) and Emergency Service (ES), are responsible and have the duty to follow current rules recommended for all stages of the process: identification, evaluation and validation of patients with clinical criteria for Brain Death (BD); notification to the family of opening the BD diagnosis; BD diagnosis; maintenance of the potential organ donor; notification of the Potential Organ Donor (POD) and update of the POD conditions information to the State Transplant Centers (STCs); inform the family about the completion of the diagnosis of death, and develop care during the grieving process^(1,4,5).

These teams are responsible for important tasks in the process, such as the identification of the possible donor, BD diagnosis, information on the severity to the family, planning of assistance for hemodynamic changes that arise due to neurological injury, in addition to direct contact with professionals working in the STCs, Organ Procurement Organizations (OPOs) and Intra-hospital Commissions on Transplant (ICTs), reporting on clinical conditions of the POD and progress of the other stages^(1,4-8).

Even in the face of efforts to prepare the teams, there are still weaknesses related to insecurity regarding confirmation of BD, ignorance of the current legislation, difficulty in identifying qualified professionals to conduct the BD diagnosis and inform the family about the stages of this BD diagnosis. In addition, there are difficulties in the management of the POD, due to hemodynamic changes, fear and insecurity in causing more pain to the family when communicating death and discussing organ donation^(6,8-11).

Thus, it is understood that, despite studies already pointing out the weaknesses of the team that works in Critical Care Units in the donation process⁽⁹⁻¹³⁾, it is considered essential to continue research on this topic in our country, since Brazil has a large territorial extension and different realities in this scenario.

Thus, the research information will assist local managers and governmental and non-governmental organizations to promote adjustments in the public policies for the organ and tissue donation process, in addition to providing strategic actions for managers to support, train, and ensure that a safe and effective care is developed in this process.

The impact of the study aims to provide changes in the daily practice of these professionals, since they are the ones who lead fundamental stages of the donation process. Therefore, the relevance of the study is highlighted, since the Brazilian state where the research was developed shows the best results in organ donation in the last eight years⁽¹⁴⁾.

Given this context, the objective of the research was to assess the weaknesses of the health teams in the Critical Patient Units regarding the stages of the organ donation process, considering the legislation in force in the country.

METHOD

A quantitative and cross-sectional study, developed in two reference hospitals in organ donation in the state of Santa Catarina in the period between 2017 and 2018. The choice of the institutions is related to the fact that they present a mean of 65 POD notifications per year, in addition to being large institutions in the state.

The research participants were 243 professionals who worked in the CCUs, units where the PODs are hospitalized. The inclusion criteria were the following: physicians, nurses, and nursing technicians working for more than six months in the CCUs. Exclusion criteria were the following: physicians, nurses, and nursing technicians on vacation, maternity leave, sickness benefit, medical certificate, or who had worked for less than six months in the unit. The sample consisted of 150 professionals, recruited at random in the three work shifts, considering a significance level of 95%.

To start data collection, the researchers introduced themselves to each professional, highlighting the objectives, contributions, and presenting the form to be filled out. Upon acceptance, they proceeded with the signing of the Free and Informed Consent Form (FICF) and, subsequently, with filling out the form individually, in a private place, without interference from any other team member. Data collection started after approval by the Research Ethics Committee.

The data collection form consisted of 13 questions. Five were related to the description of the professional profile and work unit. There were eight stages of the donation process; each one had four response alternatives, of which only one was correct. For the construction of the questions, the authors identified the stages of the donation process in the legislation^(4,5,15).

The form variables related to the professional profile were the following: age; professional qualification; professional training time; performance unit; and length of professional activity in the unit. The variables of the donation process were the following: clinical signs of BD (identification, evaluation and validation of the potential donor); criteria for starting the BD diagnosis; criteria that prevent the BD diagnosis; exams to be performed for the BD diagnosis; sequence of the stages of the organ and tissue donation process; and main care in maintaining the POD.

This form was validated with 20 professionals, 12 (60%) nurses; five (25%) nursing technicians and three (15%) physicians, with 12 (60%) working directly in assisting the POD and the other eight (40%) working in coordinating the organ and tissue donation process.

