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CHARACTERIZATION OF THE POTENTIAL DONORS AND STRUCTURE OF HOSPITAL UNITS THAT DEVELOPS THE TRANSPLANTATIONS[1]

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ABSTRACT
It was aimed to characterizing potential donors and describing the structure of the units donated of organs and tissues for transplantations. This is a descriptive and quantitative study carried in six hospitals units. The probability consisted of 65 potential donors and the data collection occurred between August 2010 and February 2011. The majority were male (50.8%), with up to 45 years of age (53.8%), whose main cause of Encephalic Death (ED) was vascular encephalic accident (53.9%) and86.2% were assisted in public hospital. Regarding the structure, the physical plant presented as highest inadequacy the climatization (80.5%) and physical space (40.0%). In material resources, it was found the absence mobile radiology, glucometer and hospital bed, both of with the same percentage (32.3%).In the human resources, the smaller quantity was nursing technicians (53.8%) and in the organizational structure there was a lack of care protocols (86.2%). It was concluded that the structure of services where develops the process of transplantation it was find inadequate. For both, becomes necessary to implement of complementary actions in order to improving the structure of the hospitals to better meet patients in ED.

Keywords: Nursing. Organ Transplantation. Structure of Services. Tissue and Organ Procurement.

INTRODUCTION

For a long time the concept of death was associated with the final stop of cardiac and respiratory function; however, the technological development, the evolution of ventilator techniques and clinical and hemodynamic support developed in Intensive Care Units (ICU) has become possible to maintain artificial life of patients with severe neurological injuries[1].

The care with the patient that bring forward clinical criteria of Encephalic Death (ED), i.e., the Potential Donor (PD) of organs and tissues must be performed in the ICU, it requires constant monitoring by trained professionals in the management of critically ill patients[2].

Countries with better hospital facilities to meet the PD stand out with higher donation rates. European countries such as Spain have donation rates of 34,8 per million population (pmp). In Brazil, despite the considerable increase in the number of donations and transplants, which in 2013 got 13,2 donors pmp, still coexist limiting factors such as lack of appropriate infrastructure and skilled human resources to perform the steps of the donation process satisfaction and thus increase the number and quality of transplants offered the population[3,4].

It is added also that the logistical difficulties of health services, such as, lack of ICU beds without condition laboratories to perform the necessary serology, lack of equipment for the diagnosis of ED and

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transport impossibility to remove the PD or distribution organs, are considered also impediments to the effectiveness of the process of organ and tissue donation[5,6].

Thus, the success of the effectiveness of the donation of organs and tissues depends on the assistance provided to the PD and his family, which involves infrastructure where the PD is, and especially the cooperation of the multidisciplinary team. Although the attribution to doctors and nurses the largest share of responsibility and authority, it is essential to the participation of other professionals who may act in any form or systematic: physical therapist, nutritionist, pharmacist, psychologist, social worker and other[7].

It stands out in this multidisciplinary team, nurses, being the professional that works in all phases of the donation-transplant process, with assistance functions, administrative, teaching, research and consultancy. Work in the Centers of Notification, Procurement and Organ Donation (CNPOD), the transplantation teams, the Organ Procurement Transplant Services (OPTS) and Hospital Commission on Organ Donation and Tissues Transplantation (HCODTT) or even ICUs, which provides direct assistance to the PD and their families[8].

Knowing the importance of structural adequacy of inpatient units offered by health services to developed countries, since proper treatment is directly related to higher donation and transplantation effectiveness index, elaborated the following research question: What the structure of hospitals characteristics which develops the process of organ and tissue donation for transplantation?

Given the significant levels of population in need of transplantation at the expense of the number of donation, it is considered necessary to identify the structure of health services in relation to maintenance of PDs of organs and tissues. Whereas, the inadequacy of the premises where the process of donation and transplantation of organs and tissues can contribute directly to the effectiveness of the donation and transplantation process. Thus, this study aimed to characterize the potential donors of organs and tissues and describe the structure that develops the process of organ and tissue donation for transplantation.

