RESUMO

Objetivo: descrever a morbidade e os custos públicos hospitalares pela insuficiência renal crônica no Nordeste brasileiro entre 2013 e 2017. Método: trata-se de estudo quantitativo, ecológico e descritivo elaborado com dados secundários do Sistema de Informações Hospitalares. Estudaram-se as variáveis internações, óbitos, custos hospitalares, valor médio de internação e média de permanência hospitalar, analisando-as com estatística descritiva simples.

Resultados: registraram-se 47.882 internações e 6.919 óbitos pela insuficiência renal crônica no Nordeste brasileiro. Informa-se, além disso, que os custos hospitalares pela doença foram superiores a R$ 79 milhões, com valor médio de internação de R$ 1.816,11 e média de permanência de 10,4 dias na unidade hospitalar. Conclusão: conclui-se que a morbidade pela insuficiência renal crônica ainda consiste em sério problema de saúde pública, implicando diretamente o incremento e a ascensão dos custos. Adverte-se que este estudo revela dados capazes de despertar o autocuidado da população e de fortalecer as ações da atenção básica na prevenção e controle da doença e de seus fatores etiológicos no intuito de reduzir as hospitalizações e diminuir as onerações.

Descriptors: Saúde Pública; Epidemiologia; Nefrologia; Nefropatias; Custos Hospitalares; Sistemas de Informação.

ABSTRACT

Objective: to describe morbidity and public hospital costs for chronic renal failure in Northeastern Brazil, between 2013 and 2017. Method: this is a quantitative, ecological and descriptive study based on secondary data from the Hospital Information System. The following variables were studied: hospitalizations, deaths, hospital costs, average hospitalization value and average hospital stay, analyzed using simple descriptive statistics. Results: 47,882 hospitalizations and 6,919 deaths from chronic renal failure were registered in the Brazilian Northeast. In addition, hospital costs for the disease were higher than R$ 79 million, with an average hospitalization value of R$1,816.11 and an average length of stay of 10.4 days in the hospital unit. Conclusion: it can be concluded that morbidity due to chronic renal failure is still a serious public health problem, directly affecting the increase and ascension of hospital costs. It is warned that this study reveals data capable of arousing the self-care of the population and strengthening the actions of primary care in the prevention and control of the disease and its etiological factors, in order to reduce hospitalizations and reduce burdens. Descriptors: Public Health; Epidemiology; Nephrology; Kidney Diseases; Health Care Costs; Information Systems.
INTRODUCTION

Chronic Kidney Failure (CKF) is defined as a pathology that presents a complex clinical picture, characterized by the slow, progressive and irreversible behavioral lesion of all renal functions (endocrine, tubular and glomerular). As a result, the loss of body homeostasis is mainly due to the accumulation of substances resulting from metabolism.1,2

It is a disease with etiological multiplicity and, in most cases, the underlying cause is chronic noncommunicable diseases (NCDs). It is mentioned that the two main etiologies of CKF are systemic arterial hypertension (SAH) and Diabetes Mellitus (DM);2,4 diseases that are closely related to population aging, an epidemiological reality that reflects the current situation in Brazil.3

CKF is considered a major global public health problem, 2,5 affecting approximately 13% of the world's population.5 In the last decade, its incidence has increased in several contexts6,7 and, due to its complexity, it is pointed as one of the main factors of morbidity and mortality2,8 and great financial impact on health.2,8-10

It is estimated that currently in Brazil there are over two million people with some dysfunction in the renal system, which corresponds to around 1% of the Brazilian population.2 It is pointed out, in the United States, the existence of a contingent more than 20 million patients with kidney disease, of which 600,000 have CKF. It is also noteworthy, that the global incidence of kidney disease grows by about 10% per year.11

It is mentioned that, in order to ensure the maintenance of life, the individual needs to undergo renal replacement therapy (RRT) in the last stage of kidney disease, especially hemodialysis (HD), peritoneal dialysis (PD) and kidney transplantation (Tx) among the therapeutic modalities.12 It is evidenced that, annually, around 20 thousand Brazilians start some type of RRT,13 from 2000 to 2013, the number of dialysis users in the country increased from 42 thousand to 100 thousand fans, corresponding to an increase of 138%.9