The six largest hospitals specialized in organ and tissue donation in the state were considered for data collection, hospitals which notify approximately 40 donors per year to the Transplant Center. As for validation, medium-sized hospitals were considered, which notify a mean of 15 PODs per year to the Transplant Center. The definition of this institution was due to its proximity to the researchers.

After adjustments to the form suggested by the professionals, related to language improvement, data collection was carried out.

For the analysis of the categorical variables, the distribution of absolute (n) and relative (%) frequencies was used and the chi-square test was performed. For the quantitative variables, the mean, 95% confidence interval, median, minimum, maximum, standard deviation and standard error were presented. For the inferential analyses, the significance level adopted was 5% and the Statistical Package for the Social Sciences (SPSS) statistical program was employed, using Kolmogorov-Smirnov statistical tests with a p-value > 0.05; the Mann-Whitney's U test for factor with 2 categories and the Kruskal-Wallis test for factor with 3 or more categories.

The research was approved in 2016 by the Research Ethics Committee of the Federal University of Santa Catarina, under opinion No. 1,538,577.

RESULTS

The participants of the research were 150 health professionals: 34 (22.7%) nurses,

37 (24.7%) physicians, and 79 (52.7%) nursing technicians. Of the participants, 97 (64.6%) worked in the Emergency Unit and 52 (34.7%) in the Intensive Care Unit. Of these, 113 (75.3%) participants did not receive any training on the topic of organ donation. Of the professionals who received training, 37 (100%) were nurses, with a mean of 10 hours of training.

Table 1 shows the distribution of the professionals regarding training and workplace. The largest number of participants was from the Emergency Units, totaling 97 (64.7%), of these, 53 (35.3%) were from H1.

Table 1 – Frequency distribution in relation to the work unit and professional training. Florianópolis, SC, Brazil, 2019

Professional Training			Nurse	Physician	Nursing Technician	Total
Work unit	Emergency H1	N	13	17	23	53
		%	24.5	32.1	43.4	100
	Emergency H2	N	12	3	29	44
		%	27.3	6.8	65.9	100
	Emergency/ICU H2	N	0	1	0	1
		%	0	100	0	100
	ICU H1	N	6	5	13	24
		%	25.0	20.8	54.2	100
	ICU H2	N	3	11	14	28
		%	10.7	39.3	50	100
	Total	N	34	37	79	150
		%	22.7	24.7	52.6	100

Source: By the authors based on the collected data.

With regard to the weaknesses, represented by the errors and correct answers regarding the stages of the donation process, there was a higher rate of correct answers in relation to the following variables: 137 (91.3%) criteria to start the BD diagnosis, 126 (84%) clinical signs of BD and 126 (84%) main care in maintaining the POD. Regarding the errors, the following variables stand out: 36 (24%) criteria that prevent the BD diagnosis, and 56 (37%) sequence of the stages of the organ and tissue donation process.

Tables 2 and 3 show the distribution of errors and correct answers by professional category in relation to the two variables with the highest percentage of errors. In the criteria that prevent the BD diagnosis variable (Table 2), there was a higher percentage of errors among nursing technicians: 64 (81%). In the sequence of the organ and tissue donation process variable (Table 3), the highest percentage of errors was among physicians: 27 (73%).

Table 2 – Frequency distribution in relation to the criteria that prevent the diagnosis of Brain Death and professional training. Florianópolis, SC, Brazil, 2019

Check the alternative that you consider to be the correct one regarding the criteria that prevent the opening of the diagnosis of brain death			Wrong	Right	Total
Professional Training	Nursing Technician	n	64	15	79
		%	81	19	100
	Nurse	n	25	9	34
		%	73.5	26.5	100
	Physician	n	25	12	37
		%	67.6	32.4	100
Total	n	114	36	150	
	%	76	24	100	

Source: By the authors based on the collected data.

