http://www.periodicos.uem.br/ojs/index.php/CiencCuidSaude
ISSN on-line1984-7513
DOI 10.4025/cienccuidsaude.v19i0.50407

ORIGINAL ARTICLE

KIDNEY PATIENT CARE BEFORE THE START OF HEMODIALYSIS: RETROSPECTIVE STUDY

Paulo Henrique Alexandre de Paula*
Paulo Roberto Santos**
Luiz Derwal Salles Júnior***
Maria Socorro de Araújo Dias****
Patrícia Neyva da Costa Pinheiro*****
Maria Izabelly Fernandes da Costa******

ABSTRACT

INTRODUCTION: the monitoring of renal patients before the start of hemodialysis is an important element for the implementation of preventive measures that delay or interrupt the progression to more advanced stages of the disease. **OBJECTIVE:** to evaluate primary and tertiary care for people with Chronic Kidney Disease before hemodialysis. **METHODS:** retrospective, documentary, quantitative study with 35 renal patients who started hemodialysis in Sobral-Ceará, Brazil. Data were collected between January and March 2015. An instrument was used to outline the socioeconomic profile, laboratory data, etiology of chronic kidney disease, type of vascular access, and degree of comorbidity. In the Family Health Strategy, we sought to collect data on the number and dates of consultations, creatinine levels, qualitative urine tests, and referral to nephrologist. Data were analyzed using descriptive statistics. **RESULTS:** of the 35 patients, 19 (54.3%) were women and 16 (45.7%) men, with a mean age of 58.8 ± 17.7 years. Of the total, 22 (62.8%) were consulted in the Family Health Strategy before the start of hemodialysis. Of these, only 6 (22.3%) had their renal function assessed and 4 (18.1%) consulted a nephrologist. The time elapsed between the first consultation at the FHS and the start of hemodialysis was 2.5 days (median) and between the first consultation with a nephrologist and the start of hemodialysis, 273.5 days (median). The interval of 2.5 days indicated the start of urgent renal replacement therapy. **CONCLUSION:** chronic kidney disease is not screened in the majority of patients monitored by the FHS and few are seen by a nephrologist before starting hemodialysis

Keywords: Chronic Renal Failure. Mass screening. Family Health Strategy. PrimaryHealth Care. Renal Dialysis.

INTRODUCTION

Kidney patient care before the start of hemodialysis (HD) finds a favorable scenario in the Family Health Strategy (FHS), considering that professionals in general and nurses, in particular, recognize, among others aspects, the risk factors for the development of Chronic Kidney Disease (CKD), preventive strategies and actions, and risk groups, which include people with hypertension and diabetes, these being the ones who most seek primary care services[1].

Chronic Kidney Disease is defined as the presence of abnormalities in renal structure or function lasting for more than three months, with health implications and is classified based on the etiology, categories of glomerular filtration rate and albuminuria[2]. This disease represents a public health problem worldwide and the end stage of the disease is the most unfavorable outcome of CKD, as well as cardiovascular disorders[3].

In Brazil, the prevalence rate of dialysis treatment in 2016 was 596 patients per million population (pmp), representing an increase over the previous year when the rate was 544 patients pmp[4]. However, there is no exact estimate of the number of Brazilians with CKD. Population surveys reveal that 3 to 6 million Brazilian people are chronic renal patients and just over 100 thousand receive dialysis therapy, data that point to the need to expand the access to health services in order to enable early diagnosis and timely treatment[5].

The challenge, facing this reality, to deal with CKD as an epidemic of the century is to diagnose

*Nurse. Master, PhD student at the Nursing Graduate Program at the Federal University of Ceara. Fortaleza, CE, Brazil. E-mail: paulohed@gmail.com ORCID iD: https://orcid.org/0000-0003-4583-2989
**Doctor. PhD, Professor of the Academic Master's in Family Health at the Federal University of Ceara. Sobral, CE, Brazil. E-mail: prsantos@fortalnet.com.br ORCID iD: https://orcid.org/0000-0002-3092-4808
***Doctor. PhD, Professor of the Master's Degree in Medical Sciences at the Federal University of Ceara. Sobral, CE, Brazil. E-mail: derwal@ufc.br ORCID iD: https://orcid.org/0000-0003-4933-7969.
****Nurse. PhD, Professor of the Academic Master's in Family Health at the Federal University of Ceara. Sobral, CE, Brazil. E-mail: socorroad@gmail.com ORCID iD: https://orcid.org/0000-0002-7813-547X
*****Nurse. PhD, Professor of the nursing course at the Federal University of Ceara. Fortaleza, CE, Brazil. E-mail: neyvapinheiro@yahoo.com.br ORCID iD: https://orcid.org/0000-0001-7022-8391.
******Nurse. PhD student, Graduate Program in Nursing, Federal University of Ceara. Fortaleza, CE, Brazil. E-mail: isabellyfernandes165@yahoo.com.br ORCID iD: https://orcid.org/0000-0001-7697-9727