METHODOLOGY

This is a descriptive study with a quantitative approach, carried out in six hospitals of Natal/RN, of which three were from public and three private, all accredited by the National Transplant System (NTS) for removal and transplantation of organs and tissues .

The random sample without replacement was made up of 65 PDs of organs and tissues for transplantation, calculated from the average of the developed countries assisted in hospitals in Natal/RN, during the years 2005-2009.

The data collection process took place between August 2010 and February 2011. Data were collected daily, using a structured script non-participant observation, checklist type, composed of the following parts: 1) characterization of PD (age, sex, education, race, religion, marital status, occupation, family income, origin and declaration was donor or not) and 2) structure of the hospitals where does the process of organ and tissue donation: physical plant, material, human and organizational structure. The variables that comprise part 2 of the instrument[2,9] are described in Table 1.

The evaluation of quality in health should from parameters or attributes that will serve as a reference for quality definition and the construction of instruments to be used in the evaluation. Most studies in this area has been strongly based on the conceptual framework, which has two main parts: the first supports the Systems Theory and observes the relationship between the components of the structure, process and outcome; and the second is based on dimensions or attributes that define the quality, known as the "seven pillars of quality", which are: efficacy, effectiveness, efficiency, optimization, acceptability, legitimacy and equity[10].

When starting the search, it was requested the consent of the spouse or relative to the second degree of PD to participate in the study

by signing the Informed Consent and Informed. It proceeded to the analysis of data using descriptive statistics, presenting them in tables with their relative and absolute frequencies.

The study was approved by the Research Ethics Committee under the General Certificate for Ethics Assessment (GCEA) No 007.0.294.000-10, according to the norms of Resolution 196/96, which was reformulated by Resolution 466/2012 of the National Council Health, as regards the ethical aspects observed when conducting research involving human subjects.

Table 1. Parameters used for evaluation of the structure. Natal/RN, 2014.

Structure	Parameters[2,9]
Physical Plant	-The bed had: 2 points of oxygen, 2 of compressed air and 1 vacuum; > eight taken; physical space ≥ the 9 m² and 2 m between beds; viewing conditions (angle of professionals with regard to inpatient beds of PDs); lighting and climate control (air conditioning). The hospital had: scanner; equipment for evidentiary examination of BD; clinical and microbiological analysis laboratory and blood bank.
Material resources	- The bed had: pulmonary mechanical blower (01); reducing valves of oxygen (01) and compressed air (01); oxygen (01), vacuum cleaner (01) and connections; ambulatory bag (01); multi-parameter monitor (01); infusion pumps (04); hospital bed (01) and bedding. The unit had: emergency car (01); equipment for measurement of capillary glycemia (01); electrocardiograph (01) and mobile Radiology (01).
Human resources	-The unit had: emergency physician and nurse assistance (1 for each 10 beds); Nursing technician (1 for each 2 beds); neurologist or neurosurgeon; doctor who specializes in the realization of the graphic or image examination for diagnosing ED; nurse or doctor of OPTS or HCODTT; physical therapist; nutritionist; social worker and employee for the cleaning service.
Organizational structure	- Realization of the records (evolution of the clinical state, complications and care); standards manual and technical routines; whether or not a permanent education program at the hospital.

RESULTSAND DISCUSSION

With the aim of better understanding the study, we present the results in two stages: sociodemographic profile of PDs and structure that develops the process of organ and tissue donation.

Characterization of the potential donors of organs and tissues for transplant

In characterizing the PDs, it was observed that the 65, most were male (33; 50.8%), aged up to 45 (35; 53.8%), average age of 42.3 years old, with a minimum of 5 and maximum of 73 years old(± 17.32 years) and was diagnosed as the main cause of BD the Vascular Encephalic Accident (VEA) (35; 53.9%). Among the PDs, 42 (64.6%) were hospitalized in ICU beds and 56 were assisted in a public hospital (86.2%), as shown in Table 1.

