Original Article

http://dx.doi.org/10.1590/0104-07072014002350013

FACILITATING ASPECTS AND BARRIERS IN THE EFFECTIVENESS OF DONATION OF ORGANS AND TISSUES[1]

Izaura Luzia Silvério Freire[2], Quinídia Lúcia Duarte de Almeida Quithé de Vasconcelos[3], Gabriela de Sousa Martins Melo[4], Gilson de Vasconcelos Torres[5], Ednaldo Cavalcante de Araújo[6], Francisco Arnoldo Nunes de Miranda[7]

[1] Extract from thesis - Factors associated with the effectiveness of donation of organs and tissues for transplantation. Postgraduate Program in Nursing, *Universidade Federal do Rio Grande do Norte* (UFRN), 2013.

[2] Doctoral student, Postgraduate Program in Nursing, UFRN. Professor of the School of Nursing of the UFRN. Natal, Rio Grande do Norte, Brazil. E-mail: izaurafreire@hotmail.com

[3] Master's degree student, Postgraduate Program in Nursing, UFRN. Natal, Rio Grande do Norte, Brazil. Email: quinidia@hotmail.com

[4] Doctoral student, Postgraduate Program in Nursing, UFRN. Natal, Rio Grande do Norte, Brazil. E-mail: gabrielasmm@hotmail.com

[5] Ph.D. in Nursing. Full Professor of the Department of Nursing and the Postgraduate Programs in Nursing, UFRN. Natal, Rio Grande do Norte, Brazil. E-mail: gilsonvtorres@hotmail.com

[6] Ph.D. in Nursing. Professor of the Postgraduate Program in Nursing, Federal University of Pernambuco. Recife, Pernambuco, Brazil. E-mail: reuol.ufpe@gmail.com

[7] Ph.D in Psychiatric Nursing. Associate Professor of the Postgraduate Program in Nursing, UFRN. Natal, Rio Grande do Norte, Brazil. E-mail: farnoldo@gmail.com

ABSTRACT: This study aims to ascertain the influence of the structure and process on the effectiveness of donation of organs and tissues. It is an evaluative, longitudinal study, with a quantitative approach, undertaken in six hospitals of Natal-RN, with 65 potential donors. The data collection instrument was a structured script of non-participant observation. The data were analyzed using descriptive statistics and the application of the Chi-squared, Fisher, and Mann Whitney tests. The effectiveness of donation was 27.7%. No significant difference occurred between structure and effectiveness of donation, however, inadequacies were observed in the physical resources (36.9%), material resources (30.8%), organizational structure (29.2%), and human resources (18.5%). In the process, the phases of maintenance (p=0.004), diagnosis of brain death (p=0.032), family interview (p≤0.001) and documentation (p=0.001) presented significant differences with effectiveness. The adequacy of the factors related to the structure and process is associated with the effectiveness of the donation. Improvement of these indices depends on the speed with which the process is conducted, in addition to the adequate structure.

DESCRIPTORES: Nursing. Health services evaluation. Effectiveness. Tissue and organ procurement.

FACILITADORES E BARREIRAS NA EFETIVIDADE DA DOAÇÃO DE ÓRGÃOS E TECIDOS

RESUMO: Verificar a influência da estrutura e processo na efetividade da doação de órgãos e tecidos. Estudo avaliativo, longitudinal, com abordagem quantitativa, desenvolvido em seis hospitais de Natal-RN, com 65 potenciais doadores. O instrumento de coleta de dados constou de roteiro estruturado de observação não participante. Analisaram-se os dados pela estatística descritiva e aplicação dos testes Qui-quadrado, Fisher e Mann Whitney. A efetividade da doação foi 27,7%. Não ocorreu diferença significante entre estrutura e efetividade da doação, porém, observaram-se inadequações nos recursos físicos (36,9%), materiais (30,8%), estrutura organizacional (29,2%) e recursos humanos (18,5%). No processo, as fases de manutenção (p=0,004), diagnóstico de morte encefálica (p=0,032), entrevista familiar (p≤0,001) e documentação (p=0,001) apresentaram diferença significante com a efetividade. A adequação dos fatores relacionados à estrutura e processo está associada à efetividade da doação. A melhora desses índices depende da rapidez com que o processo se conduz, além da estrutura adequada.

DESCRITORES: Enfermagem. Avaliação de serviços de saúde. Efetividade. Obtenção de tecidos e órgãos.

FACILITADORES Y BARRERAS EN LA EFICACIA DE LA DONACIÓN DE ÓRGANOS Y TEJIDOS

RESUMEN: Verificar la influencia de la estructura y proceso en la efetividad de la donación de órganos y tejidos. Evaluación, estudio longitudinal con un enfoque cuantitativo, desarrolló en seis hospitales de Natal-RN, con 65 donantes potenciales. El instrumento de recolección consistió en la escritura estructurada de observación no participante. Los datos se analizaron mediante estadística descriptiva y la aplicación de Chi-cuadrado, Fisher y Mann Whitney. La eficacia de la donación fue 27,7%. No hubo diferencia significativa entre la estructura y la eficacia de la donación, pero había insuficiencias en recursos físicos (36,9%), materiales (30,8%), estructura organizativa (29,2%) y recursos humanos (18,5%). En el proceso, la fase de mantenimiento (p=0,004), el diagnóstico de muerte cerebral (p=0,032), entrevista familiar (p≤0,001) y documentación (p=0,001) mostro una diferencia significativa con la efectividad. La adecuación de los factores relacionados con la estructura y el proceso de la efectividad se asocia con la donación. La mejora en los índices depende de la velocidad con la que el proceso se lleva a cabo, además de la estructura adecuada.