the disease at an early moment. As CKD is asymptomatic in its early stages, early diagnosis depends on screening through active search in populations at risk. To this end, exams such as summary of urinary indices and serum creatinine levels must be requested among individuals who are part of risk groups for CKD, such as individuals presenting hypertension, diabetes, age over 60, heart disease, and family members of people with CKD[6].

The benefits resulting from early diagnosis are several: decreased mortality due to the control of morbidities associated with CKD, especially cardiovascular complications, delayed progression of renal injury, and preparation of arteriovenous fistula for HD at the right moment, thus avoiding the urgent start of Renal Replacement Therapy (RRT) through catheters[7]. However, it appears that the early diagnosis of CKD remains a challenge, especially in primary care where the identification of the disease is 60% less likely than in specialized care[8].

Sobral is the largest municipality in the northwest region of the state of Ceará, and it is also the place where the only two units offering Renal Replacement Therapy (RRT) are located. In a retrospective study, based on the recall of CKD patients in RRT in that city, less than half (49.2%) of the incident patients in RRT had been consulted with a nephrologist before the start of RRT, less than 40% had a diagnosis of CKD before the start of RRT, and the vast majority (73.2%) initiated RRT with temporary access (catheter), and not through definitive access (fistula)[9]. Starting HD with a catheter causes a higher level of inflammatory activity, greater risk of infection, deep venous thrombosis and higher mortality in the first year after the start of RRT, when compared to starting the procedure through a fistula[10,11].

The need to understand the care provided to renal patients in the FHS and specialized services in this region of Ceará, especially in the perspective of early diagnosis, and considering the unfavorable outcomes of CKD, characterized as an important public health problem, justified this study.

In this context, the objective was to evaluate primary and tertiary care for people with CKD before HD.

METHODS

This is a retrospective, documentary study with a quantitative approach.

The sample consisted of the medical records of CKD patients who started HD between July 2012 and June 2013 at the Santa Casa de Misericórdia de Sobral and Dom Odelir Clinic, the only two RRT units in the city of Sobral and which are a reference for 55 municipalities in the North of Ceará, as well as in the Basic Family Health Units of 20 municipalities of origin of the patients who composed the sample.

The population of patients seen between July 2012 and June 2013 was 200. From this total, the sample calculation was based on a probabilistic method of the simple random type, based on the formula:

$$n0 = \frac{1}{E0^2} \qquad n = \frac{N.n0}{N+n0}$$

In this case, N = 200 records (population size), E = 16% (sample error), n0 = 39 (first approximation of the sample size), and 35 medical records (sample size) were considered.

In the two RRT units, the following data were collected: sex, age, social class according to the Brazil criterion of the Brazilian Association of Research Companies[12], municipality of residence, etiology of CKD (according to clinical criteria noted in the records of the RRT), type of vascular access at the start of HD, degree of comorbidity according to the criteria of Khan and collaborators[13].The following laboratory results at the start of HD were also collected: creatinine (assessment of renal function), hemoglobin (level of anemia), calcium and phosphorus (assessment of mineral and bone disorder), and C-reactive protein (inflammation level).

Social classeswere classified according to the instrument idealized by the Brazilian Association of Research Companies, which is widely validated in marketing surveys and population censuses and takes into account the educational level of the head of the family and the possession of goods. This classification has five social class strata from A (best level) to E (worst level)[12]. The Khan Index instrument used to classify the degree of comorbidity takes into account nine comorbidities (diabetes mellitus, acute myocardial infarction, angina pectoris, heart failure, liver cirrhosis, chronic obstructive pulmonary disease, collagenosis, pulmonary fibrosis and visceral neoplasia) and the age group, based on which the patient is classified into three categories: grade I (low risk), grade II

(medium risk) and grade III (high risk)[13]. Data about to outpatient consultations with a nephrologist during the five years prior to the date of start of RRT were collected in the RRT units; these data were the number and dates of consultations, andthe time between the first consultation and thestart of RRT.

