OBJECTIVE: to describe the epidemiology of renal transplantation in Brazil and the hospital public spending for the Unified Health System between 2013 and 2017. Method: this is a quantitative, ecological and descriptive study conducted with data from the Hospital Information System. The following variables were selected: Brazilian regions; authorization for hospital admission and hospital costs. Results: there were 19,823 kidney transplants in Brazil. 79.94% occurred with deceased donors and 53.01% occurred in the southeast region. Transplantation generated a financial impact exceeding R$ 588.3 million. Moreover, 84.55% were deceased donors and the southeast region caused greater burden (52.48%). Conclusion: there is need for empowering teams of organ capitacion for direct and efficient approaches to sensitize families to the donation process. Education in the initial grades appears as an important tool for the process of critical and early reflection on the process of donation that may change the future scenario of organ donations in the country. Descritores: Epidemiology; Public Health; Nephrology; Organ Transplantation; Chronic Renal Failure; Information Systems.

RESUMEN
Objetivo: describir la epidemiología del trasplante renal en Brasil y el gasto público hospitalario para el Sistema Único de Salud entre 2013 y 2017. Método: se trata de un estudio cuantitativo, ecológico y descriptivo realizado con datos del Sistema de Informaciones Hospitalarias. Se seleccionaron las variables: regiones brasileñas; autorización de internación hospitalar y los custos hospitalarios. Resultados: se registraron 19,823 trasplantes renales en Brasil. Verificó-se que 79,94% foi por meio de doadores falecidos e 53,01% ocorreu na região sudeste. Salienta-se que o transplante gerou impacto financeiro superior a R$ 588,3 milhões de reais. Destaca-se, ainda, que 84,55% foram por doadores falecidos e o sudeste causou maior ônus (52.48%). Conclusión: reforça-se a necesidad de capacitación de equipos de captación de órganos para abordagens directas e eficientes no intuito de sensibilizar a familias para o processo de doação. Adverte-se ainda, que a educação nas séries iniciais revela-se como uma importante ferramenta para o processo de reflexão crítica e precoce acerca do processo de doação que poderá no futuro, mudar o cenário de doações de órgãos no país. Descritores: Epidemiología; Saúde Pública; Nefrología; Transplante De Órgãos; Insuficiência Renal Crónica; Sistemas de Información.

REVIEW ARTICLE
Objective: to describe the epidemiology of renal transplantation in Brazil and the hospital public spending for the Unified Health System between 2013 and 2017. Method: this is a quantitative, ecological and descriptive study conducted with data from the Hospital Information System. The following variables were selected: Brazilian regions; authorization for hospital admission and hospital costs. Results: there were 19,823 kidney transplants in Brazil. 79.94% occurred with deceased donors and 53.01% occurred in the southeast region. Transplantation generated a financial impact exceeding R$ 588.3 million. Moreover, 84.55% were deceased donors and the southeast region caused greater burden (52.48%). Conclusion: there is need for empowering teams of organ capitacion for direct and efficient approaches to sensitize families to the donation process. Education in the initial grades appears as an important tool for the process of critical and early reflection on the process of donation that may change the future scenario of organ donations in the country. Descritores: Epidemiology; Public Health; Nephrology; Organ Transplantation; Chronic Renal Failure; Information Systems.
INTRODUCTION

Estimates show an increasing behavior of the prevalence and incidence of chronic noncommunicable diseases (CNCD) due to the Brazilian population aging and the adoption of risk health behaviors. Among the CNCD of greater epidemiological importance, Systemic Arterial Hypertension (SAH) and Diabetes Mellitus (DM) stand out. They are diseases considered high risk factors for the development of Chronic Kidney Disease (CKD). According to a census survey conducted in 2016 in Brazil, SAH and DM were responsible, respectively, for 34% and 30% of renal involvement of the population.

CKD is defined as the slow, progressive and irreversible loss of all renal functions (endocrine, tubular and glomerular). Chronic Renal Failure (CRF) or end-stage CKD occurs reaching the last stage, evidenced by the Glomerular Filtration Rate < 15ml/min/1,73m², emerging the need for referral of the patient to some renal replacement therapy for the maintenance of organic balance compatible with the life. Hemodialysis (HD), the various modalities of Peritoneal Dialysis (PD) and Renal Transplantation (RT) stand out among the available renal therapies, with the latter as less costly, among others.