DESCRITORES: Enfermería. Evaluación de servicios de salud. Efectividad. Obtención de tejidos y órganos.

INTRODUCTION

Brazil has been active in the world transplant scenario for more than 40 years, but only since the 2000's has this activity achieved recognition in public health policies, with the country becoming one of those which most allocate public resources to this treatment, proportionately to its Gross Domestic Product (GDP) and spending on health.[1]

Date from the Brazilian Association of Organ Transplantation (ABTO) showed that, in 2012, 7,426 transplants of solid organs were undertaken. However, at the end of that same year, there were 22,055 patients active on the waiting list for this procedure. There is, therefore, an imbalance between the offering of organs and the number of patients who could benefit from the treatment.[2]

The organization structure – which encompasses the physical, human, material and financial resources necessary for the donation and transplantation of organs and tissues in the context of the Unified Health System – established the National Transplantation System (SNT), in 1997, under Law n. 9.434 and Decree N. 2.268. This is deployed by the other units of the Federation through the Centers for Notification, Procurement and Distribution of Organs (CNCDO). Also part of this system are the single lists of recipients, their registration, the authorization of hospitals which undertake transplantation and of the specialized teams, as well as the criteria for financing.[3-4]

Regarding the care related to the Potential Donor (PD), this must be undertaken in the Intensive Care Unit (ICU), with an appropriate infrastructure, specialized human resources, and specific materials and necessary technologies for the diagnosis, monitoring and therapy.[5] In this way, emphasis is placed on the relevance of the organization and planning of the health services such that the donation may be effected. One can add to this the importance of the assessment, both of the possibility for identifying needs for interventions capable of increasing the number of donations and procurements and the optimization of making full use of the organs and tissues, and of ascertaining the difficulties faced by such practices.[6]

Regarding the evaluation of quality and health, emphasis is placed on the systemic model, undertaken with three dimensions: the "structure", which includes the physical, human, material and financial resources necessary for the health care; the "process", which involves the activities referent to the health professionals and patients, based in accepted standards; and the "outcome", which encompasses the final product of the assistance given, and considers health, and the meeting of standards and of expectations.[4]

It stands out that, in Brazil, there is a scarcity of evaluative studies in the area of donation and transplantation of organs. Only one study covers the issue, undertaken by the Brazilian Federal Court of Auditors (TCU), in 2006, titled "Evaluation of the program for donation, procurement and transplantation of organs and tissues". The TCU stresses the importance of evaluation, as this practice can advise against the use of techniques which are shown to be mistaken, with benefits in terms of public resources economized; mainly, however, it can lead to more appropriate treatment for the patients.[7-8]

It is important to emphasize that evaluations must be based on the definition of the characteristic which was evaluated as quality. Therefore, for this study, the term "effectiveness" was used, defined as the extent to which the care, the services and the actions achieve the results expected.[6] In this way, obtaining the donation and undertaking the transplantation of the organ/tissue donated was considered as the effectiveness of the donation.

Based in these considerations, the question is put: what was the association of the factors related to the structure and process which influence the

effectiveness of donation of organs and tissues for transplants?

In order to ascertain the effectiveness of the process of donation of organs and tissues for transplantation, based in the assumption that there is an association between the structure and process, the following research hypotheses were formulated: H_0 – The adequacy of the factors related to the structure and process is not associated with the effectiveness of the donation of organs and tissues for transplants; and H_1 – The adequacy of the factors related to the structure and process is associated with the effectiveness of the donation of organs and tissues for transplants.

In this regard, this study is justified by its possibility of generating knowledge which could assist in the improving: of public policies, with a view to improving the structures necessary for the attendance to the PD; of the training of the health professionals; and of educational programs directed at the population, with the aim of reducing family refusal and increasing the number of transplants.

In the light of the necessity and relevancy of evaluating the effectiveness of the donation of organs and tissues, the following objective was elaborated: to ascertain the influence of the structure and process in the effectiveness of the donation of organs and tissues.

METHODS

This evaluative, longitudinal study, with a quantitative approach, was undertaken in six hospital units in Natal in the Brazilian state of Rio Grande do Norte (RN), accredited by the SMT for removing and transplanting organs and tissues, as well as by the CNCDO and by the Organ Procurement Organization (OPO) of the above-mentioned state, in the period August 2010 – February 2011.

Of the six hospital units selected for the study, three are part of the public network: the Monsenhor Walfredo Gurgel Hospital (HMWG), the Onofre Lopes Teaching Hospital (HUOL) and the Deoclécio Marques de Lucena Hospital; and three are part of the private network: the Promater Hospital and Maternity Hospital, the Natal Hospital Center and the Antônio Prudente Hospital.

