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RESEARCH

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The Caring Costs for Patients Bearing Chronic Kidney Disease (CKD), in a Non-dialytic Phase of a University Hospital

O Custo do Atendimento aos Pacientes com Doença Renal Crônica (Drc), em Fase Não Dialítica de um Hospital Universitário

El Coste del Tratamiento a Pacientes com Enfermedad Renal Crónica (ERC), em Fase no Diálisis em um Hospital Académico

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ABSTRACT

Objective: The study's goal has been to identify the cost of care for patients bearing Chronic Kidney Disease (CKD) in a non-dialytic phase of a university hospital in *Rio de Janeiro* State. Conservative treatment is a therapeutic modality that aims to accompany the patient at all disease stages. **Methods:** This is a retrospective cohort study with a quantitative approach and cost analysis performed at a university hospital in *Rio de Janeiro* State. **Results**: In the study, data such as age, sex, religion, education, race, income, access type, mode of entry into dialytic therapy, exams, consultations and their specialties and medications were delimited. **Discussion:** It has been discussed under scrutiny each point from observed data in order to highlight the costs of conservative treatment, and also the beneficial aspect that is closely linked to it. **Conclusion**: There is a need for stimulating research regarding the topic, particularly, when it comes to epidemiological, financial and clinical aspects.

Descriptors: Chronic kidney disease, Conservative treatment, Costs and technologies in health.

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RESUMO

Objetivo: Identificar o custo do atendimento aos pacientes com doença renal crônica (DRC), em fase não dialítica de um Hospital Universitário do Rio de Janeiro. O tratamento conservador é uma modalidade terapêutica que tem objetivo acompanhar o paciente em todos os estágios da doença. **Métodos:** Trata-se de um estudo de coorte retrospectivo com abordagem quantitativa e análise de custos realizado em um hospital universitário do estado do Rio de Janeiro. **Resultados:** Diante do estudo foram delimitados dados como idade, sexo, religião, escolaridade, raça, renda, tipo de acesso, modo de entrada em terapia dialítica, exames, consultas e suas especialidades e medicamentos. **Discussão**: foi discutido ponto a ponto de cada dado observado a fim de destacarmos os custos do tratamento conservador e o aspecto benéfico que está intimamente ligado. **Conclusão**: Evidencia-se, então, a necessidade de incentivar pesquisas para a temática quando aos aspectos epidemiológicos, financeiros e clínicos.

Descritores: Doença renal crônica, Tratamento conservador, Custos e Tecnologias em saúde.

RESUMEN

Objetivo: El estudio tiene como objetivos: identificar el costo de la atención para los pacientes con enfermedad renal crónica (ERC) en la fase no-diálisis de un hospital universitario de Río de Janeiro. El tratamiento conservador es una modalidad terapéutica que tiene el objetivo de acompañar a los pacientes en todas las etapas de la enfermedad. **Métodos**: Se realizó un estudio de cohorte retrospectivo, con un enfoque de costos y análisis cuantitativo realizado en un hospital universitario en el estado de Río de Janeiro. **Resultados**: Antes del estudio se definieron los datos como la edad, el sexo, la religión, la educación, raza, ingresos, tipo de acceso, el modo de entrada en diálisis, exámenes, consultas y *sus* especialidades y medicamentos. **Discusión:** punto discutido por punto a cada uno de los datos observados con el fin de destacar los costos de tratamiento conservador y el aspecto beneficioso que está estrechamente vinculado. **Conclusión**: Se ve, pues, la necesidad de fomentar la investigación en el tema cuando la epidemiológica, clínica y financiera.

Descriptores: Enfermedad renal crónica, El tratamiento conservador, Los costos y tecnologías sanitarias.

INTRODUCTION

Chronic Kidney Disease (CKD) is considered a major public health problem in Brazil and the world. Due to its complexity, it has been one of the main causes of morbidity and mortality, besides demanding high costs in health resources.[19]

CKD consists of a slow and progressive decrease of the renal function generating accumulation of products of the metabolic degradation in the blood. This type of kidney injury can be caused, in many cases, by hypertension and diabetes, which cause irreparable damage to the organ.20

In Brazil, it is estimated that there are currently more than two million people with some degree of renal dysfunction. This is equivalent to approximately 1% of the Brazilian population.[15]

The Brazilian Society of Nephrology pointed out an increase in the number of cases of patients bearing CKD throughout the country, converging with the tendency of the worldwide increase of these rates. That same year, it was estimated that 100,397 people were dialyzed. Of those dialyzed in 2013, 85.8% were attended by the Sistema Único de Saúde (*SUS*) [Unified Health System].[40]

