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ORIGINAL ARTICLE

NURSING KNOWLEDGE IN ORGAN AND TISSUE FOR TRANSPLANT DONOR POTENTIAL MAINTENANCE

CONHECIMENTO DO ENFERMEIRO NA MANUTENÇÃO DO POTENCIAL DOADOR DE ÓRGÃOS E TECIDOS PARA TRANSPLANTE

CONOCIMIENTO EN ENFERMERÍA EN MANTENIMIENTO DEL POTENCIAL DONANTE DE ÓRGANOS Y TEJIDOS DE TRASPLANTE

Natália de Lima Vesco[1], Cristiana da Silva Nogueira[2], Ramirene Ferreira Lima[3], Vitória Nascimento de Souza[4], Bruna Michelle Belém Leite Brasil[5], Carla Daniele Mota Rêgo Viana[6]

ABSTRACT

Objective: to evaluate the knowledge of nurses in maintaining the donor potential due to brain death, regarding hypothalamic, hematologic and infectious aspects change. ***Method:*** a descriptive study, with a quantitative approach, with 82 nurses of Intensive Care and Emergency Units at a hospital in Fortaleza/CE. Data collection occurred from October to November, 2014, using a questionnaire. Data were analyzed by SPSS 20.0. ***Results:*** the prevalence of partial knowledge among respondents nurses was observed. ***Conclusion:*** the educational activities and continuous improvement of health professionals is necessary, enabling expansion of both scientific knowledge and qualified practical assistance to the potential donor. ***Descriptors:*** Brain Death; Nursing Care; Tissue Donors.

RESUMO

Objetivo: verificar o conhecimento dos enfermeiros na manutenção do potencial doador em morte encefálica, diante das alterações hipotalâmicas, hematológicas e dos aspectos infecciosos. ***Método:*** estudo descritivo, com abordagem quantitativa, com 82 enfermeiros das Unidades de Terapia Intensiva e de Emergência em um hospital de Fortaleza/CE. A coleta dos dados ocorreu de outubro a novembro de 2014, a partir de questionário. Os dados foram analisados pelo Programa SPSS 20.0. ***Resultados:*** detectou-se prevalência de conhecimento parcial entre os enfermeiros entrevistados. ***Conclusão:*** é necessária a realização de atividades educativas e o aperfeiçoamento contínuo junto aos profissionais de saúde, possibilitando ampliação do conhecimento científico e assistência prática qualificada ao potencial doador. ***Descritores:*** Morte Encefálica; Cuidados de Enfermagem; Doadores de Tecidos.

RESUMEN

Objetivo: evaluar el conocimiento del personal de enfermería en el mantenimiento del potencial donante debido a muerte cerebral, en los cambios hipotalámicos, hematológicas y aspectos infecciosos. ***Método:*** estudio descriptivo, con un enfoque cuantitativo, con 82 enfermeras de unidades de cuidados intensivos y la emergencia en un hospital de Fortaleza / CE. Los datos fueron recolectados entre octubre y noviembre de 2014, a partir de cuestionario. Los datos se analizaron por SPSS 20.0. ***Resultados:*** se detectó prevalencia de conocimiento parcial entre los encuestados. ***Conclusión:*** las actividades educativas y la mejora continua con profesionales de la salud son necesarios, permitiendo la expansión del conocimiento científico y de la asistencia práctica calificado para donante potencial. ***Descriptores:*** Muerte Cerebral; Los Cuidados de Enfermería; Los Donantes de Tejidos.

[1]Nurse, Resident of Transplantation of Organs and Tissues, Multidisciplinary Residency Program, University Hospital Walter Cantídio/HUWC, Federal University of Ceará/UFC. Fortaleza (CE), Brazil. Email: nataliavesco@gmail.com; [2]Nurse. Specialization in progress in Cardiovascular Nursing and Hemodynamics the State University of Ceará/UECE. Fortaleza (CE), Brazil. E-mail: cristianasnogueira@gmail.com; [3]Nurse, Student of the Specialization in Cardiovascular Nursing and Hemodynamics, State University of Ceará/UECE. Fortaleza (CE), Brazil. E-mail: ramis-lima@hotmail.com; [4]Intensive Care Specialist Nurse, Center of Hematology of Ceará/HEMOCE. Fortaleza (CE), Brazil. E-mail: vitoriasouzza@yahoo.com.br; [5]Nurse, Professor in Nursing, School of Education and Culture of Ceará/FAECE. Fortaleza (CE), Brazil. E-mail: brunaufc@hotmail.com; [6]Nurse, Master in Clinical Care, PhD in Education, State University of Ceará/UECE. Fortaleza (CE), Brazil. Email: profdanieleviana@gmail.com