For selection of the PD, the following inclusion criteria were adopted: a score of 3 on the Glasgow Coma Scale; cause of the coma defined by computerized tomography of the cranium; and identification of a person or a family member who could be responsible for authorizing or not the donation. The following were selected as exclusion criteria: evidence of communicable diseases, neoplasia and use of injectable drugs detected prior to opening the Brain Death (BD) protocol; improvement in the neurological situation; and the family's refusal to participate in the study.

The probabilistic sample was calculated without replacement based on the annual mean number of PD assisted in the hospitals during the years 2005 – 2009, the annual mean being 81.4. For this, the calculation for finite populations was used,[9] obtaining a sample n of 67 PD. Thus, 68 PD were included, although three were excluded, one due to being unidentified, and two because they showed improvements in their clinical and neurological situations prior to the opening of the BD protocol. As a result, 65 PD were included for monitoring.

The data collection instrument was elaborated specifically for this study, being supported in the basics recommended by the scientific literature on the subject.[1,3-5,10-12] It is a structured script of non-participant observation, of the checklist type, categorized as Adequate or Inadequate, made up of the following parts: data for characterizing PD; data on the structure of the hospital institutions where the PD were hospitalized; and data on the process of donation of organs and tissues.

For the purposes of this study, the parameters used evaluating the adequacy of the structure and process are presented in figure 1.

The research was initiated following the project's approval by the Research Ethics Committee of the Onofre Lopes Teaching Hospital, under n. 414/10 and CAAE 007.0.294.000-10. The information were collected daily using the technique of systematic non-participant observation, and from institutional documents such as incident books and medical records. Consent was requested from spouse, or relative, of the PD up to second degree in order to participate in the study, through signing of the terms of consent.

The data were analyzed using descriptive statistics and were presented in the form of tables and figures. For this, Microsoft Excel 2007 and statistical software were used. In order to ascertain the level of significance, it was decided to apply the Chi-squared ($\chi 2$) and Mann Whitney tests. It is emphasized that, for cells of less than five, Fisher's exact test was considered. The level of significance of 5% ($p<0.05$) was adopted. The Odds Ratio (OR) was also calculated, between the effectiveness or not of the donation.

In dealing with the continuous variables referent to the structure of the hospital units according to the effectiveness of the donation of organs and tissues for transplantation (physical, material and human resources and organizational structure), the Chi-squared and Fisher's exact test were used. For the continuous variables related to the process of donation of organs and tissues for transplant, according to the effectiveness of the donation (identification and notification, evaluation, maintenance, diagnosis of brain death, family interview and documentation of brain death) the Chi-squared and Fisher tests were used, as well as the Odds Ratio. For the continuous variables related to the factors associated with the effectiveness of the donation of organs and tissues for transplantation (structure and process), the Chi-squared and Fisher tests and the Odds Ratio were used, while the Mann Whitney test was used for comparing the means of the adequacy of the structure and of the process of donation of organs and tissues in relation to the effectiveness of the donation.