In the Basic Family Health Units, the following data for the period of five years prior to the start of RRT were collected: number and dates of consultations held in the Family Health Program (FHP); number and dates of assessments of creatinine level; number and dates of qualitative urine tests; number and dates of referrals to the nephrologist.

Continuous variables were tested for normal distribution using the Shapiro-Wilk test. Continuous variables with normal distribution were presented as means and standard deviations. Variables with non-normal distribution were presented as median and minimum and maximum values. Categorical variables were presented as absolute numbers and percentages.

Despite being a documentary research, patients' authorization was requested through their signing of the Informed Consent Form in order to obtain data from the medical records. The health units alsogave permission to the development of the research through aconsent letter. The study took into account the ethical aspects of Resolution 466/2012, being approved by the Research Ethics Committee of the State University of Vale do Acaraú under protocol 886.876.

RESULTS

The sample consisted of 35 patients aged 58.8 ± 17.7 years on average, with higher prevalence of males (54.3%). Regarding social class, the class D stood out, representing 45.7% of the sample. The most prevalent renal disease, vascular access and degree of comorbidities were hypertensive nephrosclerosis (48.5%), catheter (91, 4%) and medium risk (37.2%), respectively (Table 1).

Table 1. Demographic, clinical and laboratory characteristics of chronic kidney disease patients on hemodialysis between July 2012 and June 2013 in the city of Sobral (CE). Brazil.

Variables	n (%)	Mean ± standard deviation
Age		58.8±17.7
Sex		
Male	19 (54.3)	
Female	16 (45.7)	
Social class		
B	01 (2.9)	
C	14 (40)	
D	16 (45.7)	
E	04 (11.4)	
Baseline kidney disease		
Hypertensive nephrosclerosis	17 (48.5)	
Diabetic kidney disease	8 (22.8)	
Glomerulopathy	03 (8.5)	
Obstructive uropathy	01(2.8)	
Not determined	06(17.1)	
Access for hemodialysis		
Catheter (temporary)	32 (91.4)	
Fistula (definitive)	03 (8.6)	
Degree of comorbidity		
Low risk	11 (31.4)	
Medium risk	13 (37.2)	
High risk	11 (31.4)	
Creatinine (mg/dL)		7.9 ± 3.7
Hemoglobin (g/dL)		6.9 ± 1.2
Calcium (mg/dL)		8.9 ± 3.3
Phosphorus (mg/dL)		5.8 ± 1.6
Calcium-phosphorus product (mg^2/dL^2)		47.6 ± 14.2

Results in mean ± standard deviation, percentages in parentheses and median (Md) with maximum and minimum values in parentheses

Among the 35 patients in the sample, 22 (62.8%) attended consultations at the FHS of the municipality of residence before starting RRT (Table 2).

Of the 22 patients who were consulted in the FHS, only six (27.3%) had had serum creatinine levels assessed, although more than half of these participants were hypertensive and diabetic; none had done a qualitative urine test; and less than half (40.9%) had been referred to a nephrologist.

Table 2. Variables related to the consultations conducted in the Family Health Strategy for chronic kidney disease patients on hemodialysis between July 2012 and June 2013 in the city of Sobral (CE). Brazil.

Variables	n (%)	Mean ± standard deviation
Age		57.3 ± 17.9
Sex		
Female	16 (72.7%)	
Male	06 (27.3%)	
Social class		
B	01 (4.6%)	
C	08 (36.4%)	
D	11 (50.0%)	
E	02 (9.0%)	
Baseline kidney disease		
Hypertensive nephrosclerosis	12 (54.6%)	
Diabetic kidney disease	03 (13.6%)	
Obstructive uropathy	01 (4.6%)	
Glomerulopathy	03 (13.6%)	
Not determined	03 (13.6%)	
Degree of comorbidity		
Low risk	08 (36.4%)	
Medium risk	09 (40.9%)	
High risk	05 (22.7%)	
Patients with serum creatinine results		
	06 (27.3%)	
Patients referred to a nephrologist		
Yes	09 (40.9%)	
No	13 (59.1%)	
Patients with qualitative urine test results		
	0	
Number of consultations before the start of hemodialysis therapy, *Md (min-max)*	5.5 (3-17)	
Time in days elapsed between the first consultation and the start of hemodialysis, *Md (min-max)*	2.5 (0-947)	