INTRODUCTION

Organ transplantation is a complicated activity, which has innovated the treatment of various pathologies by providing the prolongation of the lives of thousands of people.[1] It is an effective and safe treatment that provides increased healthy life perspective, once it controlls the failure of some tissues and the terminals shortcomings of some organs.[2]

The practice of organ and tissue transplantation in Brazil began in Rio de Janeiro and São Paulo, in the years 1964 and 1965, respectively. This beginning was marked by the first two kidney transplants performed in the country. Currently, the country has one of the largest public transplantation of organs and tissues worldwide,[3] occupying second place in the list of countries with the highest number of transplants performed (second only to the United States of America).[4]

Despite the country's growth in this area, there is a significant discrepancy between the demand for transplants and the number of donations.[5] According to the Brazilian Registry of Transplants, data from September 2014 indicate that there are still 29.021 active patients on the transplant waiting list.[6]

Researches indicate the main obstacles to the realization of the donation: potential donors' (PD) relatives refusal for the donation of organs and tissues for transplantation; failure to identify the PD or inappropriate handling of the same;[7-8] the medical clinic contraindication,[7] motivated, for instance, by bacterial infection uncontrolled in deceased donor,[9] as well as logistical problems.[8]

The success of organ donation depends on a dynamic process, conducted through several interconnected steps. The procedure involves from early detection of PD to the monitoring of post-transplant results.[2] In Brazil, the process of organ capturing and donation is governed and regulated by Law nº 9.434/97 and by Law nº 10.211/01, which establish the guidelines of the National Transplantation of Organs and Tissues Policy, determining the gratuitousness of the donation, as well as the criteria for selection of living or deceased PD.[3] There are three types of deceased PD: donor with recent cardiac arrest, which makes possible the removal of organs and tissues; donor with late cardiac arrest, up to 6 hours, which can be only tissue donor; and the donor diagnosed with Brain Death (BD).[2]

Most people associate death only to the absence of heartbeat or lung ventilatory incursions, but what characterizes us as living is vigorous and incessant activity in the brain.[10] Thus, the total and irreversible failure of brain functions defines the diagnosis of BD, according to Resolution No. 1480/97 of the Federal Council of Medicine, in accordance with criteria established by the scientific community.[11] After confirming this diagnosis, patient care changes. Nursing is focused on organs and tissues, no more on the cerebral protection, aiming at the quality of the donation to recipients.[12]

A survey examined the level of education of intensivists, doctors and nurses, about the BD diagnostic criteria, detecting high prevalence of insufficient knowledge among respondents.[13] The BD causes physiological changes in metabolism, immune and endocrine functions, and in coagulation. If not properly conducted, these situations can result in dysfunction of multiple organs and systems, cardiovascular collapse and asystole,[5] becoming the cause of a not effective transplant.[14]

Among the professionals involved in the transplant process, the nurse has important role in maintaining the PD. Scientific knowledge of the nursing team about the pathophysiological effects and appropriate care is necessary, in order to ensure the best possible functional condition of organs and tissues.[8,15] The performance in the process of organ and tissue donation is properly regulated by resolutions of the Federal Nursing Council nº 200/97 and nº 292/2004, which standardize the work of nurses in the viability of the donor and in the systematization of the care to the receiver.[16]

The primary nursing care to be provided in PD maintenance are related to major physiological changes of BD, as hypotension, hypertension, diabetes insipidus, hyperglycemia, hypothermia, infection and corneal ulcer.[14]

Another survey, conducted in a hospital at Natal, Rio Grande do Norte, also showed that the knowledge of nursing professionals was insufficient for the diagnosis of BD and its maintenance, showing the need for improvement on the subject.[15] This knowledge fragility relates to one of the factors involved in the problem of short supply of organs: the flaws in PD.[8,17] Maintenance process proper treatment of PD in BD is directly associated with the success of transplantation in multiple receivers.[5]

Despite the significant increase in the number of transplants in Brazil, the amount is still insufficient, in relation to the demand of the receivers in the queue. Thus, this study is justified by the fundamental role that the

nurse has in maintaining the PD, in order to preserve organs for donation. Even a small flaw in this assistance can spoil the process of donation and transplantation. The objective of this study is to assess the nurses' knowledge in relation to PD maintenance of organs and tissues for transplantation in BD, regarding hypothalamic, hematologic and infectious aspects changes.