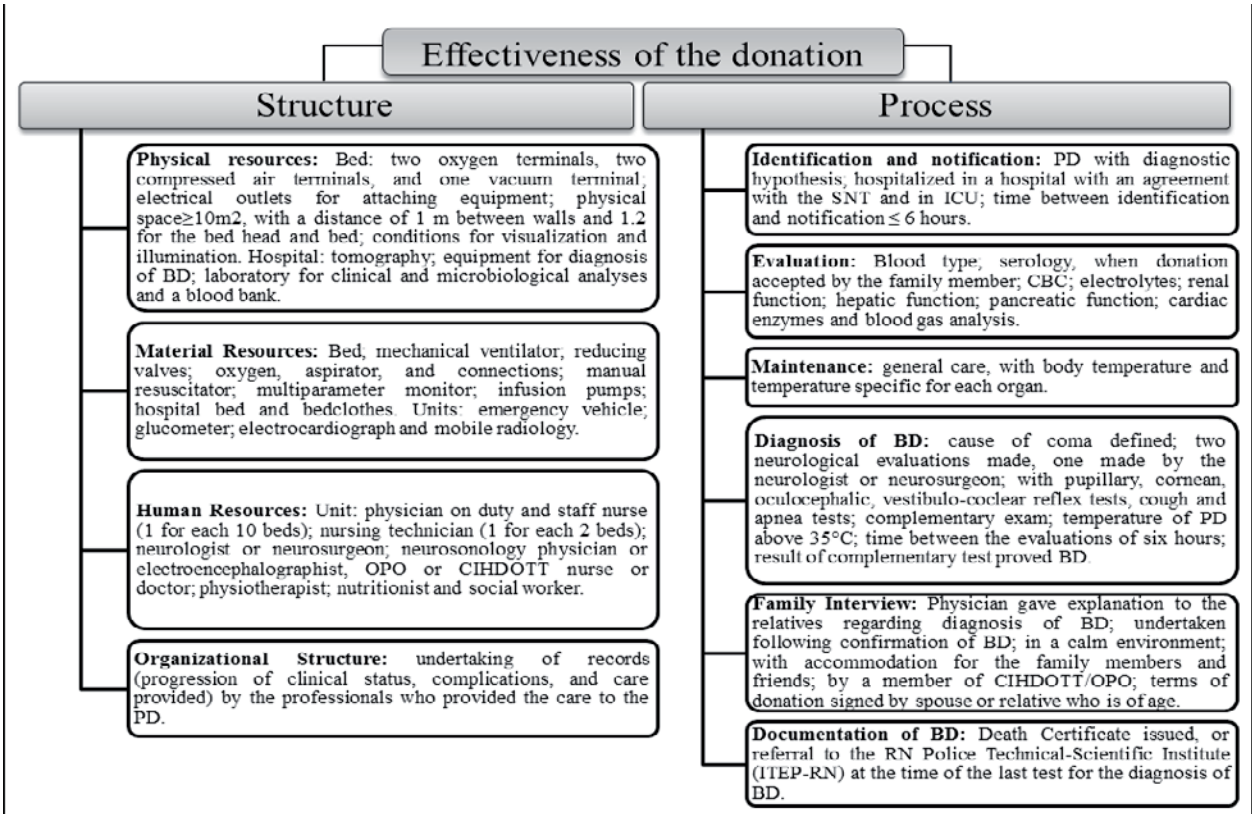

Figure 1 - Parameters of adequacy used for evaluation of the structure of the hospitals and of the process of donation of organs and tissues for transplantation. Natal-RN, 2013

RESULTS

The population studied was made up of 65 PD. The majority of these were male (50.8%), aged up to 45 years old (53.8%), a mean age of 42.3 years old, a minimum age of five years old, and a maximum of 73 years old (± 17.32 years old). They were single/widowed/divorced (56.9%), educated up to junior high school level (60.0%), undertaking professional activities (86.2%) and resident in the metropolitan region of Natal (52.3%). Regarding the effectiveness of the donation, it was observed that 18 (27.7%) donated solid organs, such as kidneys (100.0%), liver (44.4%) and heart (1.5%); 16 (88.9%) donated tissues (corneas). The causes of non-effectiveness of the donation were: family refusal (34.7%); did not terminate the protocol for the diagnosis of BD (24.6%); medical contraindication (22.6%); and cardiac arrest (7.1%).

The results referent to the evaluation of the structure of the hospital units, of the process of donation, and of the factors associated with the effectiveness of the donation of organs and tissues are presented below.

Evaluation of the structure of the hospital units

Regarding the data related to the evaluation of the structure of the hospital units in which the PD were hospitalized (Table 1), it may be observed that the physical resources or installations were adequate in most of the institutions (63.1%). However, the 36.9% of the physical resources considered inadequate referred to the inadequate physical space (40.0%), lack of conditions for visualization (20.0%), and lack of electricity outlets for attaching electrical equipment (13.8%).

In the material resources which were essential for assistance to the PD, it was possible to observe a higher percentage of adequacy (69.2%). However, the inadequacies observed (30.8%) related to the absence of mobile radiology (32.3%), equipment for checking capillary glycemia (32.3%), hospital beds (32.3%), manual resuscitator by the PD's bed (30.8%), electrocardiograph (30.8%), infusion pumps (24.6%), and bedclothes (16.9%).

Table 1 - Evaluation of the structure of the hospital units, by effectiveness of donation. Natal-RN, Brazil, 2013

Structure of the hospital units		Effectiveness of the donation						χ^2 p
		Donor		Non-donor		Total		
		n	%	n	%	n	%	
Physical resources	Adequate	12	18.5	29	44.6	41	63.1	0.711
	Inadequate	6	9.2	18	27.7	24	36.9	
Material resources	Adequate	13	20.0	32	49.2	45	69.2	0.746
	Inadequate	5	7.7	15	23.1	20	30.8	
Human resources	Adequate	14	21.5	39	60.0	53	81.5	0.436*
	Inadequate	4	6.2	8	12.3	12	18.5	
Organizational structure	Adequate	13	20.0	33	50.8	46	70.8	0.873
	Inadequate	5	7.7	14	21.5	19	29.2	

Key:*Fisher's exact test.

In relation to human resources, the inadequacies (18.5%) were due to the lack of nursing technicians (53.3%) and staff nurses necessary to meet the patients' needs (32.3%), as well as nutritionists (24.6%) and physiotherapists (20.0%).

In the organizational structure, 70.8% adequacy was observed. However, it is appropriate to emphasize the inadequacies referent to lack of records of the progression of the clinical status, complications, and care provided by the health team to the PD (29.2%).

It is highlighted that a statistically significant difference was not verified, at the level of 5%, between the structure and the effectiveness of the donation.

Evaluation of the process of donation of organs and tissues

In the evaluation of the phases which make up the process of donation of organs and tissues for transplantation (Table 2), it was ascertained that the identification and notification were adequate on 64.6% of occasions. Nevertheless, the inadequacy (35.4%) except for in these phases, relates to the inpatient care department, where 35.4% of the PD received inpatient treatment in the emergency.