Results in mean ± standard deviation, percentages in parentheses and median (Md) with maximum and minimum values in parentheses

The number of consultations at the FHS varied between 3 and 17 (median of 5.5). The time elapsed between the first consultation at the FHS and the start of RRT corresponded to a median of 2.5 days.

Among the 35 patients who started RRT, only four (11.4%) had attended a consultation with a nephrologist, although there were nine referrals in the medical records. The number of consultations with a nephrologist ranged from 1 to 6 (median of 3 consultations). The timeelapsed between the first consultation with a nephrologist and the start of RRT corresponded to a median of 273.5 days (Table 3).

Table 3. Variables related to the consultations with a nephrologistfor chronic kidney disease patients on hemodialysis between July 2012 and June 2013 in the city of Sobral (CE). Brazil.

Variables	n (%)	Mean ± standard deviation
Age		55.7 ± 18.1
Sex		
Female	02 (50.0%)	
Male	02 (50.0%)	
Social class		
B	01 (25.0%)	
C	01 (25.0%)	
D	02 (50.0%)	
Baseline kidney disease		
Hypertensive nephrosclerosis	02 (50.0%)	
Diabetic kidney disease	02 (50.0%)	
Degree of comorbidity		
Low risk	01 (25.0%)	
Medium risk	0	
High risk	03 (75.0%)	
Distance in kilometers between the municipality of residence and Sobral		54.2 ± 51.5
Number of consultations, ***Md (min-max)***	03 (1-6)	
Time in days elapsed between the first consultation and the start of hemodialysis, ***Md (min-max)***	273.5 (1-1192)	

Results in mean ± standard deviation, percentages in parentheses and median (Md) with maximum and minimum values in parentheses

DISCUSSION

The slight predominance of women with CKD who started HD in our study does not represent what happens among all patients undergoing HD in Brazil according to the Census of the Brazilian Society of Nephrology[4], which showed that 57% of the patients were male. Women seek health services more often than men because of greater availability of time and also for a different perception of the importance of self-care[14]. Also, a study carried out in England pointed to a higher prevalence of chronic kidney disease in males[15], diverging from the findings of the present study.

The average age of 58.8 years among the participants of this study corresponds to the age group with higher prevalence of CKD patients on HD in Brazil, according to the abovementioned census[4]. These data is a cause of concern because the majority of patients are in the productive age group and CKD causes severe restrictions for work activities, especially a lower time to dedicateto work and impaired functional capacity.

At first glance, the concentration of participants in the social classes C and D could be considered as a mirror of the social distribution that occurs in the general population of the region where the study was conducted. However, there seems to be a higher prevalence of CKD among individuals from lower social classes[16]. This higher prevalence is explained by a model describing aspects associated with poverty as favoring the appearance and progression of CKD. There are several aspects and they ultimately determine risk situations for the onset and progression of CKD, representing an important step towards making ideal health a tangible reality for all people who are at risk of developing or who are already affected by CKD[17].

Lack of employment, low level of education, poor nutrition, environmental exposure to infectious agents, higher prevalence of depression and alcoholism, difficulty in accessing a quality health system, and lack of knowledge of prevention practices lead to risk situations such as low birth weight, obesity, diabetes, high blood pressure and endothelial dysfunction, which are all risk factors for CKD[18].

Regarding the clinical profile, hypertensive and diabetic patients stood out. They constitute the groups under highest risk for onset of CKD. According to the latest census of the Brazilian Society of Nephrology[4], hypertension and diabetes are the main causes of CKD, affecting, respectively, 34% and 31% of patients on RRT in Brazil. The third most common cause is glomerulonephritis. In our sample, the order of

distribution of CKD etiologies was exactly the same of the national census: hypertension in 48.5% of the patients, diabetes in 22.8%, and glomerulonephritis in 8.5%.