MÉTHOD

Descriptive study, with a quantitative approach, developed in the largest public hospital in Ceará,[18] chosen for this study due to the greater quantity of PD notifications in BD, according to Notification Center, Procurement and Distribution of Organs and Tissues of Ceará. This information was acquired in the Secretary of State for Health.

The data collection was carried out from October to November 2014, with a population composed of all nurses working in the main sectors that assist DPs in BD: Intensive Care Unit (ICU) and Emergency - red axis. The red axis is composed of the Arrest Room, Stabilisation and Observation Room III, which is intended for patients in serious condition, with a critical profile.

In the data collection period, the sectors mentioned counted 100 nurses, 61 ICU and 39 of the Emergency. The sample inclusion criteria included: not being on license and have already assisted patients diagnosed with BD. In the case, it was excluded one licensed and three nurses who had not seen this type of patient.

After presenting this study to nurses, reagrding methodology and objectives, the sample included 82 nurses who agreed to participate in the study by signing the Instrument of Consent.

Data collection was performed in the aforementioned sectors, by applying two instruments. One was an existing questionnaire,[19] adapted to the proposed theme, considering the variables of the study, based on literature. The questionnaire consisted of sociodemographic characterization data, professional identification data and the characterization of the nurses' experience of the PD of the maintenance process in BD.

The second instrument was developed by the researchers, based on the fundamentals recommended by the scientific literature on the subject. It was a multiple choice questionnaire, with questions containing more than one correct option relating to the maintenance of PD on the cardiovascular, pulmonary, endocrine-metabolic, hypothalamic, hematological changes, and care related to infectious aspects. For this research, the data relating to nursing care before hypothalamic, hematologic and infectious aspects changes were analyzed.

This material is part of a broader research project entitled "Knowledge of nurses in the care of potential organ donor", which obtained data were scanned and organized in a spreadsheet in order to provide a summarized view of the data. The data were analyzed by SPSS (StatisticalPackage for Social Sciences) version 20.0, for determination of absolute and relative frequencies, averages and standard deviations.

For a better visualization and interpretation of the results, they were presented in tables where the responses of nurses were classified according to the number of correct answers in each issue, taking into account that some issues contained more than one correct option. Thus, "full settlement" means selected all the correct items; "Partial settlement" means that selected at least one correct item; "Missed" means that selected incorrect items only; and "no response" means that the participant did not know the answer or did not agree with any of the items.

All legal and ethical principles governed by human research were followed, pursued by the National Council of Health nº 466 of 12 December 2012,[20] after approval from the Ethics and Research of the Paulista Association of Unified Renewed Education Committee through the opinion No. 826,503. The hospital requested the project evaluation by its own Research Ethics Committee, with approval by opinion nº 877.387.

RESULTS AND DISCUSSION

Regarding the sociodemographic profile of the 82 interviewed nurses, the predominance was female (81,7%) with mean age of 35 (± 10), the upper limit of 61 and lower limit of 22 years. Most nurses were single (42,7%), without children (62,2%) and Catholicism (78%), as shown in Table 1.

Table 1. Sociodemographic profile of nurses in the Intensive Care and Emergency Units of a reference hospital in Fortaleza-CE, 2014.

Variables	n	%
Sex		
Female	67	81,7
Male	15	18,3
Age		
22-30 years	35	43
31-40 years	25	30
41-50 years	12	15
51-61 years	9	11
Did not answer	1	1
Average: 35 (± 10) Maximum: 61 Mínimum: 22		
Marital status		
Not married	35	42,7
Married/Stable Union	34	41,5
Divorced	12	14,6
Did not answer	1	1,2
You have children		
No	51	62,2
Yes	31	37,8
Average: 0,72 (± 1) Maximum: 3 Minimum: 0		
Religion		
Catholic	64	78
Evangelical	13	15,9
Spiritist	3	3,7
Others	2	2,4

Regarding professional identification data (Table 2), 62,2% had their training in private, while 37,8% in public institution. Of the participants, 54,9% worked in the ICU sector, 42,7% in emergency and 2,4% worked in both sectors, with an average of seven years and nine months for the time of service in nursing, especially between six years and two months (63%).