Regarding the similarity between the percentage of men and women in the present study is justified by changes in the profile of developed countries, where external causes (accidents and violence), which were predominantly male, gave way to the VEA[4,11].

Regarding age, there was similarity with the scientific literature, when he shows that most of these individuals are young adults of working age. However, a study conducted in Santa Catarina, whose predominant age group of developed countries was between 41 and 60, points to changes in this scenario, because it showed that the age of PDs increased, this fact results of the Brazilian population aging process and the relaxation clinical inclusion criteria from marginal donors, ie donors who are outside the optimal criteria for donating[8,11-13].

Table 1. Characterization of the potential donors of organs and tissues. Natal/RN, Brazil, 2014.

Characterization of the potential donor		Total	
		n	%
Gender	Male	33	50.8
	Female	32	49.2
Age (in years)	Until 45	35	53.8
	Over 45	30	46.2
Cause of brain death	Cerebrovascular Accident	35	53.9
	Traumatic Brain Injury	26	40.0
	Anoxic encephalopathy	2	1.5
	Brain tumor	2	1.5
Location of hospitalization	Intensive Care Unit	42	64.6
	Emergency unit	23	35.4
Hospital profile	Public	56	86.2
	Private	9	13.8

In this research, it was observed that 35.4% of the developed countries received assistance in emergency departments; however, the ICU is the preferred location for patients with severe condition who receive the appropriate care and attention to their health. This fact is associated with reduced number of ICU beds available in the state of Rio Grande do Norte. It is known that intensive care PDs become essential because they contribute to improving the quality of the organ to be transplanted[14].

In the Brazilian hospital setting, it appears that the notorious crisis generated by the lack of ICU beds causes the seriously ill patients remain in the emergency department, indicating that these units have lost the characteristic of initial care and represent currently in overcrowded units of patients who remain for days and even weeks in hospital stretchers waiting for a place in the ward or ICU[15].

Structure where the process of organ donation

Table 2 presents data on the physical plant of hospitals where it develops the donation process. It was observed that five items were present in 100.0% of admissions. Other items exist in the majority of hospital admissions, as device for the diagnosis of ED (98.5%), viewing conditions PD (80.0%), and taken necessary to connect the electrical equipment (63.1%) and space physical (60.0%). However, the cooling proper was a lesser percentage (20.0%).

Table2. Physical plant of hospital units where the process of organ donation. Natal/RN, Brazil, 2014.

PHYSICAL PLANT	Public service		Private service		TOTAL	
	n	%	N	%	n	%
Supply of gases and vacuum	9	13.8	56	86.2	65	100.0
Imaging scans to detect the cause of ED (tomography)	9	13.8	56	86.2	65	100.0
Blood Bank	9	13.8	56	86.2	65	100.0
Laboratory	9	13.8	56	86.2	65	100.0
Lighting system	9	13.8	56	86.2	65	100.0
Apparatus for diagnosis of ED (Electroencephalograph)	9	13.8	55	84.6	64	98.5
Viewing conditions for professionals*	9	13.8	43	66.2	52	80.0
Taking	9	13.8	32	49.2	41	63.1
Physical space**	9	13.8	30	46.2	39	60.0
Climatization***	9	13.8	4	6.2	13	20.0

*Relates to the angle of view of professionals with regard to inpatient beds of PDs. **Refers to the adequacy of the physical space of the inpatient sector to receive the PD. ***Regarding the presence of air conditioning or not in the hospitalization.

It is noteworthy that the lack of these accessories can generate commitment to quality of care in PD, since the donation and transplantation of organs and tissues depend on factors related to the physical, technological and enough qualified professionals to meet the needs of PDs and their families[15].