In this perspective, it is warned that the dialysis phase increases the risks of complications and morbidity and mortality among users, as well as having a direct impact on the social, family and financial costs to health systems.10 It is noted that, the values approved to ensure care for kidney patients is increasing and affecting the economic stability of the system.13 It is further noted that kidney disease may require expenditures of more than 8% of all health care revenue to provide treatment less than 2% of the population.14

It is stated that although there are several informative sources of dissemination on CKF at the international level, there are still many limitations on the data that hinder real knowledge for health planning.2 Therefore, the development of this study is justified due to the need for new information that traces the morbidity profile and public costs of CKF in the literature. Furthermore, it is reported that studies involving financial impacts on health are essential to support decision making regarding resource allocation.9

OBJECTIVE

- To describe morbidity and public hospital costs for chronic renal failure in Northeastern Brazil, between 2013 and 2017.

METHOD

This is a quantitative, ecological and descriptive study, with secondary data from the Hospital Information System (HIS): an administrative tool responsible for collecting information on hospitalizations performed throughout the national territory, through the Unified Health System (UHS).15

The Northeast region of Brazil was chosen as a study scenario, which consists of nine Federative Units (UF): Maranhão, Piauí, Ceará, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe and Bahia. The Northeast is the second largest region in the country in terms of population, reaching about 56.8 million inhabitants, second only to the Southeast, which shows a population of approximately 87.8 million people.16

In HIS, the option “treatment of chronic renal failure" was cataloged throughout the national territory under code 03.05.02.005-6. It is noteworthy that all data collected refer to records dated January 1, 2013 to December 31, 2017. In addition, the data presented here cover the following categories: N180 (End-stage renal disease) , N188 (Other Chronic Kidney Failure) and N189 (Unspecified Chronic Kidney Failure), Chapter XIV (Genitourinary Tract Diseases), 10th International Classification of Diseases and Related Health Problems (ICD-10).

Subsequently, the collected data were correlated with hospital morbidity (hospitalizations and deaths), hospital service costs spent with hospitalizations, average hospitalization value and average length of stay in the hospital unit. It is noteworthy that, because the source of data collection is public domain, open access and without identification of participants, this study did not need to be evaluated by the Research Ethics Committee, according to Resolution 466/2012 of the National Health Council.

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RESULTS

According to Table 1, there were 47,882 hospitalizations and 6,919 deaths due to CKF in the Brazilian Northeast. The state of Bahia was the most prevalent in hospitalizations, with 10,939 (22.8%), and deaths with 1,772 (25.6%).

Table 1. Morbidity due to chronic renal failure in northeastern Brazil according to the study period. Jequié (BA), Bahia, Brazil, 2018.

| Federative Units | 2013          | 2014          | 2015          | 2016          | 2017          | Total | %     |
|------------------|---------------|---------------|---------------|---------------|---------------|-------|-------|
|                  |               |               |               |               |               |       |       |
| HOSPITALIZATIONS|               |               |               |               |               |       |       |
| Maranhão         | 101           | 1,255         | 1,266         | 1,406         | 1,273         | 5,301 | 11.1  |
| Piauí            | 53            | 569           | 654           | 759           | 440           | 2,475 | 5.2   |
| Ceará            | 191           | 1,804         | 1,751         | 1,806         | 1,618         | 7,170 | 15.0  |
| Rio Grande do Norte | 86          | 484           | 527           | 541           | 491           | 2,129 | 4.4   |
| Paraíba          | 42            | 1,059         | 1,032         | 795           | 700           | 3,628 | 7.6   |
| Pernambuco       | 178           | 2,260         | 2,248         | 2,478         | 2,724         | 9,888 | 20.7  |
| Alagoas          | 50            | 1,267         | 1,229         | 1,258         | 1,056         | 4,860 | 10.1  |
| Sergipe          | 44            | 379           | 312           | 429           | 328           | 1,492 | 3.1   |
| Bahia            | 208           | 2,631         | 2,636         | 2,664         | 2,800         | 10,939| 22.8  |
| Total            | 953           | 11,708        | 11,655        | 12,136        | 11,430        | 47,882| 100   |
| OBITOS           |               |               |               |               |               |       |       |
| Maranhão         | 7             | 133           | 176           | 158           | 132           | 606   | 8.8   |
| Piauí            | 9             | 109           | 139           | 108           | 44            | 409   | 5.9   |
| Ceará            | 26            | 245           | 204           | 242           | 226           | 943   | 13.6  |
| Rio Grande do Norte | 19          | 104           | 99            | 93            | 75            | 390   | 5.6   |
| Paraíba          | 5             | 118           | 117           | 107           | 95            | 442   | 6.4   |
| Pernambuco       | 18            | 296           | 333           | 368           | 350           | 1,365 | 19.7  |
| Alagoas          | 6             | 139           | 188           | 162           | 143           | 638   | 9.2   |
| Sergipe          | 14            | 70            | 94            | 103           | 73            | 354   | 5.1   |
| Bahia            | 42            | 420           | 426           | 440           | 444           | 1,772 | 25.6  |
| Total            | 146           | 1,634         | 1,776         | 1,781         | 1,582         | 6,919 | 100   |