The small proportion of patients who started HD using AVF is a worrying aspect. The benefits of starting RRT with this type of vascular access are well known, as they reduce the level of inflammation and the risk of infection, favoring lower mortality rates in the first year of dialysis therapy[10,11].

The preparation of arterio-venous fistula (AVF) for the start of HD depends on the referral of the CKD patient to a nephrologist at an appropriate time. After being made surgically, the AVF can only be used as access to HD after 45 to 60 days. In our sample, it is clear that patients who started RRT without AVF did not have follow-up by a nephrologist in the period preceding RRT. This was also indicated by the median of only 2.5 days between the first consultation at the PSF and the start of RRT. However, the creation and maintenance of an AVF may have repercussions on the patients' image and sexuality, giving way to sadness, social isolation and sexual disinterest, among other feelings[19].

The laboratory profile, on the other hand, showed a severe degree of anemia (mean hemoglobin: 6.9 g/dL; recommended: 10-11 g/dL), hyperphosphatemia (mean phosphatemia: 5.8 mg/dL; recommended:<4.5 mg/dL), and a high level of inflammatory activity (average C-reactive protein: 9.7 mg/L; normal <1 mg/L). Anemia, hyperphosphatemia and inflammation increase the risk of cardiovascular complications. These conditions are associated with higher mortality and a significant reduction in the quality of life of these patients and in productivity at work, especially in patients with anemia[20].

The distribution of the participants in the three degrees of comorbidities (low, medium and high risk) was proportional. It is worth mentioning that patients with medium and high risk together correspond to more than half of the sample, which demonstrates a clinical condition that requires health care beyond theattention offered in primary care.

The number of consultations in the FHS before starting HD ranged from 3 to 17 (median 5.5). Despite a reasonable number of consultations, the expected benefits were not achieved. Such benefits wereCKD screening, referral to a nephrologist at an appropriate time, and decreasing number of CKD cases that start emergency RRT. These goals were evidently not achieved according to the data presented here, as only 27.3% of the patients had ivnestigated serum creatinine levels, less than half had been referred to a nephrologist, and the median time elapsed between the consultation and the start of RRT was 2.5 days. This interval characterizes the urgent start of HD, since there is no time to implement any measure that is known to decrease morbidity and mortality inthese patients, such as control of anemia with the use of erythropoietin, control of bone mineral disease, and surgical creation of AVF.

Most patients who received consultations before starting RRT were at high risk for comorbidity. The greater clinical severity of these patients must have influenced the realization of the consultation, compared to patients who had a more favorable clinical condition. There is no consensus about the regulation of the number of consultations[21,22], but in this study, the number was considered small, varying between one and six, with a median of three consultations. However, the median of 273.5 days between the consultation and the start of RRT demonstrates that one of the goals of the consultation with a specialist was achieved: to delay the progression of CKD and consequently the start of RRT. Delayedstart of RRT has a positive impact on the quality of life of people with CKD and reduces treatment costs[23,24].

It is still a challenge to implement a line of care for people with CKD and to coverthe expenses with care for pre-dialysis patients expressed in Ordinances 389, 2014, and 1,675, 2018[21,22], since these initiatives have not succeeded to contain the high growth of patients who need RRT, revealingflaws in early detection and monitoring of the disease.

It is also important to note that this reality generates financial burdens to the Unified Health System (SUS), as revealed by a study on the economic impact of RRT modalities, highlighting that the cost per HD session in the SUS is R$ 179.03 (HIV-negative patients) and R $ 265.41 (HIV-positive patients). To understand the dimension of these costs, the investment in

prevention proposed by Ordinance 389 is R$ 61.00, a very different reality when compared to what is paid for a HD session[25].

CONCLUSION

Based on the information presented above, CKD is still not adequately screened during consultations at the FHS and patients are not referred to a nephrologist in the appropriate time, and this was true despite the fact that the more than half of thesample had a medium and high risk of comorbidity. Most CKD patients started emergency RRT, without prior follow-up by a nephrologist, despite having undergone consultations at the FHS, not having enough time to implement measures that reduce the morbidity and mortality such as control of anemia with the use of erythropoietin, control of mineral bone disease, and surgical creation of AVF, which enhances cardiovascular risks and complications. Routine screening of CKD in primary care and a system of interaction between the FHS and nephrologists who work in tertiary health care are necessary, besides interdisciplinary and intersectoral measures, taking into account the socioeconomic conditions of patients.