In this scenario, early diagnosis of CKD is an optimization tool for the adoption of strategic prioritization measures and a reduction in the progression of CKD as well as a reduction in treatment costs.[4,32]

Recently, it has been shown that the progression of the disease can be delayed, interrupted or led to better clinical outcomes through a set of actions called Conservative Treatment, which consists of controlling the risk factors for the progression of CKD, as well as for cardiovascular events and mortality, in order to maintain the Glomerular Filtration Rate (GFR) for the longest possible time.[4]

Based on the literature produced outside the Brazil, it is assumed that the expansion of its offer under the *SUS* is more cost effective than the natural course of the disease, with late interventions, linked to the beginning of Substitutive Renal Therapy (SRT).[12,21,22]

In this context, conservative treatment has a broad impact, allowing the reduction of costs by using lower cost technologies in therapeutic conduction and would enable a better qualification of the demand generated for services, management of renal damage in its initial stage and better monitoring of markers of renal impairment among hypertensive, diabetic and elderly patients to prevent complications.[5]

Among the benefits of this treatment modality, it should be highlighted the findings[34] that demonstrated that the patients' survival that are attended by a multidisciplinary team is greater than those patients followed in conservative treatment only by the physician.

Despite the diversity of sources of information on CKD in Brazil and the world, there are many limitations in the data that exist mainly on the costs of conservative treatment, which makes it impossible to know precisely this universe for the planning of health actions.

Given the above, and in view of the importance of offering cost-effective options in dealing with CKD, knowledge of the costs of therapeutic options that delay the progression of the disease is relevant and, therefore, has become the object of this study.

This research will allow the identification and mapping of costs and opportunities for the use and application of technological solutions. These analyzes can help to select the most effective interventions at a lower cost and add elements for modifications and improvement of health policies, increasing the efficiency and effectiveness of services and the quality of the health care provided.

Therefore, the study's goal has been to identify the cost of care for patients bearing CKD in a non-dialytic phase of a university hospital in *Rio de Janeiro* State.

This research is justified by the scarcity of investigation regarding the financial costs of the technologies offered by the *SUS* to subsidize assistance and the choice of the best form of resource allocation in confronting the CKD as a knowledge gap that must be corrected.

METHODS

This is a descriptive study with a quantitative approach, associating the epidemiological method to a cost study. A retrospective investigation was carried out in a cohort of patients followed at a CKD care unit at a university hospital in *Rio de Janeiro* State. It is pointed out[18,31] that research using the descriptive and quantitative approach has the facility to describe the complexity of a particular hypothesis or problem, to analyze the interaction of certain variables, to understand, to contribute, to understand the dynamic processes and to present contributions in the change process.

Data collection took place from April to June 2016. All patients who entered SRT were enrolled, out of a total of 18, of whom only 10 met the inclusion criteria and were followed up at the research hospital by adult patients Above 18 years old, of both sexes and have performed at least three documented medical consultations.

To perform the data collection, an instrument was used to characterize the clientele and to identify the follow-up by nephrologist prior to the onset of SRT. A second instrument was used to extract data, from the medical record, aimed at the consumption of resources used by the patient who were followed up; Were used as variables such as: numbers of consultations with health professionals, exams performed as biochemistry, serology, hematology, images exams and medications.

The variables such as the number of consumption of consultations, examinations and medicines were established according to the proposed protocol for follow-up of the clientele in the institution. The values assigned to each consumption item were derived from the *SUS* procedure table.

The data were entered into a Microsoft Excel® spreadsheet and the total cost of each patient's follow-up period was calculated and then the average monthly cost was calculated. To calculate the average monthly cost, the total value was divided by the number of months of the follow-up period.

The project was submitted to the Research Ethics Committee of a university hospital in *Rio de Janeiro* State, approved by the Legal Opinion No. 1,517,603.

RESULTS

During the period from January to June 2016, patients were enrolled in SRT totaling 18 patients, of whom only 10 met the established inclusion criteria and all patients were treated through hemodialysis.

In this sampling, the female predominated 7 (70%), and the average age was 59.1 years old, with a standard deviation of 19.1. Regarding schooling, 6 (60%) of the interviewees attended high school, while 2 (20%) attended up to the 1st grade, 1 (10%) attended the college and 1 (10%) studied until the 5th grade.