Source: Ministry of Health - UHS Hospital Information System (HIS/UHS)

Regarding the hospital costs in the management of CKF, there was a charge of R$ 79,132,453.29 to the public coffers, as shown in table 2. In addition, over the years, the values presented behavior and the state of Pernambuco generated a greater financial impact with R$ 23,818,884.18 (30.1%).

Table 2. Hospital costs for the treatment of chronic kidney failure in northeastern Brazil according to the study period. Jequié (BA), Bahia, Brazil, 2018.

| Federative Units | 2013          | 2014          | 2015          | 2016          | 2017          | Total | %     |
|------------------|---------------|---------------|---------------|---------------|---------------|-------|-------|
|                  |               |               |               |               |               |       |       |
|                  |               |               |               |               |               |       |       |
| Maranhão         | 177,179.80    | 1,590,367.66  | 1,767,063.94  | 1,652,718.32  | 1,722,738.34  | 6,910,068.06| 8.7   |
| Piauí            | 56,421.05     | 753,639.70    | 830,982.35    | 1,114,251.45  | 469,186.93    | 3,224,481.48| 4.1   |
| Ceará            | 291,907.94    | 2,503,507.78  | 2,563,444.50  | 2,602,949.90  | 2,232,824.52  | 10,194,634.64| 12.9  |
| Rio G. Norte     | 128,532.42    | 889,881.82    | 1,059,883.51  | 966,355.76    | 809,760.00    | 3,854,413.51| 4.9   |
| Paraíba          | 56,297.38     | 990,924.48    | 1,109,294.89  | 966,559.10    | 946,858.01    | 4,099,933.86| 5.2   |
| Pernambuco       | 410,120.16    | 4,024,527.59  | 5,071,417.54  | 6,073,870.95  | 7,333,947.94  | 23,818,884.18| 30.1  |
| Alagoas          | 58,084.54     | 1,121,959.88  | 1,321,872.77  | 1,480,885.70  | 1,323,872.10  | 5,306,674.99| 6.7   |
| Sergipe          | 90,258.74     | 449,427.36    | 933,771.15    | 1,191,271.43  | 1,136,111.02  | 3,801,839.70| 4.8   |
| Bahia            | 407,773.75    | 3,792,964.26  | 4,169,163.91  | 4,162,319.95  | 5,394,301.00  | 17,926,522.87| 22.7  |
| Total            | 1,676,575.78  | 17,017,200.53 | 18,826,894.56 | 20,242,182.56 | 21,369,599.86 | 79,132,453.29| 100   |

Source: Ministry of Health - UHS Hospital Information System (HIS/UHS)

It is verified that the average hospitalization value in the Northeast was R$ 1,816.11 and the average length of stay in the hospital was 10.4 days. In the state of Sergipe, the highest prevalence was recorded in the two variables, respectively, with R$ 2,795.87 and 15 days.
In the first instance, it is reported that, despite the fact that CKF has been a growing object of study in recent years, there is a scarcity of research on the theme in the Northeast region of the country. As a result, it was difficult to construct the discussion, making it impossible to evidence concrete justifications for arguing the results.