ASSISTÊNCIA AO PACIENTE RENAL ANTES DO INÍCIO DA HEMODIÁLISE: ESTUDO RETROSPECTIVO

RESUMO

Introdução: o acompanhamento do paciente renal antes do início da hemodiálise é elemento importante para a implementação de medidas preventivas que retardam ou interrompam a progressão para estágios mais avançados da doença. **Objetivo:** avaliar assistência primária e terciária de pessoas com Doença Renal Crônica antes da hemodiálise. **Métodos:** estudo retrospectivo, documental, quantitativo, com 35 pacientes renais que iniciaram hemodiálise em Sobral-Ceará, Brasil. Coletaram-se os dados entre janeiro e março de 2015. Utilizou-se instrumento para traçar o perfil socioeconômico, laboratorial, etiologia da Doença Renal Crônica, tipo de acesso vascular e grau de comorbidade. Na Estratégia Saúde da Família, buscou-se coletar dados sobre quantidade e datas das consultas realizadas, dosagens de creatinina, testes qualitativos da urina e encaminhamentos ao nefrologista. Analisaram-se os dados por meio da estatística descritiva. **Resultados:** dos 35 pacientes, 19 (54,3%) eram mulheres e 16 (45,7%) homens, com média de idade de 58,8 ± 17,7 anos. Do total, 22 (62,8%) foram consultados na Estratégia Saúde da Família antes do início da hemodiálise. Destes, apenas 6 (22,3%) tiveram a função renal avaliada e 4 (18,1%) se consultaram com nefrologista. O intervalo entre a primeira consulta e início da hemodiálise foi de 2,5 dias (mediana) e 273,5 (mediana) na Estratégia Saúde da Família e com nefrologista, respectivamente. O intervalo de 2,5 dias indicou início de urgência da Terapia Renal Substitutiva. **Conclusão:** a DRC não é rastreada na maioria dos pacientes atendidos na ESF e poucos são atendidos por nefrologista antes de iniciar hemodiálise.

Palavras-chave: Insuficiência Renal Crônica. Programas de Rastreamento. Estratégia Saúde da Família. Atenção Primária à Saúde. Diálise Renal.

ASISTENCIA AL PACIENTE RENAL ANTES DEL INICIO DE LA HEMODIÁLISIS: ESTUDIO RETROSPECTIVO

RESUMEN

INTRODUCCIÓN: ela compañamiento al paciente renal antes del inicio de la hemodiálisis es elemento importante para la implementación de medidas preventivas que retrasan o interrumpen la progresión para etapas más avanzadas de la enfermedad. **OBJETIVO:** evaluar la atención primaria y terciaria de personas con Enfermedad Renal Crónica (ERC) antes de la hemodiálisis. **MÉTODOS:** estudio retrospectivo, documental, cuantitativo, con 35 pacientes renales que iniciaron hemodiálisis en Sobral-Ceará, Brasil. Fueron recolectados datos entre enero y marzo de 2015. Se utilizó instrumento para esbozar el perfil socioeconómico, de laboratorio, etiología de la Enfermedad Renal Crónica, tipo de acceso vascular y grado de comorbilidad. En la Estrategia Salud de la Familia, se buscó recolectar datos sobre cantidad y fechas de las consultas realizadas, dosificaciones de creatinina, exámenes cualitativos de la orina y encaminamientos al nefrólogo. Se analizaron los datos por medio de la estadística descriptiva. **RESULTADOS:** de los 35 pacientes, 19 (54,3%) eran mujeres y 16 (45,7%) hombres, con edad promedio de 58,8 ± 17,7 años. De lo total, 22 (62,8%) fueron consultados en la Estrategia Salud de la Familia antes del inicio de la hemodiálisis. De estos, solo 6 (22,3%) tuvieron la función renal evaluada y 4 (18,1%) se consultaron con el nefrólogo. El intervalo entre la primera consulta y el inicio de la hemodiálisis fue de 2,5 días (mediana) y 273,5 (mediana) en la Estrategia Salud de la Familia (ESF) y con nefrólogo, respectivamente. El intervalo de 2,5 días indicó inicio de urgencia de la Terapia Renal Sustitutiva. **CONCLUSIÓN:** la ERC no se rastrea en la mayoría de los pacientes atendidos en la ESF y pocos son atendidos por el nefrólogo antes de iniciar la hemodiálisis.