Transplantation is defined as a set of high-complexity procedures in which there is transfer of cells, organs or tissues physiologically stable from a donor to a receiver. It requires specific inputs and human resources, extreme technical competence and continuing education for all staff involved in the process. RT represents the most effective therapy for the socioeconomic recovery, reduction of comorbidities and increased life expectancy and quality of life (QOL) of patients. Moreover, RT can be performed with a Living Donor (LD) or Deceased Donor (DD).

The donation of organs is little discussed in Brazil among the population and there is still lack of knowledge among health professionals. Furthermore, the theme permeates through several segments that shape the individual behavior, such as ethical, moral, cultural, economic, and religious aspects, which require a reflective discussion. Besides, there are other main factors associated with the discontinuous donation, such as lack of identification of a potential donor and scarcity of notification to capitation centers.

Therefore, the development of this study is justified by benefits of RT for patients with CKD. The results may serve as a reflection mainly for health professionals regarding the precise identification of a potential donor and an efficient approach with families for the approval of the transplant. Moreover, between 50 and 70% of relatives authorize the procedure when appropriately approached.

Thus, such actions become capable of increasing the rates of donations from DD and, consequently, the homogenization in relation to supply and demand, which will increase the patients’ adherence to the best therapeutic option of CKD.

OBJECTIVE

• To describe the epidemiology of renal transplantation in Brazil and the hospital public spending for the Unified Health System between 2013 and 2017.

METHOD

This is a quantitative, ecological and descriptive study conducted with secondary data from the Hospital Information System (HIS), which is a resource managed by the Ministry of Health, in partnership with the State and Municipal Health Bureaus. The (public or private) hospital units belonging to the Unified Health System (UHS) perform the admission of the patient, generate information about each hospitalization and send them to the municipal managers, who, in turn, pass on to the state managers and, finally, to the Executive Bureau of the Ministry of Health.

The study scenario selected was the Federative Republic of Brazil, consisting of approximately 207.7 million inhabitants and five regions: North, Northeast, Southeast, South and Midwest. The country has 5,570 municipalities and a territorial area of 8.5 million m², constituting the largest country in South and Latin America. The following variables were selected: Brazilian regions; Hospital Admission Authorization (HAA) approved for living and deceased donors and the values of hospital services for transplants reported from January 2013 to December 2017.

Data collection, tabulation and analysis occurred in July 2018 through the electronic platform, adopting simple descriptive statistics (absolute and relative frequencies) for all statistical analyses. Since this study collected data through a system of information in the public domain, it did not need consideration by the Research Ethics Committee, according to Resolution 466/2012 of the National Health Council.
RESULTS

There were, from 2013 to 2017, 19,823 RT, as shown in Table 1. Furthermore, 15,823 (79.94%) occurred from DD and the southeastern region showed the largest numbers of RT by DD with 7,894 (39.88%) and LD, with 2,599 (13.13%), which corresponds to 53.01% of the total of performed transplants.