Table 2 - Evaluation of the process of donation of organs and tissues, by effectiveness of the donation. Natal-RN, Brazil, 2013

Process of donation		Effectiveness of the donation						χ^2 p	OR
		Donor		Non-donor		Total			
		n	%	n	%	n	%		
Identification and notification	Adequate	12	18.5	30	46.2	42	64.6	0.831	-
	Inadequate	6	9.2	17	26.2	23	35.4		
Evaluation	Adequate	10	15.4	21	40.0	31	52.3	0.986	-
	Inadequate	8	12.3	26	32.3	34	47.7		

Maintenance	Adequate	12	18.5	13	20.0	25	38.5	0.004	1.6
	Inadequate	6	9.2	34	52.3	40	61.5		
Diagnosis of brain death	Adequate	11	16.9	15	23.1	26	40.0	0.032	1.4
	Inadequate	7	10.8	32	49.2	39	60.0		
Family interview	Adequate	17	26.2	17	26.2	34	52.4	≤0.001*	1.9
	Inadequate	1	1.4	30	46.2	31	47.6		
Documentation of brain death	Adequate	05	7.7	01	1.5	06	9.2	≤0.001*	11.5
	Inadequate	13	20.0	46	70.8	59	90.8		

Key: *Fisher's exact test.

Regarding the evaluation of the PD, it was observed that in 52.3%, all the laboratory tests necessary for evaluating the function of their organs were undertaken. In this phase, the main inadequacies were related to the failure to undertake tests for daily evaluation of the pancreatic (36.9%), cardiac (24.6%) and hepatic (16.9%) functions.

It was observed that the essential care for the maintenance of the organs and tissues was not undertaken adequately in 61.5% of the PD; the highest percentage of inadequacies was associated with the lack of care for maintenance of body temperature (52.3%).

In relation to the diagnosis of BD, inadequacies were ascertained in 60.0% of the cases. These were due, above all, to failure to undertake the two neurological assessments (24.6%); failure to undertake the complementary test (21.5%); and subnormal temperature (16.9%). It is emphasized that, of the 49 evaluations undertaken, in 62.4% of the PD, not all of the reflexes were tested for assessing the compromise of the brainstem; the time between the evaluations was over six hours (55.1%); and the result of the complementary test did not confirm BD (7.8%).

Regarding the family interview, inadequacies were observed in 47.6%. These occurred due to failing to undertake the interview (43.1%), and intensivists who did not adequately explain the doubts regarding the progression of the treatment and the current state of the patient, including the diagnosis of BD (10.8%).

Lastly, it was observed that the BD documentation was undertaken inadequately in 90.8% of cases. This inadequacy occurred due to failure to fill out the death certificate or to undertake the referral to the RN Police Technical-Scientific Institute (ITEP-RN) immediately after the undertaking of the last test, whether this was the neurological or complementary test, including the time that this was undertaken.

These findings show a statistically significant difference between the phases of the process of donation referent to maintenance (p=0.004; OR=1.6), diagnosis of BD (p=0.032; OR=1.4), family interview (p≤0.001; OR=1.9) and documentation of BD (p≤0.001; OR=11.5) and the effectiveness of the donation.

Factors associated with the effectiveness of the donation of organs and tissues

In relation to the factors associated with the effectiveness of the donation, it was observed that the structure of the hospital units was adequate in most of the hospitalizations of the PD (63.1%). However, it was demonstrated that the process was not undertaken adequately on most occasions (89.2%) (Table 3).

Table 3 - Factors associated with the effectiveness of the donation of organs and tissues for transplantation. Natal-RN, Brazil, 2013

Factors		Effectiveness of the donation						χ^2 p	OR
		Donor		Non-donor		Total			
		n	%	n	%	n	%		
Structure	Adequate	12	18.5	29	44.6	41	63.1	0.711	-
	Inadequate	6	9.2	18	27.7	24	36.9		
Process	Adequate	6	9.2	1	1.5	7	10.8	0.001*	5.5
	Inadequate	12	18.5	46	70.5	58	89.2		

Key: *Fisher's exact test.

As a result, it is evaluated that there was a statistically significant difference between the process and the effectiveness of the donation (p=0.001; OR=5.5).