Table 3 – Frequency distribution regarding the sequence of the organ and tissue donation process and professional training. Florianópolis, SC, Brazil, 2019

Check the alternative that you consider to be the correct one regarding the stages of the organ and tissue donation process			Wrong	Right	Total
Professional Training	Nursing Technician	n	50	29	79
		%	63.3	36.7	100
	Nurse	n	17	17	34
		%	50	50	100
	Physician	n	27	10	37
		%	73	27	100
Total	n	94	56	150	
	%	62.7	37.3	100	

Source: By the authors based on the collected data.

In the correlation between the variables of characteristics of the professionals and the variables of the organ donation process, there was only statistical significance ($p = 0.039$) between the length of professional activity in the unit variable and the criteria that prevent the BD diagnosis variable (Table 4). The mean length of professional activity in the units was over 6 years.

Table 4 – Relation between age, length of training, length of professional activity in the unit and training with the criteria that prevent the diagnosis of Brain Death. Florianópolis, SC, Brazil, 2019

	Mann-Whitney U	Wilcoxon W	Z	p-value
Age	2,406.000	4,002.000	-.879	0.379
Time of professional training (years)	2,473.500	4,069.500	-.512	0.608
Time of performance in the current unit (years)	2,044.500	3,584.500	-2.060	0.039
Training received during the donation process	67.000	187.000	-.814	0.416

Source: By the authors based on the collected data.

*U: Mann-Whitney's U test (for factor with 2 categories)

†W: Mann-Whitney's W non-parametric test (for comparison of two independent samples)

‡Z: Kolmogorov-Smirnov normality test

§p-value: Difference between the variables analyzed

DISCUSSION

The team that acts in the organ donation process must have skill and knowledge, providing safety, effectiveness and viable organs for transplantation^(11,16). The information obtained in the study shows relevant weaknesses of the CCUs' health teams in relation to these stages.

With regard to the training of the participants, there was a greater predominance of nursing technicians. The Federal Nursing Council (*Conselho Federal de Enfermagem, COFEN*) points out that there is a higher proportion of nursing technicians in the CCUs in relation to physicians and nurses, who provide comprehensive care 24 hours a day to critically ill patients hospitalized in such units⁽¹⁷⁻¹⁹⁾.

It is noteworthy that these professionals assume direct assistance to the severe neurocritical patient (the one with possibility and criteria for BD) and in the maintenance of the POD (patient with BD diagnosis completed and notified to the STC)⁽¹⁷⁻¹⁹⁾. However, they are not directly involved in leading any stage of the donation process. They have the role of assistance and care focused on the patient with criteria for initiating the BD diagnosis and to the POD.

It is considered that the weakness of knowledge of the referred professionals about this theme, especially regarding the criteria that prevent the beginning of the BD diagnosis (above 80% of errors), may contribute to delay the beginning of this diagnosis. However, this responsibility is not only of these professionals, but of the entire CCUs' teams. When they do not know these criteria, they daily fail in identifying patients with BD criteria in their care.

Several authors point out that the BD diagnosis is a crucial stage in the organ donation process, with the participation of all the professionals from the CCUs being essential so that it can be expedited and developed within ethical and legal parameters. Only after BD is confirmed can the POD be notified to the STC, and the death informed to the family^(4,5).

Still regarding the criteria that prevent the beginning of the BD diagnosis variable, there was an important percentage of errors among nurses and physicians: above 65%. Those are the professionals who identify, evaluate and validate the POD, coordinate and direct care actions to patients with criteria to start the BD diagnosis^(4,5). Failure to recognize these criteria can compromise the realization of the BD diagnosis and the communication of the clinical picture to the family^(4,5,15).

The weakness of knowledge of these criteria can generate insecurity in the professionals, and distrust by other colleagues and family members about the process. Several studies show that qualified and safe professionals make the donation process more responsive and smoother^(10,19-23). It is necessary to remember that the professionals must have aptitude, knowledge, skill, and agility in the face of all the complications and needs that may arise during assistance to the POD and the family⁽²⁰⁻²³⁾. The absence of these elements constitutes one of the barriers to the donation process^(10,16).