Of the respondents, 85,4% said they feel prepared to assist patients diagnosed with BD, among which only 15,8% acquired for that type of assistance during the undergraduate course. Most nurses (61%) said that there is no obstacle or difficulty to watch this type of patient (Table 2).

Table 2. Professional characterization and knowledge of nurses on patient care diagnosed with brain death. Fortaleza-CE, 2014.

Variables	N	%
Profissional qualification		
Public	31	37,8
Private	51	62,2
Working Session		
Intensive Care Unit	45	54,9
Emergency	35	42,7
Intensive Care Unit and Emergency	2	2,4
Service Time		
< 6 years	52	63
6-15 years	12	15
16-25 years	10	12
> 25 years	5	6
Did not answer	3	4
Average: 7 years and 9 months (±105,7 months) Maximum: 34 years Minimum: 02 months		
Are you prepared to attend this type of patient?		
Yes	70	85,4
No	11	13,4
Did not answer	1	1,2
Where did you learn the informations for the attendance of theses patients?		
Specific courses	20	24,4
Lectures	18	22
Graduation courses	13	15,8
Daily practice	72	87,8
Others	13	15,8
Is there any difficulty or trammel that makes it hard to attend these patients?		
Yes	32	39,0
No	50	61,0

Low responses frequency about the degree course as a source of knowledge acquisition, only 15,8% (Table 2), denotes a concern about the influence of academic training in care practice.

Similar results were found in another study,[19] in the city of Natal, Rio Grande do Norte, in order to identify the nurse's knowledge about the process of care for the patient victim of head trauma, at the prehospital and hospital stages. Of the 44 nurses interviewed in this study, only eight (10,67%) said that they have acquired knowledge on the subject in college.

On nursing care related to hypothalamic dysfunction, 39% of respondents in this study said that the PD must be heated immediately after confirmation of BD, while 60.9% said that the PD should only be heated when present hypothermia, totaling 58,5% of wrong answers, as observed in Table 3.

On measures to reverse hypothermia in PD, using thermal blankets and heated liquid infusing was the most preferred option among participants, totaling 76,8%, while 20,7% chose to heat the ambient air and gases in the mechanical ventilator, 2,4% opted for gastric and colonic irrigation with heated solutions, and 1,2% opted for the use of bladder and peritoneal irrigation. The result of this inquiry showed 90,2% of partial successes (Table 3).

Among the participants, 90,2% said that the form recommended for monitoring the body temperature of PD in BD is through the axillary temperature, 7,3% said that it should be monitored by rectal or oral cavity, 6% via the pulmonary artery or 4,8% of the esophagus and through the tympanic membrane or nasopharynx, totaling 89% of incorrect answers (table 3).

Table 3. Nurses' answers classification regarding nursing care related to the hypothalamic change of the potential donor. Fortaleza-CE 2014.

	Totally right		Partially right		Wrong		Did not answer	
VARIABLES	n	%	n	%	n	%	n	%
When you have to warm up the PD?	30	36,6	2	2,4	48	58,5	2	2,4
What are the steps to reverse the hypothermia of the PD?	-	-	74	90,2	1	1,2	7	8,5
How is the monitoring of the body temperature of the PD recommended?	8	9,8	-	-	73	89,0	1	1,2

The loss of thermoregulatory function during BD is due to irreversible damage in the hypothalamus region.[21] So, after installation, hypothermia becomes difficult to reverse. Its prevention consists on confirming the diagnosis of ME.[17] Interference of exogenous factors, such as the infusion of large amounts of non-heated liquid, associated with the change of hypothalamic ME, results in very fast temperature decrease.[14,21]

Heat the ambient air and gases in the mechanical ventilator (42-46ºC), using thermal blankets and heated liquid to infuse (43ºC), using gastric and colonic irrigation with heated crystalloid solutions and infuse at 43°C in central vein, are the recommended actions for reversal of hypothermia in the PD in BD. According to the guidelines for maintenance of PD,[17] bladder irrigation and peritoneal are not recommended.