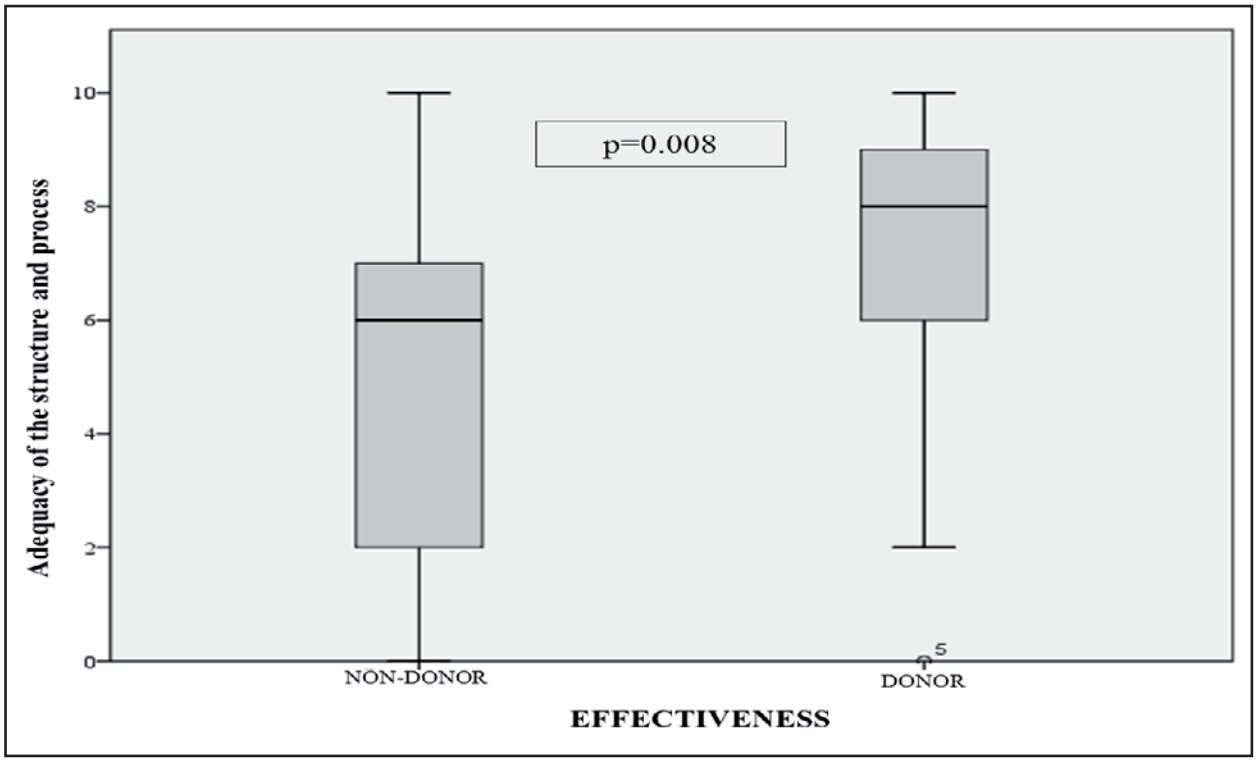

Figure 2 - Adequacies of the structure and of the process of donation of organs and tissues, by the effectiveness of the donation. Natal-RN, Brazil, 2013

In comparing the means of the adequacies of the structure and of the process of donation of organs and tissues in relation to the effectiveness of the donation (Figure 2), through the application of the Mann Whitney Test, it can be verified that there was a greater quantity of adequacies of the structure and of the process among those in whose cases the donations were effected, with a statistically significant difference (p=0.008).

DISCUSSION

The socio-demographic profile of the participants is similar to that found in other studies undertaken in Brazil, where one observes a high proportion of male PD, of an economically active age, single, with low educational levels, undertaking professional activities, and originating from metropolitan regions. The majority did not effect the donation, the organ donated the most often was the kidney, and the most frequent cause of non-donation was family refusal.[8,13]

In relation to the facts evaluated, attention is drawn to the little and insufficient standardization of structure which is adequate for the assistance for the PD of organs and tissues, as well as of clinical conducts and practices undertaken in the development of the process of donation. These requirements could have influenced the effectiveness of the donation.

It stands out that, in spite of there having been no statistically significant difference between structure and the effectiveness of the donation, it was observed that 36.9% of the PD were maintained in inadequate conditions of care. To this, one can also add the lack of human resources for meeting the patients' needs and the lack of adequate records regarding the progression of their clinical status, complications, and care provided to the PD.

It is inferred that the lack of these components influences the process of caring and generates frustration among the professionals who undertake the care. What is observed is that, faced with the inadequacy of physical, material and hu-

man resources, the professionals end up doing the best they can, but this culminates in impairing the quality of the care.[14-15]

Although it is known that it is not always possible to provide the best care, the structure for the care for the PD involves personnel in sufficient numbers, and trained to provide the specific care and continuous observation, with a physical layout elaborated with special equipment, and an administrative organization which is concerned with maintaining standards of care and continuous education programs.[5,14-15]

In addition to this context, one study undertaken on the meaning of death and dying to nurses who work in the donation process denounces the poor situation in which the health system is found, and the lack of conditions offering appropriate attendance to the PD, with consequences for non-donation. Another study shows that the problems of structure stop 5 -10% of the PD from effecting the donation. As a result, it is essential for there to be improvement in the hospital structures, such that the effectiveness of the donation may occur.[11,15]

It was identified that the phases of the donation process were not undertaken adequately for most of the PD. It stands out that the knowledge and the command of this process and the appropriate undertaking of its stages allows the obtaining of organs and tissues with safety and quality, so that they may be made available for the undertaking of transplants.[1] Thus, one can observe a statistically significant difference between the phases of maintenance of the PD, the diagnosis of BD, the family interview and documentation of BD, and the effectiveness of the donation.