<table>
<thead>
<tr>
<th>Variables</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Total (R$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deceased Donor Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>229,799</td>
<td>1,160,668</td>
<td>1,333,916</td>
<td>1,988,869</td>
<td>1,512,946</td>
<td>6,226,197</td>
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<tr>
<td>Northeast</td>
<td>2,317,009</td>
<td>20,342,405</td>
<td>21,285,075</td>
<td>21,242,615</td>
<td>23,463,613</td>
<td>88,650,718</td>
</tr>
<tr>
<td>Southeast</td>
<td>4,671,248</td>
<td>62,987,987</td>
<td>61,588,391</td>
<td>58,192,773</td>
<td>59,911,590</td>
<td>247,351,989</td>
</tr>
<tr>
<td>South</td>
<td>4,858,189</td>
<td>30,418,499</td>
<td>33,045,911</td>
<td>35,809,399</td>
<td>36,953,491</td>
<td>141,086,030</td>
</tr>
<tr>
<td>Total</td>
<td>705,642</td>
<td>3,162,275</td>
<td>2,453,863</td>
<td>3,962,554</td>
<td>3,869,704</td>
<td>14,154,038</td>
</tr>
<tr>
<td>Living Donor Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>-</td>
<td>526,734</td>
<td>427,125</td>
<td>488,646</td>
<td>396,693</td>
<td>1,839,198</td>
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<tr>
<td>Northeast</td>
<td>295,313</td>
<td>2,274,993</td>
<td>2,108,133</td>
<td>1,552,634</td>
<td>1,197,071</td>
<td>7,428,144</td>
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<tr>
<td>Southeast</td>
<td>790,465</td>
<td>16,354,438</td>
<td>14,252,353</td>
<td>15,564,795</td>
<td>14,481,241</td>
<td>61,443,293</td>
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<tr>
<td>South</td>
<td>460,104</td>
<td>5,655,006</td>
<td>4,392,904</td>
<td>3,784,219</td>
<td>3,566,112</td>
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<tr>
<td>Midwest</td>
<td>59,179</td>
<td>637,372</td>
<td>423,508</td>
<td>535,442</td>
<td>665,857</td>
<td>2,321,357</td>
</tr>
<tr>
<td>Total</td>
<td>1,605,060</td>
<td>25,448,543</td>
<td>21,604,024</td>
<td>21,925,735</td>
<td>20,306,974</td>
<td>90,890,335</td>
</tr>
</tbody>
</table>

Source: Ministry of Health - UHS Hospital Information System (SIS/UHS)
Numeric data equal to 0 not resulting from rounding.

DISCUSSION

Brazil occupies a prominent global position in the field of nephrology, being one of the largest populations of outpatient dialysis programs and annually responsible for the largest numerical indicators of RT. Moreover, the country has the UHS, one of the greatest public health systems in the world, which offers free universal, comprehensive and equitable access of the population to health services.22

Brazil showed greater realization of RT by DD in all regions, totaling 15,823 (79.94%), as shown in Table 1. For this type of transplantation, the donor has to be irreversible coma, without cerebral activity and with respiratory and cardiac functions within the normal parameters. Two medical professionals are responsible for diagnosing the death cause factor, and they cannot be part of the the transplant or withdrawal team.23

Only 3,970 (20.06%) were LD in the country, as shown in Table 1. The transplantation performed in this modality has advantages, such as more satisfactory results, reduced queue time, increased longevity, in addition to providing a significant improvement in the QOL of users and relatives.24 Despite these benefits, the transplant process with LD demonstrates a higher degree of complexity due to ethical aspects involved and the specific evaluations of recipients and donors. Such process give rise to psychological impacts on the family system resulting from dilemmas generated by the removal of an organ from a healthy member and/or the feeling of responsibility in

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collaborates in the development of cardiovascular consequences, one of the main death cause factors in dialysis patients. 30

Regardless socioeconomic factors, the financial impact generated by RT is significantly lower from the second year after transplantation. 29 For comparative purposes, the estimates for average annual expenses for the user in HD is 10 times higher than the treatment with RT, including immunosuppressive therapy, 17 which, in turn, is less costly than medicines used in HD and PD. 29

RT generates expectations for users who look forward to a life closer to normality. Nonetheless, despite decreased restrictions, mortality and direct and indirect financial costs, 29 RT is not a definitive cure, because the recipient requires continuous ambulatory care and adherence to immunosuppressive therapy to avoid transplant rejection. 17

CONCLUSION

Most RT in Brazil were held from DD throughout the study period and the amount of donations is not yet able to balance supply and demand. In addition, there is need for empowering teams of organ capitation for direct and efficient approaches to sensitize families to the donation process. Education in the initial grades appears as an important tool for the process of critical and early reflection on the process of donation that may change the future scenario of organ donations in the country.

The financial impact generated in the first years after renal transplantation is significant for the Brazilian public health system, but, currently, it is the least costly intervention in the perspective of the user’s entire lifecycle. The information contained in this study may contain underreporting due to the source of data collection. Nevertheless, the data from DATASUS assist in the development and implementation of actions aimed at health promotion, protection and rehabilitation, in addition to controlling and preventing diseases and injuries.

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