In addition, patients in critical condition should be located so that the display directly or indirectly, possible all the time, in order to enable monitoring and under routine circumstances emergency. Add the need of electronic equipment for monitoring and therapy, as well as the availability of outlets to connect these devices[2,16]. Thus, the physical area to meet the PD should be sufficient to hold all the equipment and allow free movement of the care team and the climate must remain stable with temperature, which should be above 35°C and the ideal is between 36°C and 37°C. Furthermore, to avoid excessive air displacement and maintain the relative humidity of 100%, in order to maintain normothermia PD[17].

Table 3 presents the data for the material resources of the hospitals where it developed the donation process. It was found that five items were found in 100% of hospitalizations. However, according to the specific norms for proper operation of the ICU[2].

Among the material resources, the largest deficit was observed for the presence of hospital bed, glucometer and mobile radiology; both supplied the need for developed countries only 44 (67,7%). However, all developed countries had at their disposal cleaner and connections, car emergency, thermal blanket, oxygen and connections, mechanical ventilator and reducing valves.

Table3. Material resources of the inpatient units of potential donors of organs and tissues. Natal/RN, Brazil, 2014.

MATERIAL RESOURCES	Public service		Private service		TOTAL	
	n	%	N	%	n	%
Vacuum cleaner and connections	9	13.8	56	86.2	65	100.0
Emergency car	9	13.8	56	86.2	65	100.0
Thermal blanket	9	13.8	56	86.2	65	100.0
Oxygen and connections	9	13.8	56	86.2	65	100.0
Pulmonary mechanical ventilator	9	13.8	56	86.2	65	100.0
Reducing valves	9	13.8	55	84.6	65	100.0
Multi-parameter monitor	9	13.8	45	69.2	64	98.5
Bed garments	9	13.8	40	61.5	54	83.1
Infusion bombs	9	13.8	36	55.4	49	75.4
Electrocardiograph	9	13.8	36	55.4	45	69.2
Resuscitation apparatus	9	13.8	35	53.8	45	69.2
Hospital bed	9	13.8	35	53.8	44	67.7
Glucometer	9	13.8	35	53.8	44	67.7
Mobile Radiology	0	0.0	4	6.2	44	67.7

It is known that such resources are essential for the continuous monitoring, comfort, transportation and assistance to the PD. Thus, it is recommended that in each unit has a manual resuscitator and infusion pumps. Furthermore, it should be appreciate the safety, comfort and transport PD, keeping the hygiene of the bed, cleaned and heated bedding, and hospital bed enabling the adjustment position, side rails and rollers, so as to lift the head for changing positions. It is necessary also that it has the provision for analyzing the electrocardiograph heart disease, arrhythmias, in particular, very common in these patients, and also the glucose meter to measure blood glucose levels[2,16].

As a result of the ME, there is a loss of regulation of body temperature due to destruction of the hypothalamus and midbrain structures. Therefore, the typical extreme vasodilation syndrome associated with shaking inability to produce heat in addition to the infusion of large volumes of fluids do not heated, resulting in rapid decrease in body temperature. Hypothermia induces many deleterious effects such as cardiac dysfunction, arrhythmias, coagulopathy, deviation of the hemoglobin dissociation curve to the left and diuresis induced by cold. Care on the hypothermia is to maintain the temperature of the donor above 35°C through the use of blankets, heating element heated and infusion liquids. Often in practice, there is the use of targeted light sources to the thorax or abdomen PD[18].

In Table 4, we show the information related to human resources that made up the hospitals where it developed the donation process, and it

was found that the lowest quantity of professionals related to nurses and doctors laborers, both with 44 (67.7%), followed by technical lead (43; 66.2%) and nursing technicians (30; 46.2%). Thus, according to the criteria of the Resolution no. 7, 2010, the amount of assistance and technical nurses in nursing is inappropriate, since it comes to critically ill patients[2].

It emphasizes the importance of skilled professionals to ensuring appropriate assistance to PD, contributing to the effectiveness of the process of organ and tissue donation. Under current regulation, in assisting the PD must have at least: attending physicians, nurses, physiotherapists and nursing technicians, who must be fully available for patient care in the ICU while on duty, in contrast to the results of this study, which shows the lack mainly of nursing technicians that in less than half met the ideal quantitative[2].