Regarding the maintenance, studies show that few PD are treated optimally by the team responsible. This fact occurs because few cities in Brazil have effective conditions to deal with the PD of organs and tissues, due to the volume of patients compared to the low number of professionals and lack of ICU beds, added to the lack of knowledge and of the appropriate valuing of the benefits of donation and transplantation.[11-12]

These facts are evidenced by the nearly absolute absence of the systematization of the care for the PD of multiple organs. This is something which exceeds the technical, humanitarian and citizenship sphere of all the actors involved in this patient's maintenance. Therefore, the standardization and the speed of these procedures are associated with an increase in the number and quality of the organs transplanted, the reduction in loss of donors, and the increase in post-transplantation survival.[12]

Regarding the diagnosis of BD, the consequences which can arise from not undertaking the neurological tests or from the incorrect undertaking of these tests, are concerning, for both the health professionals and the population, given that they influence the running of the process, and give rise to doubts about the concept of BD, as well as erroneous expectations regarding the patient's clinical status.

It is known that the diagnosis of BD represents barriers to the notification of donors on the part of the ICUs and emergency departments. There are doctors who do not feel comfortable undertaking this diagnosis, and allege that there is controversy relating to the tests for BD, and lack of technical support necessary for undertaking the necessary supplementary tests, as well as the legal responsibility which falls upon the diagnosis.[16-17]

Also regarding the diagnosis of BD, a study undertaken with intensivists in Porto Alegre showed that 16% of the doctors were not aware of the concept of BD, 29% were not able to determine when the brain stopped functioning, and 53% felt insecure about explaining the significance of this event to the family. Therefore, the concept of BD meets resistance not only in the population, but also among the health professionals who assist the PD, and this represents an obstacle in the authorization of the donation by a large proportion of the families.[16-17]

Regarding the documentation of the BD, it stands out that the doctors continue to fill out the death certificate or the referral to the ITEP-RN only after the heart stops. This fact may be ascertained because of the high prevalence of intensivists who believe that the time for the removal of organs is when the donor dies. If this were true, they would be violating the basic ethical axiom of the removal of vital organs; the dead donor rule, denying that BD signifies death, and breaking Brazilian law on organ transplantation.[17]

It was ascertained that, among the factors associated with the effectiveness of the donation, it was the process which presented the most problems, contributing to the effectiveness of 27.7% of donations, a rate compatible with that of Brazil which, in 2011, obtained 20,19 (27.9%), that is, 10.6 effective donors per million of population (pmp) out of 7,238 PD. However, these rates are well below certain Brazilian states, such as Santa Catarina (25.1 pmp), São Paulo (19.2 pmp) and

Ceará (16.6 pmp). Furthermore, it is also below international rates, such as Spain (35.3 pmp), the world reference in organ and tissue donations and transplants, Serbia (34.4 pmp), Canada (34.5 pmp) and even countries of Latin America and the Caribbean, such as Uruguay (20.0 pmp), Argentina (14.9 pmp) and Puerto Rico (11.3 pmp).[2]

In this way, it is observed that a set of factors is necessary for the effective number of donations and transplants to increase. Among these, emphasis is placed on the needs to improve the structure of the hospitals which present the highest number of notifications of BD, with material and technological resources necessary for maintaining the PD's and to undertake, safely, the BD diagnoses, as stipulated by law: as well as the planning of training, with a view to meeting the shortcomings existing both in the diagnosis of BD and in the assistance to the PD and their family members.[7]

During the investigation process, one relevant fact verified called our attention. This was the readiness of all the family members of the PD, and of some professionals, to allow the observations to be made with no objections or restrictions. Lack of data in the instrument covering causes for family refusal was classified as a limitation of this study; thus, it would have been possible to ascertain whether the lack of adequate structure in 36.9% of the hospitalizations and the development of the process inadequately in 78.5% of occasions contributed to the refusal to donate by 46.0% of the families interviewed.

CONCLUSION

Of the 65 PD identified and notified, in 27.7%, the donation of organs and tissues was effected. Among the factors associated with effectiveness of donation, which contributed to this low rate, emphasis is placed on the inadequate structural conditions for assistance to the PD, there being insufficient physical and material resources. This is in addition to the lack of human resources for meeting the requirements of patients, and of adequate records regarding the progression of clinical status, complications and care provided.

It should be noted that the process contributes even more significantly to the low effectiveness, in particular, in the phases of diagnosis of BD, maintenance of the PD, family interview and documentation of BD. The rate of donation obtained was comparable with that of Brazil, although it was far below some Brazilian states, and further still below the international rates, such as that of Spain, the world reference in donations and transplants of organs and tissues, and even of countries of Latin America and the Caribbean.

Consequently, it is understood that the effectiveness of the donation of organs and tissues depends on the speed and accuracy with which the process of donation is conducted; and for this to occur, one needs an adequate structure, with appropriate physical and material resources, and with trained human resources, so as to contribute to reducing the time and the suffering for those who are on the waiting list for an organ or tissue in Brazil.

