JHGD
Journal of Human Growth and Development

www. jhgd.com.br

ORIGINAL ARTICLE

Clinical-epidemiological characterization of patients submitted to hemodialysis according to the national kidney foundation, the kidney disease outcomes quality initiative – KDOQI in a hemodialysis reference center in the metropolitan region of São Paulo, Brazil

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Open acess

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Manuscript received: may 2023
Manuscript accepted: june 2023
Version of record online: august 2023

Abstract

Introduction: hemodialysis is a treatment that helps in the survival of patients with renal failure, through an established cardiopulmonary bypass to carry out blood filtration, as a result, there is a need for a feasible, lasting and effective vascular access. There are two types of vascular access, arteriovenous fistulas, using autogenous veins or prostheses, and venous catheters. The indications for choosing the type of vascular access are related to the characteristics and restriction of use of each patient.

Objective: to analyze the epidemiological, demographic and clinical profile of patients undergoing hemodialysis in two reference services in the metropolitan region of São Paulo, Brazil, and compare the clinical-surgical processes with those defined by the Kidney Guidelines disease Outcomes Quality Initiative (KDOQI).

Methods: data were collected in two public hospitals, with patients undergoing hemodialysis, through registration forms and medical records, from August to December 2016. The volunteers were informed about the procedures and objectives of the study and, after agreeing, they signed a consent form. The variables age, gender, weight, height, body mass index, hemodialysis time, types of accesses already used , complications related to the accesses and underlying disease were analyzed. Patients with chronic renal failure undergoing hemodialysis of both genders, with no age restriction, were included. Patients not able to perform one of the techniques, arteriovenous fistula or catheter, were excluded . The collected data were compared with the Kidney guidelines disease Outcomes Quality Initiative (KDOQI).

Results: a total of 252 individuals were included, of which 182 are patients undergoing reference hospital treatment in the city of São Bernardo do Campo, SP and 70 patients at the State University Hospital Mário Covas, a State reference in the clinical management of patients undergoing hemodialysis care.

Conclusion: chronic kidney disease is highly prevalent with progression to end-stage chronic kidney failure (dialysis). The definition of the epidemiological profile of the population undergoing treatment, as well as the journey of venous accesses for hemodialysis (catheters and fistulas), are fundamental for the multidisciplinary team's learning curve about complications throughout the course of the disease/treatment. Furthermore, the clinical-surgical management of this population is in line with the guidelines of the National Kidney Foundation. The treatment performed in these hemodialysis centers is efficient and in line with what the KDOQI recommends.

Keywords: vascular access devices, renal replacement therapy, arteriovenous fistula , catheters.

Suggested citation: Cardelino BC, Scabora R, Silva TO, Corrêa JA. Clinical-epidemiological characterization of patients submitted to hemodialysis according to the national kidney foundation, the kidney disease outcomes quality initiative – KDOQI in a hemodialysis reference center in the metropolitan region of São Paulo, Brazil. *J Hum Growth Dev. 2023; 33(2):267-276.*
DOI: http://doi.org/10.36311/jhgd.v33.14836

Authors summary

Why was this study done?
To describe and analyze the clinical-surgical management of the population of chronic kidney disease patients in a populous Brazilian region, as well as to analyze aspects of the practice of assistance to the population with Chronic Kidney Disease and on hemodialysis.

What did the researchers do and find?
An interview was carried out with the patients, with the collection of historical data of their venous accesses, as well as access to the medical records with the intention of defining the epidemiological profile of the population with CKD who use continuous hemodialysis. The epidemiological profile of the population was described, which is relevant for us to understand its profile and criticality, the journey of venous accesses for hemodialysis, catheters and fistulas was defined, as well as its complications throughout the course of the disease/treatment and compared the findings of the management of the treatment with the Kidney gold standard disease Outcomes Quality Initiative (KDOQI).

What do these findings mean?
The treatment performed in these hemodialysis centers is efficient and in line with what the KDOQI recommends.

Highlights
This is an epidemiological study on a highly prevalent disease, with an expected increase in incidence in the coming years, which is end-stage chronic renal failure (dialysis).
There is a description of the epidemiological profile of a continuous hemodialysis user population in the metropolitan region of São Paulo, Brazil.
There is a description of venous accesses for performing hemodialysis, and comparison with a gold standard, from the KDOQI international guideline

INTRODUCTION

In recent years, there has been a substantial increase in the demand for renal replacement therapy worldwide, driven by the aging of the population and the consequent increase in the life expectancy of the elderly. Among the therapies that help in the treatment of patients with renal failure, hemodialysis is the most requested and comprehensive[1,2].