Regarding the religion, 6 (60%) declared themselves Catholics and 4 (40%) Evangelicals. Referring to the marital situation 4 (40%) were single, 3 (30%) married and 3 (30%) claimed to be widowers. Regarding the race, there was a prevalence of individuals who declared themselves white skin color, totaling 5 (50%), while 3 (30%) declared themselves black and 2 (20%) declared themselves as brown.

We identified a population with 6 (60%) of the respondents with income between 1 and 2 minimum wages, 3 (30%) declared income of 5 or more minimum wages and 1 (10%) with income between 3 and 4 minimum wages. In this population, 6 (60%) declared to be retired. In the anthropometric measurements it was observed that the Mean Body Mass Index (BMI) was 26.20.

In the group, 9 (90%) presented Systemic Arterial Hypertension (SAH) and 1 (10%) presented Diabetes Mellitus (DM) as the underlying disease. Additionally, it was identified that 5 (50%) of the respondents had some kind of comorbidities. However, the costs of treating these injuries were not accounted for.

The patient's condition on the first dialysis was elective with 5 (50%) and the remaining 5 (50%) in dialysis emergence. The type of access for SRT onset was predominantly short-lived with 7 (70%), while the remaining 3 (30%) had a definite and better choice of Arteriovenous Fistula (AVF).

The sum of the months of patients undergoing conservative treatment was 571 months. The average follow-up period of these patients was 57.1 months, ranging from 3 to 228 months. At the time of dialysis the mean hemoglobin (Hb) was 12 g/dL, creatinine (Cr) equal to 6.5 mg/dL and the initial GFR with a mean of 7.9 mL/min.

We found records of 229 medical consultations, 10 nursing consultations, 10 nutrition consultations, 1 psychology consultation and none of social workers.

The concentration of medical consultations per patient was 4.8 consultations/year, while for the consultation of other professionals the registered offer is less than 0.1 consultations/year.

Considering the amount paid by the *SUS* for consultations in specialized care according to the SIGTAP website in 2016, which is R$ 10,00 (ten reais), and the total cost of medical consultations was ten thousand nine hundred and ninety two reais). [Note: the Brazilian currency format has been used over the text].

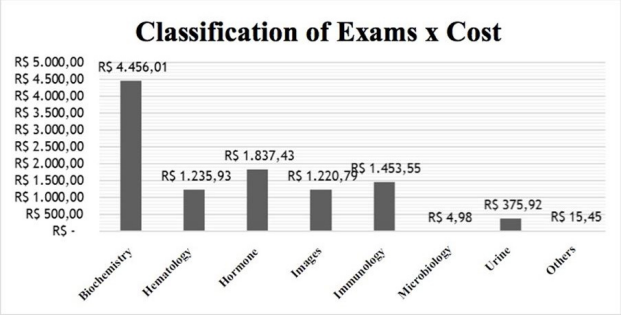
Average monthly cost of medical consultations per patient was R$ 19,25 (nineteen reais and twenty-five cents) and

average annual cost of medical consultations per patient was two hundred and thirty-one reais and one cent (R$ 231,01).

The exams performed by patients undergoing conservative treatment were quantified. The exams requested by the medical team were grouped into 8 subgroups (biochemistry, hematology, hormone, immunology, urinalysis, images, microbiology and others). Biochemistry totaled 1,821 exams, hematology 485, hormones with 62, immunology 89 exams, urinalysis 131, images with 43, microbiology 1 (antibiogram) and others (Graph 1).

The total amount paid by the *SUS* for these examinations was R$ 10.600,06 (ten thousand, six hundred reais and six cents). The average monthly amount was R$ 18,60 (eighteen reais and sixty cents) and R$ 223,16 (two hundred twenty-three reais and sixteen cents) in the average annual value. The average value paid by the *SUS* for examinations per patient/month ranged from R$ 6,01 (six reais and one cent) to 160,44 (one hundred and sixty reais and forty-four cents).

Graph 1 - Distribution of the exams subgroups by cost.



Source: Author, 2016.

Note: The currency format used in this graph was the Brazilian currency format.

Among the drugs prescribed for patients in conservative treatment in the outpatient clinic of 59 therapeutic formulas divided into 23 drug classes (Table 1).

Table 1 - Drug classes identified and total cost in conservative treatment in the study population.