It is recommended to monitor the core temperature through the pulmonary artery, the esophagus, the tympanic membrane and nasopharynx. Temperatures obtained in the rectal, axillary and oral cavities are not recommended.[17]

A reliable temperature monitoring is essential, since hypothermia induces deleterious effects such as cardiac dysfunction, arrhythmias, coagulopathies and diuresis induced by cold – these phenomena that could jeopardize the viability of the structures to be donated.[14-7,21] In order to maintain the viability of these organs, they must be kept at temperatures above 35°C (optimally between 36°C and 37,5°C).[17]

From a study aimed to verify the knowledge of ICU nurses at a hospital in Goiânia on nursing actions to be taken in the management of the potential organ donor, regarding prevention, maintenance and temperature control, was verified that nurses surveyed had sufficient knowledge on the prevention of hypothermia,[22] not corroborating with the results of this study. It is noteworthy that the study cited showed a sample of only ten nurses.

It was asked how the nursing staff can identify signs of coagulation disorders in PD, to which 76,8% answered this is possible through observation of persistent bleeding at sites of vascular puncture; 54,8%, by observing gengivorragias; 46,3% by hematuria; and 19,5%

said it is possible only through laboratory tests, totaling 47,6% partial successes.

Regarding nursing care for infectious aspects of PD, it was asked whether it is still necessary to perform the hygiene of the patient after the diagnosis of BD – 90,2% answered yes, body and oral hygiene should be performed daily; 19,5% said moreover hygienic should only be done with heated water, and 1,2% stated that only oral hygiene must be performed when necessary. This challenge has resulted in 79,3% overall hits (Table 4).

On the need to conduct the exchange of dressings, 100% (Table 4) stated that even after the diagnosis of BD, you should keep the renewal of dressings with aseptic technique. However, when they were asked about the need for prevention of pressure ulcers in those patients, 11% said it is no longer necessary to carry out this prevention, while 72% chose the option you should continue preventing pressure ulcers, totaling 87 8% total hits (table 4).

On the care of the PD corneas most nurses, 67%, chose that should keep the cornea with humidified gauzes, directly applied to the corneas, moistened with 0,9% saline solution or eyewash. Keep the closed eyelids was the option chosen by 47,5% participants. Of these, 30,5% stated that they should keep the cornea humidified with 0,9% saline solution or eyewash, while 4,8% said they use eye ointments for corneal protection is the most recommended. Keep humidified cornea only with eyewash was the option chosen by only 1,2%. According to Table 4, there was a prevalence of partial adjustments, totaling 61%.

Table 4. Nurses answers classification regardingb nursing care related to haematological disorders and infectious aspects of the potential donor. Fortaleza-CE, 2014.

	Totally right		Partially right		Wrong		Did not answer	
Variables	n	%	n	%	n	%	n	%
How can the nursing staff identify signals of coagulation disorders in the PD?	31	37,8	39	47,6	9	11,0	3	3,7
After BD diagnosis, is it still necessary to do the patient's hygiene?	65	79,3	9	11,0	-	-	8	9,8
After BD diagnosis, is it still necessary to change the dressing?	82	100,0	-	-	-	-	-	-
After BD diagnosis, is it still necessary to prevent the patient's ulceration by pressure?	72	87,8	-	-	9	11,0	1	1,2
What are the cautions the nursing staff must have with the PD's corneas?	-	-	50	61,0	32	39,0	-	-

Five days after the trauma is the time required to occur hemorrhagic manifestations, depending on the extent of the injury, occurring coagulation disorders in about 45% of patients with severe brain trauma.[9] Besides the results of laboratory tests, the team nursing must be careful to identify disorders, such as disseminated intravascular coagulation, noting signs of persistent bleeding in vascular puncture sites, gengivorragias and hematuria. This early identification is essential to act promptly and appropriately in the management of PD bodies.[22]

A study conducted in six hospitals in Rio Grande do Norte aimed to describe the laboratory and further evaluation in PD organs and tissues for transplantation. With a sample of 65 PD, 30,8% had thrombocytopenia, which emphasize the importance of the nursing staff to pay attention to signs of coagulation disorders.[23]

Documentary research, performed in a hospital at Sergipe during 2009, sought to know the nursing care provided to the PD through 24 records. It was identified that body hygiene was recorded in 91,67% of the analyzed PDs. Regarding the exchange of central venous access dressing by nurses, no records had such a record.[22]