From this perspective, researchers draw the attention to the importance of epidemiological and economic studies in regions with low socioeconomic status, in order to scientifically disseminate the real health needs of the population and contribute to the direction of actions that reduce or eliminate health inequalities among the most vulnerable groups.

In the Northeast region, 11,308 people with HD attend the therapy in 134 active centers, representing 18% of dialysis units throughout Brazil. It is noted that between 2013 and 2015, there was an increase hospitalizations for all causes in the country and it was recorded that CKF and associated comorbidities represented, respectively, 1.82% and 5.79% of hospitalizations for all causes.

It is reported that Bahia is the largest state in the Northeast and has a higher number of people of African descent (78.8%) and in a situation of socioeconomic vulnerability. As a consequence, the higher prevalence of individuals with risk factors for the development of CKF stands out, which may be associated with their significant hospitalization and death values, as shown in Table 1.

However, it should be noted that the Northeast of Brazil has a significant poverty rate, potential risk factors for the development of hypertension and diabetes mellitus. In addition, the lower socioeconomic conditions are associated with the clinical presence of macroalbuminuria, reduced glomerulus filtration rate and progressive loss of nephron function.

It is also warned that renal failure is associated with lower educational levels, while people with higher education have more access to RRT and Tx. It is reported that these results clearly demonstrate the size of health inequity in Brazil, especially in the Northeast region, by recording the highest illiteracy rates among all regions of the country, showing another risk factor for the development of CKF.

Regarding the hospital costs in the management of the pathology, there was a charge of R $ 79,132,453.29 to the public coffers, as shown in Table 2. It is also emphasized that over the years, the values presented a growing behavior and the State of Pernambuco generated the largest financial impact, with R $ 23,81,884.18 (30.1%).

It is regretted that research on hospitalizations and public costs due to CKF in the state of Pernambuco is scarce. A study was conducted in an emergency department of the state, showing that, among hospitalizations admitted in July and August 2012, 38.46% of patients had renal function failure and 15.38% had end-stage CKF. Furthermore, many CKF diagnoses were given to patients who were unaware of their nephrological clinical condition.

It is noteworthy that this condition, reported in 2012, may have expanded over the years of this study and promoted greater burden on public health services, since the patient who receives a diagnosis of CKF, in a dialysis stage in the hospital, needs more assistance from orientation to the first dialysis procedures, when necessary, among other assistance procedures that involve greater technological resources.

It is observed, in a study conducted in Brazil with the objective of establishing the expenses with UHS hospitalizations for CKF and related diseases, that, in the period 2013-2015, such pathologies accounted for 12.97% of the total expenses with hospitalizations, in the country, considering all the causes. These results are noteworthy because they are a significant value in health prescriptions, and it is expected that these values will increase over the years.

Table 3. Average cost of hospitalization and average stay in the Northeast of Brazil by Chronic Kidney Failure. Jequié (BA), Bahia, Brazil, 2018.

| Federative Units  | Average value of hospitalization | Average length of stay |
|------------------|---------------------------------|------------------------|
| Maranhão         | 1,473.00                        | 11.5                   |
| Piauí            | 1,416.82                        | 7.9                    |
| Ceará            | 1,538.89                        | 10.6                   |
| Rio Grande do Norte | 1,982.17                   | 9.5                    |
| Paraíba          | 1,261.57                        | 7.3                    |
| Pernambuco       | 2,614.36                        | 11.9                   |
| Alagoas          | 1,220.76                        | 5.9                    |
| Sergipe          | 2,795.87                        | 15                     |
| Bahia            | 1,815.35                        | 11.5                   |
| Total            | 1,816.11                        | 10.4                   |

Source: Ministry of Health - UHS Hospital Information System (HIS/UHS)

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CONCLUSION

It is concluded that morbidity due to chronic renal failure is still a serious public health problem, directly implying the increase and ascendency of hospital costs. It is cautioned that this study reveals data capable of awakening the self-care of the population and strengthening the actions of primary care in the prevention and control of the disease and its etiological factors in order to reduce hospitalizations and reduce burdens.

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