Drug Classes	Cost	%
Diuretic	R$ 562,50	3.73
Anti-hypertensive	R$ 3.771,45	24.99
Treatment of hyperlipidemia	R$ 197,10	1.31
Treatment of anemia	R$ 329,52	2.18
Anti-demineralizer	R$ 481,50	3.19
Acid/base correction	R$ 1.357,20	8.99
Vitamin complex	R$ 858,87	5.69
Corticoid	R$ 860,67	5.70
Gastric protector	R$ 25,20	0.17
Stimulator of the erythropoiesis	R$ 4.465,60	29.58
Antiplatelet aggregation agent	R$ 108,00	0.72
Treatment of uric acid	R$ 41,40	0.27
Anticoagulant	R$ 42,90	0.28
Immunosuppressant	R$ 607,50	4.02
Hypnotic	R$ 51,00	0.34
Synthetic hormone	R$ 9,48	0.06
Mineral oil	R$ 7,80	0.05
Antibiotic	R$ 13,60	0.09
Beta-blockers	R$ 133,20	0.88
Antineoplastic	R$ 798,60	5.29
Treatment of gastric ulcer	R$ 163,20	1.08
Analgesic	R$ 136,50	0.90
Antidepressant	R$ 71,40	0.47
Total	R$ 15.094,19	100.00

Note: The currency format used in this table was the Brazilian currency format.

The estimated total cost of drugs prescribed for the study population was R$ 15.094,59 (fifteen thousand, ninety-four reais and fifty-nine cents). The total cost per patient ranged from R$ 15,90 (fifteen reais and ninety cents) to R$ 3.036,49 (three thousand, thirty-six reais and forty-nine cents).

Average monthly cost per patient was R$ 26,44 (twenty-six reais and forty-four cents) and the average annual cost of medication per patient was three hundred seventeen reais and twenty-two cents (R$ 317,22). The cost of conservative treatment under the *SUS* perspective does not imply the sum of the custody of consultations, exams and medications.

It can be identified in Table 2, which shows that the total monthly average cost per patient was R$ 64,29 (sixty-four reais and twenty-nine cents) and the total annual cost equivalent to R$ 771,44 (seven hundred and seventy seventy-one reais and forty-four cents).

Table 2- Relationship: monthly and annual average costs of the items investigated.

Item description	Monthly average cost		%	Annual average cost		%
Medical appointments	R$	19,25	29.94%	R$	231,01	29.95%
Consultations to other specialties	R$	0,04	0.06%	R$	0,44	0.06%
Exams	R$	18,56	28.87%	R$	222,77	28.88%
Medicaments	R$	26,44	41.13%	R$	317,22	41.12%
Total	R$	64,29	100.00%	R$	771,44	100.00%

Source: Author, 2016.

Note: The currency format used in this table was the Brazilian currency format.

DISCUSSION

The female sex stood out among the population studied, with a frequency of 70%, finding divergent from the national and international literature. Similar studies[9,28], carried out in *Itajubá, Minas Gerais*, Brazil and in the metropolitan region of *Cariri Cearense*, Brazil, indicate that man is the most affected. However, it is reinforced the data found[14] and mentioned that the number of cases among the female has lower scores of life quality and thus, they present a higher risk of death compared to the men.

In this study, when the age of the sample was analyzed, an average age of 59 years old was observed, similar data were presented[13,26,28], which showed the involvement of CKD in people from the end of their fifth life decade. It is possible to admit that the high frequency in the elderly is due to the weakened potential of the same ones against the progressive loss of the renal function, related to the physiological alterations of the senility and associated comorbidities that lead to the development of the renal pathology.

Some authors[9,16] affirm that CKD is a disease of the elderly, and that in spite of the diverse therapeutic modalities, the CKD's treatment for this public still has many gaps; then,

suggesting achievements in actions to improve care, minimize health complications and promote the quality of life of these individuals.

The complete high school had a higher frequency among the studied population (60%). However, if we also consider those with complete and incomplete elementary education, the proportion of low schooling reaches 30%. This finding was also demonstrated in the study[43] conducted in the Brazilian Northeast, where a predominance of CKD was observed in patients who had up to 08 years under study.

Studies[14] also show a greater frequency of CKD involvement in individuals with low schooling. We would like to point out that the change in the setting of schooling in our study might have occurred due to the accessibility of teaching in recent years and the improvement of life quality as a whole.

Regarding the marital status, it was evidenced that the highest frequency of the individuals was married (30%). A survey conducted in 2015[28], where it was shown that the marital status of the individuals interviewed, 54% were married.