The data of this study corroborate with other studies already carried out with professionals from Critical Care Units regarding this theme^(2,3,7). This indicates that errors among physicians and nurses are tied in the same rate in the two variables with the highest percentage of errors in this study. The knowledge of these professionals about each stage of the donation process allows for synchronization of the information among the team members. In organ donation, time, agility and safety are essential for the maintenance of the POD and for the safety of viable organs for transplantation^(6,15). The weakness of the health team regarding the theme of organ donation can contribute to the loss of PODs due to the late identification of patients with clinical signs of BD^(13,14).

The criteria for initiating the BD protocol have been established by the Federal Council of Medicine (*Conselho Federal de Medicina, CFM*) since 1997⁽¹⁵⁾, and were improved in 2017^(4,5), stating that the diagnosis will be under the exclusive responsibility of the physician. However, other team members who develop direct care for the neurocritical patient can identify clinical signs of BD⁽⁵⁾. The study shows that more than half of the physicians erred in the criteria that prevent the beginning of this diagnosis. It is essential that they know how to identify these criteria^(1,4,5,7). Other studies already indicate the team's weaknesses at this stage, as well as in conducting this diagnosis^(9,24).

Another weakness identified was the knowledge of the correct sequence of the organ and tissue donation process. The percentage of errors among physicians is above 70%. The first stage of this process involves communicating the severity and the beginning of the BD diagnosis to the family^(1,15). It is at this stage that the physician must inform the family about how each phase of the BD protocol will be conducted. In addition, he must offer the possibility of the participation of a trusted medical professional from the family in the diagnosis phases⁽¹⁻³⁾.

When the family is not informed about each stage of the donation process, they become more likely to say no to the donation, as they do not understand the stages and think that the patient is alive even after the BD diagnosis is completed^(25,26).

Considering that the highest error rate was among professionals from the Emergency Service (ES), who have worked for more than six years in this unit, it is necessary to initiate improvement actions primarily with this population. It is noteworthy that the participation of these professionals in the study was extremely relevant due to the fact that, in recent years, the number of POD notifications in this unit has increased⁽¹⁴⁾. Furthermore, the lack of beds in the ICU to care for critically ill patients means that they stay longer in the ES with adapted beds⁽²⁰⁾, bringing ES professionals closer to the donation process. The start of the BD protocol in this unit contributes to streamline the donation process and to increase the number of POD notifications^(1,2,6).

Another weakness highlighted by the study was the high percentage (>75%) of professionals who did not receive training on this theme. Other studies show weaknesses like limited training and difficulty in adapting by the staff of the work units, often caused by work overload⁽²⁷⁾. Educational actions that bring more knowledge on the topic can directly impact the number of POD notifications and effective donors^(2,3,6). The donation process requires knowledge of the team about effective communication, information synchronization, and wisdom to be with the family dealing with the hospitalization process in the CCUs, death and grief^(7,28).

In this perspective, it is understood that continuing education should be seen by the managers as an opportunity to develop best practices in health and improvements in care

management⁽²⁹⁾. With regard to the stages of the donation process, the current legislation determines that, before being inserted in this process, the manager must promote the training of the professionals. The new CFM Resolution determines the need for qualified and skilled physicians to fully develop each stage of this process^(4,5).

The information obtained shows important nuances in relation to the team's knowledge about the donation process in the state of data collection, considering that it is the place where there are better results in donation in the last eight years, results which are comparable with European countries according to metrics from the Brazilian Association of Organ Transplantation⁽¹⁴⁾.

CONCLUSION

The study presents relevant information regarding the weaknesses of the health team in the Critical Care Units regarding the stages of the donation process. As a major weakness, the lack of training related to this theme is evident. Regarding the stages of the donation process, the main weaknesses identified involve errors associated with the criteria that prevent the opening of the BD diagnosis and the sequence of the donation process stages.

It is noteworthy that the study points out relevant information about the organ and tissue donation process, which gives managers the opportunity to develop a work plan focused on the main weaknesses identified.

It is important to emphasize the need to produce more in-depth studies to identify the knowledge of the professionals on the topic, so that external and internal factors that contribute to the development of strategies that improve the care practice can be evaluated.

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