Nursing plays a fundamental role in preventing infection. Thus, it is necessary to carry the daily body and oral hygiene,[22-4] combined with the exchange of dressings, aseptically; the insertion points of the venous and arterial catheters[22] and decubitus change every two hours, for the prevention of

pressure ulcers and skin integrity maintainance.[22-5]

Although there is no absolute contraindication in organ donation based on positive cultures or clinical diagnosis of infection,[9] PDs should be investigated for the presence of infectious agents, in which antibiotic therapy should be indicated when there is suspicion or evidence of infection. Therefore, the nursing staff should continue maintaining universal precautions against infection.[23] Moreover, the personal hygiene held in PDs in BD is a way to humanize the care giver. Keep it clean and sanitized is a way to treat it with the same respect and dedication given to alive patients. This humanization is performed often, thinking in the family, how it will find the loved one,[26] providing the welfare of the family, making ssure that the patient is being well cared.

This body hygiene can be done as routine[24], if necessary, using heated water.[27]

In a documentary research already mentioned, of the 24 charts analyzed, 87.50% had no records relating to the care of the cornea without the assurance that the specific care were provided, since there are no records of such assistance, which may hinder the corneas for transplantation capture process.[22]

A study carried out in a public hospital in Natal / RN aimed to verify the knowledge of nursing professionals about BD and maintenance of PD. With regard to care in corneal protection, 55 nursing professionals who participated in the study, the majority of respondents (58,2%) opted for the incorrect answer for the protection of the cornea with gauze.[15]

The cornea is a tissue that is associated with currently high rates of donation and transplantation,[6] requiring protection and care for the maintenance of PD. The humidification of this tissue with saline solution 0,9%[14,24] or with the use of eyewash[28], is essential to prevent desiccation and consequent injury.[15] Moistened gauze should be used on closed eyelids,[14,28] avoiding direct contact of gauze with the cornea. Furthermore, protection of this tissue against keratitis is through the use of eye ointments, according prescription.[15,24-8]

The topic discussed highlights the importance of scientific and practical knowledge of nurses in care related to the potential donor. Through care and simple measures, it is possible to minimize the effects of hypothalamus and hematologic changes in the BD patient, and prevent infection, which contributes to the feasibility and to the quality of organs and tissues for transplantation.

FINAL REMARKS

During the development of the research, some limitations were present. The unavailability of the participants to answer the questionnaires emerged as one of the main barriers in this process, as they were addressed during their working hours. Thus, it required the researchers a greater number of visits to the institution under study. However, even with these limitations, the study became possible, and the research findings are of great importance for nursing care practice.

Regarding the classification of the responses of nurses, it was identified a high ratio lack in relation to monitoring the body temperature and the time to start warming up the patient diagnosed with BD. On the other hand, on the need for hygiene, dressing changes and prevention of pressure ulcers, the prevalence of correct responses showed a good level of knowledge among nurses, which is also related to the prevention of infection. About care corneas, a partial knowledge was identified, as in other questions.

In general, according to this classification, a prevalence of partial knowledge among nurses interviewed on the subject in question is detected. It is noteworthy that the majority of respondents claimed to feel prepared to watch this type of patient. However, it is clear that this claim has not been proven in the search result.

Care in PD maintenance need to be aware of all health professionals, particularly nursing staff, as nurses take responsibility for direct care of these patients. The nurse should be prepared to take appropriate measures, along with the team, because the main physiological changes of BD involve major organs and systems, a fact that challenges professionals in maintaining the viability of organs that may be available for transplant.

As previously seen, hypothalamic and hematologic change in BD may result in deleterious effects such as cardiac dysfunction and coagulopathy, phenomena that can affect the quality of the structures to be donated. On measures to prevent infection, besides humanization the team offers through such care, these actions will prevent many complications, especially to the corneas, which make up the main structure associated with high rates of transplant.

Thus, there is the need for educational activities and continuous improvement with

health professionals on this subject. Moreover, it is essential to approach this subject in undergraduate curricula of nursing courses, enabling expansion of scientific knowledge. These measures would contribute to a more qualified practical assistance, resulting in more uniform professional conduct. Thus, the families of the PDs could carry, with greater security, the donation of the organs of their loved one to potential recipients on the waiting list for a transplant, in the hope of resuming their quality of life.

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Corresponding Address

Natália de Lima Vesco
Rua Joaquim dos Anjos, 1501, Casa A
Planalto Ayrton Senna
CEP 60760530 – Fortaleza (CE), Brazil