When analyzing the race variable, we showed that 50% of the individuals declared themselves white skin color, which indicates similarity with another study[28], which showed that 88% of the subjects were white. It is emphasized[28] that CKD affects the white race more. While the 2009 study[27] considers the black and mulatto race with a higher risk for Terminal Renal Disease.

Regarding the presence of religiosity, 60% of individuals declared Catholics. It is stated[14] that the presence of religiosity makes these people believe in a greater/divine being that contributes to overcoming the adversities of the disease and nourishes the hope of a possible cure.

Concerning occupation and income, the majority of the participants are retirees and monthly income of two minimum wages. Similar to the literature, which shows that patients bearing CKD have low socioeconomic status. The high number of retirees can be justified due to the benefit acquired by the *Instituto Nacional de Seguridade Social (INSS)* [National Institute of Social Security], after finding having the CKD[45].

The low-income CKD[25] patients carry out their treatments in the *SUS* because they do not have the economic conditions to pay for health insurance as well as treatment. They point out[17] although the low socioeconomic condition, influences the quality of adherence to treatment, food, in addition to hampering access to health service, transportation, pharmacological and dialytic treatment, favoring an undignified survival.

Regarding the BMI, it should be noted that the mean of the patients is 26.20%, which are classified as pre-obese. Although the Brazilian reality is not yet an obese country, such comorbidities are not one of the main causes of the CKD, it is necessary having caution since the BMI of patients bearing CKD[44] has increased in recent years. Factors such as obesity contribute to the development of chronic diseases. In view of this reality[36,38], the need to establish measures to increase the population's access to healthy food, interventions and incorporations of the theme in government advertising and the commitment of actions in the Public Health Policy Programs, in order to increase the knowledge of the disease and its evolution both in the scope of research and in the field of health education.

Evaluating the main causes of CKD in the research subjects, we observed the predominance of SAH and DM. Epidemiological research has pointed out the same as the main causes of CKD, corroborates with our results, demonstrating that SAH is the primary cause of CKD.[1,10,29]

However, DM is targeted[8] as the main underlying disease of CKD in developed countries. From this, it has become clear that adequate and early interventions, which encompass the full spectrum of CKD, both in primary and medium care, can delay the progression of the disease, preventing loss of renal function, or still in the improvement of the organic dysfunction and co-morbid conditions in the patients with the basic diseases of CKD.

Starting from the assumption for the initiation of dialysis therapy, its recommended GFR should be <15 mL/min/1.73 m2 and for this the nephrological evaluation should occur quarterly or with a longer period of time according to its clinical evaluation until the creation of a vascular access that allows it to perform its SRT.[5-6]

Analyzing what is recommended and what has been found in the study, we have found an average GFR well below what is established, which in fact can not explain the phenomenon, since it was not the objective of the study. Some questions can be raised such as poor adherence to the follow-up period, non-acceptance of the patient, not even presenting signs and symptoms, which makes it more difficult to explain the need for dialysis.

During conservative treatment, there are times to plan the preparation and maturation of a biological vascular access. The AVF is shown as the best and mandatory access for this patient to enter SRT. The first choice of vascular access is AVF, where the patient will have benefits such as longevity of this access, not allowing him so easily infections and consecutive losses.[23]

What also refers to the way this patient enters SRT, as observed in this study was an equivalence between patients who had their first hemodialysis in an elective and emergency (50%). As this patient is conducted and prepared in conservative treatment, it would be mandatory for all to enter SRT electively, which did not happen and for some reason this patient underwent dialytic urgency.

The early initiation of outpatient follow-up for the CKD patient aims to slow the rate of disease progression, with measures aimed at blood pressure control, glycemic control and dietary guidelines.[33]

The follow-up period is related to the time of entry and the stage of the disease. The recommended follow up by a

team of specialists in nephrology is from stage IV, when the estimated GFR reaches values lower than 15 to 29 mL/min/1.73 m^2.[5-6]

In the studied sample, the time of admission for following up ranged from patients who started treatment in stage 2 to stage 5, and therefore had more time under care from the outpatient team to patients whose GFR was so low that the follow-up period was equal to the point for inclusion in the study group, i.e. 3 months. This fact may be an element that generates distortions in the desired results for the pre-dialysis monitoring.