REFERENCES

1. Pereira AW, Fernandes RC, Soler RC. Diretrizes básicas para captação e retirada de múltiplos órgãos e tecidos da associação brasileira de transplantes de órgãos. ABTO [online]. 2009 [acesso 2012 Fev 20]. Disponível em: http://www.abto.org.br/abtov03/Upload/pdf/livro.pdf
2. Associação Brasileira de Transplante de Órgãos (ABTO). Registro Brasileiro de Transplantes. São Paulo (SP); 2012.
3. Brasil, lei n. 10.211, de 23 de março de 2001. Altera dispositivos da Lei n. 9.434, de 4 de fevereiro de 1997, que "dispõe sobre a remoção de órgãos, tecidos e partes do corpo humano para fins de transplante e tratamento". Brasília (DF), 2001.
4. Donabedian A. Avaliação na assistência à saúde. São Paulo (SP): Proaha; 1992.
5. Ministério da Saúde (BR). Agência Nacional de Vigilância Sanitária. Resolução RDC n. 7, de 24 de fevereiro de 2010. Dispõe sobre os requisitos mínimos para funcionamento de Unidades de Terapia Intensiva e dá outras providências. Brasília (DF), 2010.
6. Proadess [Internet]. Avaliação de desempenho do sistema de saúde brasileiro: indicadores para monitoramento. Rio de Janeiro (RJ): Fundação Oswaldo Cruz; 2012. Disponível em: http://www.proadess.icict.fiocruz.br/Relatorio_Proadess_08-10-2012.pdf
7. Tribunal da Conta da União (BR). Relatório de avaliação de programa doação, captação e transplante de órgãos e tecidos. Brasília (DF): TCU, Secretaria de Fiscalização de Programas de Governo; 2006. 46p.
8. Mendes KDS, Roza BA, Barbosa SFF, Schirmer J, Galvão CM. Transplante de órgãos e tecidos: responsabilidade do enfermeiro. Texto Contexto Enferm. 2012 Out-Dez. 21(4):945-53.
9. Gil AC. Métodos e técnicas de pesquisa social. 5. ed. São Paulo (SP): Atlas, 1994.

10. Conselho Federal de Medicina (BR). Resolução CFM n. 1.480/1997. Critérios para diagnóstico de morte encefálica. Brasília (DF): CFM; 1997.

11. Guetti NR, Marques IR. Assistência de enfermagem ao potencial doador de órgãos em morte encefálica. Rev Bras Enferm. [online]. 2008 [acesso 2012 Set 18]; 61(1):91-7. Disponível em: http://www.scielo.br/pdf/reben/v61n1/14.pdf

12. Westphal GA, Filho MC, Vieira KD, Zaclikevis VR, Bartz MCM, Wanzuita R, et al. Diretrizes para manutenção de múltiplos órgãos no potencial doador falecido. Parte I. Aspectos gerais e suporte hemodinâmico. Rev Bras Ter Intensiva [Internet]. 2011 [acesso 2012 Nov 01]; 23(3):255-68. Diponível em: http://www.scielo.br/pdf/rbti/v23n3/v23n3a03.pdf

13. Noronha MGO, Seter GB, Perini LD, Salles FMO, Nogara MAS. Estudo do perfil dos doadores elegíveis de órgãos e tecidos e motivos da não doação no Hospital Santa Isabel em Blumenau, SC. Rev AMRIGS. 2012 Jul-Set. 56(3):199-203.

14. Freire ILS, Mendonça AEO, Pontes VO, Vasconcelos QLDAQ, Torres GV. Morte encefálica e cuidados na manutenção do potencial doador de órgãos e tecidos para transplante. Rev Eletr Enf [online]. 2012 [acesso 2012 Abr 20]; 14(4):903-12. Disponível em: http://www.fen.ufg.br/revista/v14/n4/v14n4a19.htm

15. Lima AAF, Silva MJP, Pereira LL. Sofrimento e contradição: o significado da morte e do morrer para enfermeiros que trabalham no processo de doação de órgãos para transplante. Enferm Global [online]. 2009 [acesso 2014 Fev 03]; 15(1):1-17. http://scielo.isciii.es/pdf/eg/n15/pt_clinica1.pdf

16. Schein AE, Carvalho PR, Rocha TS, Guedes RR, Moschetti L, Salvia JC, et al. Avaliação do conhecimento de intensivistas sobre morte encefálica. Rev Bras Ter intensiva [Internet]. 2008 [acesso 2012 Dez 03]; 20(2):144-8. Diponível em: http://www.scielo.br/pdf/rbti/v20n2/05.pdf

17. Morato EG. Morte encefálica: conceitos essenciais, diagnóstico e atualização. Rev Med Minas Gerais [Internet]. 2009 [acesso 2012 Dez 03]; 19(3):227-36. Disponível em: http://rmmg.medicina.ufmg.br/index.php/rmmg/article/view/164/147

Correspondence: Izaura Luzia Silvério Freire
Rua São João, 1233, ap. 601, bloco A
59022-390 — Natal, RN, Brazil
E-mail: izaurafreire@hotmail.com

Received: September 02, 2013
Approved: January 24, 2014