Table 4. Human resources of the inpatient units of potential donors of organs and tissues. Natal/RN, Brazil, 2014.

HUMAN RESOURCES	Public service		Private service		TOTAL	
	n	%	N	%	n	%
Social assistant	9	13.8	56	86.2	65	100.0
Nurse / Physician of SPOT	9	13.8	56	86.2	65	100.0
Nursing coordinator	9	13.8	56	86.2	65	100.0
Emergency physician	9	13.8	56	86.2	65	100.0
Neurologist/Neurosurgeon	9	13.8	56	86.2	65	100.0
Neurosonologist / Electroencephalographist	9	13.8	56	86.2	65	100.0
Physiotherapist	4	6.2	48	73.8	52	80.0
Nutritionist	5	7.7	45	69.2	49	75.4
Nurse assistance	3	4.6	41	63.1	44	67.7
Doctor diarist	0	0.0	44	67.7	44	67.7
Technical Manager	9	13.8	34	52.3	43	66.2
Nursing technician	2	3.1	28	43.1	30	46.2

Still on the structural part of the hospital units, organizational structures observed the existence of continuing education programs (62; 95.4%), aimed at the administration of courses and lectures aimed at training and updating of professionals; records on changes in the clinical status, provided complications and care (46; 70.8%). Although most hospitals have available continuing education program in a few services (9; 13.8%) had records of institutional rules and routines or administrative assistance and protocols performed together. However, there were no hospital specific protocols for the patient in ED.

It is known that the absence of records interferes with communication between members of the multidisciplinary team, which provide subsidies on the assistance provided, ensuring communication and continuity of care within 24 hours, which is essential for a complete understanding of the patient. They also provide legal support and therefore security, since they are the only document that reports all actions with the PD[19].

A study aimed to understand the perceptions of the nursing team's action in patient care in ED, performed in an ICU located in southern Brazil, showed that one of the difficulties in patient care in ED was the logistic administrative structure institution in the organ donation process. The authors highlighted the delay in the completion of ED confirmation tests and disability in human and material resources[20].

Authors[20] published in a survey interviews with nursing professionals who work in a hospital in southern Brazil. The subjects reported the implication of inadequacy in the structure, human resources and health service

materials in the organ donation process. One of the respondents reported that one of the great difficulties in care is the speed in performing the ED test chart on weekends and holidays; since there is no active hemodynamic department in the hospital, and the scrutiny done in clinics. Shipping and mobilization of PD predisposes to hypotension and cardiac arrest due to intrinsic hemodynamic instability the ED situation and is added to this, the deficiency prepared teams.

Thus, it is known that it is not always possible to provide the best care, but the framework for assistance to the PD should involve sufficient staff and trained to provide adequate and effective assistance. In addition, the physical plant must include specific equipment to meet the individual in ED and the administrative organization should be concerned with maintaining skilled care standards by offering continuing education programs.

CONCLUSION

The sociodemographic characteristics of the developed countries, it was established that the majority were male, framed aged 45 years old, had primary cause of ED stroke and much was admitted to beds public hospital ICUs.

The structure of services where develops the process of organ and tissue donation found to be inadequate. For, in relation to the physical plant, five items were not present, namely: apparatus for diagnosis of ED, viewing conditions of the PD, taken to connect the equipment, physical space and air conditioning.

Regarding the material resources, it was found that the following items were not available in all hospitalizations: multiparameter monitor, bedding, infusion pumps, electrocardiograph, manual resuscitator, hospital bed, glucometer, and mobile radiology.

Regarding human resources, there was the lowest quantity of nurses, doctors and day laborers; there was emphasis on the quantitative low nurses. On the organizational structure, it was noted that none of specific protocols exist hospitals for the care and maintenance of the patient in ED.