The CKD patient is submitted to laboratory tests to evaluate renal function. Hemoglobin does not have its ideal pre-dialytic level described, but according to Kidney Disease Outcomes Quality Initiative (KDOQI) it is around 11.0 to 12.0 g/dL. Naturally high levels are considered as a warning sign for some kidney diseases. In this study it was observed that the average hemoglobin-input patients were 12.0 g/dL with a standard deviation of 4.2.[24]

Considering the creatine, the pre-dialytic levels should be dosed monthly, with a common range of ≥ 3.2 mg/dL. In this study, it was observed that the patients interviewed had an average of 6.5 mg/dL with a standard deviation of 2.6.2

And the average GFR observed was 7.9 mL/min/1.73m^2, well below that determined by the clinical guidelines for the care of patients bearing CKD in the *SUS*.[5, 11]

To conduct conservative treatment there is a clinical guideline that proposes a care structure that recommends multidisciplinary care. One study demonstrated that the survival of patients who are attended by a multidisciplinary team is greater than those patients followed in conservative treatment only by the physician.[5,33]

During this investigation course, the records of medical appointments correspond to a total of 229 consultations; in counterpoint, the records of other professional categories (nursing, nutrition, psychology) correspond to only 21 appointments, with no record of care of the social work team. The information of the existence of follow-up procedure by nurses and nutritionists is on the regular basis, but the psychologists and social workers sporadically are supported by those records. It also notes a system of medical records that weakens the expression of the care effectively offered to this clientele, especially by non-medical professionals.[35]

Lack of records and poor quality, as well as, illegible data and inconsistencies are factors that directly interfere with care actions and cost, since it makes it impossible to bill the procedures performed, since it is through the medical record that notes are made, which relates to the care and treatment of the patient. It is also one of the forms of communication among different health professionals, where this is of great value as source of investigation, educational instrument and legal protection, considered also evaluation criterion, the quality of the health service, and also of scientific character.46

Based on the records found, the concentration of medical consultations per patient is much higher than the concentration of consultations of other categories that obtained a lower quantitative. This finding indicates the scarcity of interventions of the multidisciplinary team, but it is not clear if this absence occurs in fact or is due to the lack of records that prove it, anyway the discussion is undertaken with the resources that were actually found in the records.

Patients bearing CKD when followed in conservative treatment are assisted according to the clinical guidelines of renal patient care. In this scope of treatment is placed as a care strategy, as requests for exams following programming that is related to the stages of the disease and the time intervals, monthly, quarterly, semiannually, annually and eventually when necessary. Most are biochemistry, hematology, hormones, urinary and imaging tests.[37]

In this research we have found a higher percentage in the number of records of biochemistry exams compared to other exams. It is important to emphasize the necessity of carrying out the laboratory tests for this assisted population, since these results help in the identification and classification of the stage of the disease and says about the hemodynamic balance of the patient, which is necessary to trace the best care practice with the intention of delaying the patient's entrance into dialysis.[37]

In order to control the disease, it is extremely important to associate the results of the exams and the prescription of medication, which aims to control pressure levels, glycemic control, treatment of anemia, disorder of mineral and bone metabolism and dyslipidemia. These measures help in the CKD management. In the study scenario, we have seen that, according to the guidelines, the use of drug classes to correct clinical alterations is instituted. Analyzing the drugs used, we identified as the major source of cost was in the treatment of anemia with the use of erythropoietin followed by the class of antihypertensives.[3,39]

After identifying the numbers of registered consultations, examinations performed and prescribed drugs, an average annual cost per patient under conservative treatment was found to be equal to R$ 771,44 (seven hundred seventy-one reais and forty-four cents) corresponding to annual *SUS* expenditure. In contrast, the annual amount that the *SUS* pays per hemodialysis patient amounts to eight thousand five hundred and ninety-three reais and forty-four centavos (R$ 8,593.44).[7,41]

Based on these data, the *SUS* investments should appreciate as a guarantee of the follow up in renal patient care with clinical and medical support, since any time spent in the conservative represents potential savings for the system.

CONCLUSIONS

After the study development, it has been concluded that the scope of chronic renal patient care in conservative treatment is still little explored at the national level. This problem is difficult to contextualize the results of this study with the

Brazilian framework, which reverts in a predominantly descriptive analysis of the findings.

Even though we have faced limitations regarding the quality of records, sample size and the variability of pricing the medicines, we can conclude that the results of the study showed that the amount paid by the *SUS* per patient in the conservative treatment is lower compared to the amount spent in SRT when dealing with hemodialysis.

Therefore, there is a need to encourage researches on this thematic regarding the epidemiological, financial and clinical aspects. Thus, aiming to expand the technology of low complexity, elaboration and use of differentiated guidelines for each phase of the CKD, and then bringing lower cost and greater effectiveness in the approach and assistance of this disease in the *SUS*.

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