Hemodialysis is a treatment that helps in the survival of patients with renal failure, through an established cardiopulmonary bypass to carry out periodic blood filtration. Thus, the importance of long-lasting and effective vascular access is emphasized[3].

Among the types of vascular access used for renal replacement therapy by hemodialysis, arteriovenous fistulas (AVF) can be mentioned, using autogenous veins or prostheses and central venous catheters, short or long-term. The indications for choosing the types of vascular access are related to the characteristics and restrictions of use of each patient[3-5].

It is known that some complications related to vascular access, such as fistula thrombosis, infection, venous hypertension, aneurysmal degeneration and hemorrhage are among the main causes of hospitalization in these patients. Thus, it is known that the type of access used is extremely relevant[6,7].

According to the scientific literature, currently, the most used vascular access is arteriovenous fistulas, as they have a lower rate of complications in patients. However, Noordzij et al. 8 showed that European countries have been showing a decline in the use of AVF and a trend towards an increase in the use of central venous catheters (CVC) both at the beginning of therapy use and in its chronic phase[7].

In Brazil, there are few studies relating the prevalence of vascular access in patients on hemodialysis. The findings by Linardi *et al.,*[9] showed that in 23 hemodialysis units distributed across the country, AVF represented 93.4% of the vascular accesses used in a population of 2389 patients.

Thus, it is necessary to develop more epidemiological studies on vascular access, since they are of great importance for professionals involved in the treatment and follow-up of patients with renal failure in the end-stage of renal failure. Choosing the best option for vascular access, whether fistula or catheter, depends on the stage and conditions of each individual. The improvement of epidemiological analyzes, added to the experience of the professionals involved, can result in an improvement in the quality and life expectancy of these patients.

The individual diagnosed with chronic renal failure who is included in a hemodialysis program lives with an incurable disease, which obliges him to undergo a painful, long-lasting treatment that can cause limitations and changes of great impact that have repercussions on his life and that of your family and friends[10].

In the history of hemodialysis, the first records occurred in 1913, in an experimental study carried out with dogs by Abel, Rowntree and Turner[11]. Due to complications during the procedure, the research did not go ahead[11]. The first hemodialysis session in humans, successfully carried out, was carried out in Holland in 1943 by Kolff[12] , based on a model similar to the "artificial kidney" created by Abel. Several sessions were performed in a young patient, which increased his survival[12].

Several adaptations and improvements have been developed over the years. In 1948, Alwall used arterial and venous dissection with a connection between the two using a glass cannula. However, even with the use of systemic heparin, it resulted in several cases of failure due to system thrombosis[13].

Subsequently, several attempts were made and, although the replacement technique proved to be promising, the major complication was the vascular access during the sessions. This issue was partially resolved with the creation of the Silastic Shunt , by Scribner , Dillard and Quinton in 1960. However®, complications such as infection and system thrombosis were still observed, mainly with long-term use[14].

Based on the conception of arterial and venous " cannulation ", Brescia conceived and created, in 1966, an arteriovenous fistula between the radial artery and the cephalic vein, which has become, until today, the main vascular access for hemodialysis[15].

Between 1952 and 1969, various hemodialysis techniques were developed by cannulation of the subclavian vein by Aubaniac , 1952 and by Erben in 1969. In 1966, Hermosura[16] performed cannulation of the internal jugular vein, by anterior puncture, for the first time time in history.

With the evolution of attempts to develop techniques for performing hemodialysis, the importance of efficient vascular access, with the lowest number of complications, is emphasized. A good vascular access for hemodialysis is understood as one that is capable of generating a flow equal to or greater than 300 milliliters per minute during the hemodialysis session. In addition, the preference is for an access that is long-lasting, since its exchange, or the constant loss of vascular access, directly impacts the patient's survival[17,18].

Among the causes for the evolution of access to thrombosis, the direct relationship with the type of access stands out, whether it is an arteriovenous fistula or a catheter. Catheters have their predicted times of use, defined due to the possibility of infection, but there is also a linear evolution from the point of view of thrombosis, that is, the longer the catheter is used, the greater the chance of thrombosis of this access.