Palabras clave: Insuficiencia Renal Crónica. Programas de Rastreo. Estrategia Salud de la Familia. Atención Primaria a la Salud. Diálisis Renal.

REFERÊNCIAS

1. Duarte GC, Schwartz E, Gonzáles RIC, Santos BP. Doença renal crônica: reconhecimento dos fatores de risco pelos profissionais da atenção primária. J Nurs Health [Internet].2016[citado em 2020 Fev];6(2):287–97. Disponível em: https://periodicos.ufpel.edu.br/ojs2/index.php/enfermagem/article/view/5985/6045

2. Wheeler DC, Winkelmayer WC. KDIGO 2017 Clinical Practice Guideline Update for the Diagnosis, Evaluation, Prevention, and Treatment of Chronic Kidney Disease-Mineral and Bone Disorder (CKD-MBD).Kidney Int Suppl.2017;7(1):1–59. doi:https://doi.org/10.1016/j.kisu.2017.04.001

3. Kassebaum NJ, Arora M, Barber RM, Bhutta ZA, Brown J, Carter A, et al. Global, regional, and national disability-adjusted life-years (DALYs) for 315 diseases and injuries and healthy life expectancy (HALE), 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. The Lancet. 2016; 388(10053), 1603-1658.doi:https://doi.org/10.1016/S0140-6736(16)31460-X

4. Sesso RC, Lopes AA, Thomé FS, Lugon JR, Martins CT. Brazilian Chronic Dialysis Survey 2016. J Bras Nefrol. 2017;39(3):261–6. doi: http://dx.doi.org/10.5935/0101-2800.20170049

5. Marinho AWGB, Penha AP, Silva MT, Galvão TF. Prevalência de doença renal crônica em adultos no Brasil: revisão sistemática da literatura .Cad.saúde colet. 2017; 25(3):379–88. doi:http://dx.doi.org/10.1590/1414-462x201700030134

6. Chang HL, Wu CC, Lee SP, Chen YK, Su W, Su SL. A predictive model for progression of CKD. Medicine. 2019; 98(26).doi: 10.1097/MD.0000000000016186

7. Diegoli H, Silva MCG, Machado DSB, Cruz CER da N. Encaminhamento tardio ao nefrologista e a associação com mortalidade em pacientes em hemodiálise.J.Bras.Nefrol. 2015;37(1):32-37.doi: 10.5935/0101-2800.20150006

8. Zúñiga JB, Inga JG, Onofre PC, Gómez RC, Monteverde PC. Early detection of chronic renal disease: coordinated work between primary and specialized care in an ambulatory renal network of Peru. Brazilian Journal of Nephrology. 2019;41(2):176-184.doi:https://doi.org/10.1590/2175-8239-jbn-2018-0101

9. Santos PR, Arcanjo CC, Aragão SML, Ponte Neto FL, Ximenes ARG, Tapeti JTPC, et al. Comparison of baseline data between chronic kidney disease patients starting hemodialysis who live near and far from the dialysis center. J Bras Nefrol. 2014;36(3):375–8.doi: http://dx.doi.org/10.5935/0101-2800.20140053

10. YehLM, Chiu SY,LaiPC. The Impact of Vascular Access types on Hemodialysis patient Long-term survival. Scientific reports. 2019;9(1):1-8. doi: 10.1038/s41598-019-47065-z

11. WangC, Yang Y, Yuan F, Li HQ, He LY, Liu D, et al. Initiation Condition of Hemodialysis Is Independently Associated with All-Cause Mortality in Maintenance Hemodialysis Patients: A Retrospective Study. Blood purification. 2019;48(1):1-10.doi:https://doi.org/10.1159/000497269

12. Associação Brasileira de Empresas de Pesquisa. Critério Brasil [Internet]. 2019[citado em 2019 Set]. Disponível em: www.abep.org

13. Khan IH, Campbell MK, Cantarovich D, Catto GRD, Delcroix C, Edward N, et al. Survival on renal replacement therapy in Europe: is there a "centre effect"?. Nephrol Dial Transplant. 1996;11(2):300–7. doi: https://doi.org/10.1093/ndt/11.2.300