With the results of this research, it was evaluated as fact concern the structure of hospitals where hospitalized PDs, in which were observed inadequacies in physical, material, human and organizational structure. This reality is responsible for generating involvement in the actions of the process of organ and tissue donation, in particular the evaluation and maintenance of PD, in which the examinations and care to the care is not properly done.

Thus, it is necessary implementing additional actions to improve the structure of hospitals to provide better patient care in ED, such as: implementation of evaluation and continuous training programs aimed at professionals working in the donation area and transplantation of organs and tissues; use of protocols that provide adequate and consistent instructions on how to perform the care of the PD; and structure the hospitals with material and technological resources needed for maintenance and diagnosis of ED of PDs.

CARACTERIZAÇÃO DOS POTENCIAIS DOADORESE ESTRUTURA DE UNIDADES HOSPITALARES QUE DESENVOLVEM O TRANSPLANTE

RESUMO

Objetivou-se caracterizar os potenciais doadores e descrever a estrutura onde se desenvolve o processo de doação de órgãos e tecidos para transplantes. Estudo descritivo e quantitativo realizado em seis unidades hospitalares. A amostra compôs-se por 65 potenciais doadores e a coleta de dados ocorreu entre agosto de 2010 e fevereiro de 2011. A maioria era do sexo masculino (50,8%), com até 45 anos de idade (53,8%), cuja principal causa de Morte Encefálica (ME) foi acidente vascular encefálico (53,9%) e 86,2% foram assistidos em hospital público. Quanto à estrutura, a planta física apresentou como maior inadequação a climatização (80,0%) e espaço físico (40,0%). Nos recursos materiais, verificou-se a ausência de radiologia móvel, glicosímetro e cama hospitalar, ambos com o mesmo percentual (32,3%). Nos recursos humanos, o menor quantitativo era de técnicos em enfermagem (53,8%) e na estrutura organizacional observou-se a falta de protocolos assistenciais (86,2%). Concluiu-se que a estrutura dos serviços onde se desenvolve o processo de transplante encontrou-se

inadequada. Para tanto, faz-se necessário a implementação de ações complementares a fim de melhorar a estrutura dos hospitais para atender melhor aos pacientes em ME.

Palavras-chave: Enfermagem. Transplante de Órgãos.Estrutura dos Serviços. Obtenção de Tecidos e Órgãos.

CARACTERÍSTICAS DE POTENCIALES DONANTES Y ESTRUCTURA DE UNIDADES HOSPITALARIASQUE DESARROLLAN EL TRASPLANTE

RESUMEN

Este estudio tuvo como objetivo caracterizar los posibles donantes y describir la estructura donde se desarrolla el proceso de donación de órganos y tejidos para trasplantes. Estudio descriptivo y cuantitativo realizado en seis unidades hospitalarias. La muestra estuvo conformada por 65 posibles donantes y la recolección de datos ocurrió entre agosto de 2010 y febrero de 2011. La mayoría era del sexo masculino (50,8%), con hasta 45 años de edad (53,8%), cuya causa principal de Muerte Encefálica (ME) fue accidente vascular cerebral (53,9%) y 86,2% recibió asistencia en un hospital público. En cuanto a la estructura, la planta física presentó la climatización como mayor inadecuación (80,5%) y espacio físico (40,0%). En los recursos materiales, se averiguó la ausencia de radiología móvil, glucómetro y cama de hospital, ambos con el mismo porcentaje (32,3%). En los recursos humanos, la cantidad más baja ha sido de técnicos de enfermería (53,8%) y en la estructura organizativa se observó una falta de protocolos de atención (86,2%). Se concluyó que la estructura de los servicios en la que se desarrolla el proceso de trasplante se encontró inadecuada. Por tanto, es necesaria la implementación de acciones complementarias con el objetivo de mejorar la estructura de los hospitales para atender mejor a los pacientes en ME.

Palabras clave: Enfermería. Transplante de Órganos. Estructura de los Servicios. Obtencíon de Tejidos y Órganos.

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