In the arteriovenous fistula, the complication occurs later and may be related to several factors, such as the type of fistula made, history of venous thrombosis or previous thrombophlebitis in the limb used, characteristics of the vein and artery chosen for making it, method of of use of the fistula (related to punctures and post-dialysis hemostasis), clinical complications of the patient and duration of the fistula.

In the clinical-surgical issue of infection, which is the most common complication found in catheters, the main isolated cause of the superiority of fistulas in relation to catheters. The infection is related to the use of prostheses, whether non-implantable, partially implantable or in prostheses used as venous substitutes[17].

In the non-implantable catheter (Shilley®), by direct puncture of the vein, the infection occurs earlier, being frequent from the seventh day of use. In partially implantable catheters (Permcath®), where part of the catheter is inserted in the subcutaneous tissue before entering the vein, this infection increases after the third month of use[18].

In arteriovenous fistulas, the complication is greater when the prosthesis (PTFE®) is used as a venous substitute. This occurs due to the repeated punctures of the prosthesis body. In native fistulas, where the patient's own veins and arteries are used without the use of any synthetic material, the complication is reduced.

In the case of hemorrhage, acute bleeding from a hemodialysis access has several causes, and may be related to infection of the access, technical failure, failure of the material used or even related to prolonged use of the access, this in cases of native veins. Due to multiple punctures in the same location, the veins can evolve with ulceration to the skin, which can lead to an acute bleeding condition.

The major concern regarding this complication is its potential severity for the patient, from hypotension to death. Hemorrhage from the vascular access is a constant cause of hospitalization for dialysis patients, and is directly related to survival[19].

Thus, the objective of this study was to analyze the accesses for hemodialysis in chronic patients diagnosed with chronic kidney disease.

METHODS

This is a cross-sectional, observational study with data collection in two reference centers for hemodialysis in the metropolitan region of São Paulo, Brazil (cities of Santo André and São Bernardo do Campo, in the state of São Paulo, Brazil). The field of data collection was divided between Hospital Anchieta, which performs hemodialysis procedures, from June to September 2015, and Hospital Mario Covas, from March to May 2016.

The participants were informed about the procedures and objectives of the study and, after agreeing, they signed an Informed Consent Form (TCLE). The project was approved by the Research Ethics Committee of the Faculdade de Medicina do ABC, in Santo André, and complies with resolution 466/12 of the National Health Council.

Inclusion criteria

Patients with chronic renal failure undergoing periodic hemodialysis, of both genders, with no age or associated disease restrictions were included.

Exclusion criteria

Patients unable to perform one of the possible techniques for performing hemodialysis, Arteriovenous Fistula (AVF) or Catheter, were excluded.

Protocol

Participants were identified through the following information: age, sex, treatment time, types of accesses used and chronic diseases . The study data were obtained from a registration form and medical records, accompanied by other information such as complementary exams or personal data .

Data referring to the types of vascular access for hemodialysis were divided into three classifications regarding the type and duration of current vascular access: short-term catheter , long-term catheter or AVF.

short-term catheter

They are non-implantable catheters, introduced by direct puncture of the chosen target vein, which may be double or triple lumen, with the third route reserved for the infusion of other drugs. Because they are short and non-implantable catheters, their durability is reduced due to the high incidence of infection at the puncture site, and are used for patients who undergo urgent dialysis or lose their previously used accesses.

long-term catheter

They are double-lumen catheters, partially implantable, that is, they are exteriorized at the manipulation site, but part of it is " tunneled " in the subcutaneous tissue. Because it is a longer catheter and is partially implantable, it is less susceptible to infection, in addition to this, this type of catheter has a cuff in its path that serves as a mechanical barrier to bacterial progression. It also has its target vein punctured directly, but because it runs subcutaneously, it is not exposed at the site of venipuncture.

Arteriovenous fistula (AVF)

Performed surgically, the fistula is characterized by an arteriovenous anastomosis, with the aim of promoting an increase in venous flow that favors renal replacement therapy. This anastomosis can be performed directly or with the interposition of an autologous graft (*saphenous vein*) or a synthetic one (usually a Polytetrafluoroethylene (PTFE) prosthesis).

There are several options for arteriovenous fistulas, the first choice being fistulas performed in the upper limbs, without the use of a prosthesis (Radio-cephalic , Brachio-cephalic, Brachio-basilic). The fistula with upper limb prosthesis that we use in our service is the Brachio-Axillary fistula.

We still have the option of arteriovenous fistula performed in the lower limbs, our first choice being the superficial saphenofemoral fistula, which proved to be a viable alternative in patients who do not have more options for vascular access in the upper limbs[20,21].