14. Barbosa YO, Menezes LPL, Santos AD,Cunha JO, Santos JMJ, Menezes AF, et al. Access of men to primary health care services. Rev. enferm. UFPE on line. 2018;12(11):2897-905doi: https://doi.org/10.5205/1981-8963-v12i11a237446p2897-2905-2018

15. Blunt I, Bardsley M, Strippoli GFM. Pre-dialysis hospital use and late referrals in incident dialysis patients in England: a retrospective cohort study. Nephrol Dial Transplant. 2015; 30(1):124–9. doi: https://doi.org/10.1093/ndt/gfu284

16. Oliveira DPS, Lopes MLH, Silva GAS, Sousa SMA, Dias RS, Silva LVM. Perfil socioeconômico e clínico dos pacientes em programa hemodialítico. Rev enferm UFPE on line [Internet]. 2017 [citado em 2019 Set];11(Supl. 11):4607-16. Disponível em: https://periodicos.ufpe.br/revistas/revistaenfermagem/article/viewFile/231200/25196

17. Hall YN. Social Determinants of Health: Addressing Unmet Needs in Nephrology. Am J Kidney Dis. 2018;72(4):582–91. doi: https://doi.org/10.1053/j.ajkd.2017.12.016

18. Nicholas SB, Kalantar-Zadeh K, Norris KC. Socioeconomic Disparities in Chronic Kidney Disease. Adv Chronic Kidney Dis. 2015;22(1):6–15. doi: https://doi.org/10.1053/j.ackd.2014.07.002

19. Silva PFC, Pires AS, Gonçalves FGA, Cunha LP, Campos TS, Noronha IR. Influência dos acessos vasculares na autoimagem e sexualidade dos pacientes em hemodiálise: contribuição para enfermagem. Ciência, Cuid. Saúde. 2017; 16(1):1-7.doi: https://doi.org/10.4025/cienccuidsaude.v16i1.34402

20. Covic A, Jackson J, Hadfield A, Pike J, Siriopol D. Real-World Impact of Cardiovascular Disease and Anemia on Quality of Life and Productivity in Patients with Non-Dialysis-Dependent Chronic Kidney Disease. Adv Ther. 2017; 34(7):1662–72. doi: 10.1007/s12325-017-0566-z

21. Ministério da Saúde. Portaria no 389, de 13 de março de 2014. Diário Oficial da União[Internet]. 2014[citado em 2019 Set];151(50). Disponível em: http://bvsms.saude.gov.br/bvs/saudelegis/gm/2014/prt0389_13_03_2014.html

22. Ministério da Saúde. Portaria no 1.675, de 7 de junho de 2018. Diário Oficial da União [Internet].2018[citado em 2019 Set];148(109). Disponível em: http://www.in.gov.br/materia/-/asset_publisher/Kujrw0TZC2Mb/content/id/21054948/do1-2018-06-08-portaria-n-1-675-de-7-de-junho-de-2018-21054736

23. MarinhoCLA, Oliveira JF, Borges JES, Fernandes FECV, Silva RS.Associação entre características sociodemográficas e qualidade de vida de pacientes renais crônicos em hemodiálise. Rev. Cuid. 2018; 9(1),2017-2029. doi: https://dx.doi.org/10.15649/cuidarte.v9i1.483

24. Takemoto Y, Naganuma T. Economic Issues of Chronic Kidney Disease and End-Stage Renal Disease. In CKD-Associated Complications: Progress in the Last Half Century Karger Publishers. 2019;198:87-93. doi: https://doi.org/10.1159/000496533

25. Gouveia DSS, Bignelli AT, Hokazono SR, Danucalov I, Siemens TA, Meyer F, et al. Analysis of economic impact between the modality of renal replacement therapy. J bras nefrol. 2017;39(2):162–71. doi: http://dx.doi.org/10.5935/0101-2800.20170019

Corresponding author: Paulo Henrique Alexandre de Paula. Rua Diva Ximenes Prado, 1362-Das Nações. Sobral, Ceará, Brasil.. E-mail: paulohed@gmail.com

Submitted: 05/10/2019
Accepted: 18/03/2020