RESULTS

A total of 252 individuals were included, of which 182 are patients undergoing referral hospital treatment in the city of São Bernardo do Campo, SP and 70 patients from the Hospital Universitário Estadual Mário Covas, a State reference in the clinical management of patients undergoing hemodialysis care .

Table 1 describes all the types of catheters used by the participants and their frequency in each of the hospitals included in the study.

Table 1: Types of access used for hemodialysis

TYPE OF ACCESS	HOSPITAL MARIO COVAS (N=70)	ANCHIETA HOSPITAL (N=182)
Arteriovenous fistula (AVF)	47 (67.14%)	146 (80.21%)
long-term catheter	20 (28.57%)	25 (13.74%)
short-term catheter	3 (4.28%)	11 (6.04%)

Of the 182 individuals being treated at the Anchieta hospital, 56.04% had already used the AVF as access for dialysis, 81.9% used at least one catheter and 97.8% had at least one associated disease. Regarding complications, 62.63% of participants had complications associated with hemodialysis. Since 60.95% of those who used AVF suffered some complication. Among those who used a catheter, the percentage is 69.44%. Of all complications, 48.24% are aneurysms.

In the group of 70 patients from the hemodialysis service at Hospital Estadual Mario Covas, a total of 37.14% of them already used AVF as access for dialysis and 88.6% used at least one catheter. About 92.85% of the patients had some associated disease. Among the complications affected by patients at the hospital located in Santo André, 38.57% had some complication associated with hemodialysis. 42.55% of patients with AVF had some complication and the percentage of complications in patients using a catheter was only 30.43%. Aneurysm was responsible for 70.37% of all complications affected by these patients.

After collecting all the data from both services, descriptive statistical analysis was performed with absolute frequency, which showed that the two groups can be considered homogeneous, thus opting for statistical treatment as a single group.

A total of 252 patients were interrogated. Of this total, 123 were male and 59 were female. The mean age was 53.30 years, ranging from 17 to 87 years (Tables 2 and 3).

Table 2: Epidemiological profile of patients - Hospital Anchieta, in the years 2015 and 2016

Variables	n	%
SEX		
Feminine	59	32.40%
Masculine	123	67.60%
ETHNICITY		
brown	91	50.00%
Black	46	25.27%
Yellow	7	3.85%
White	38	20.88%
ASSOCIATED DISEASES		
SAH	164	90.10%
DM	64	35.16%
heart disease	46	25.27%
neoplasm	two	1.09%
SLE	two	1.09%
Others	53	29.12%

N = 182
SAH = Systemic arterial hypertension
DM = Diabetes Mellitus
SLE = systemic lupus erythematosus

Table 3: Epidemiological profile of patients - Hospital Estadual Mário Covas, in the years 2015 and 2016

Variables	n	%
Feminine	40	57.14%
Masculine	30	42.86%
ETHNICITY		
brown	15	21.43%
Black	19	27.14%
Yellow	1	1.43%
White	35	50.00%
ASSOCIATED DISEASES		
SAH	61	87.14%
DM	23	32.85%
heart disease	10	14.28%
neoplasm	1	1.42%
SLE	1	1.42%
Others	7	10%

N = 70
SAH = Systemic arterial hypertension
DM = Diabetes Mellitus
SLE = systemic lupus erythematosus

Table 4: Current global access profile , in the years 2015 and 2016

Variables	n	%
CATHETER	40	57.14%
Long Stay	46	18.25%
short stay	14	5.55%
FISTULAS	15	21.43%
distal radiocephalic	78	30.95%
Middle third radiocephalic	27	10.71%
radio basilica	4	1.60%
brachiocephalic _	61	24.20%
Brachio - basilica	18	7.14%
saphenous-femoral	0	0%
Brachio -axillary with prostheses	4	1.60%
neoplasm	1	1.42%
SLE	1	1.42%
Others	7	10%

N = 252

Table 5: Current access profile - Hospital Anchieta, in the years 2015 and 2016

Variables	n	%
CATHETER	40	57.14%
Long Stay	26	14.28%
short stay	11	6.04%
FISTULAS	15	21.43%
distal radiocephalic	55	30.23%
Middle third radiocephalic	21	11.54%
radio basilica	0	0%
brachiocephalic _	49	26.93%
Brachio - basilica	16	8.79%
saphenous-femoral	0	0%
Brachio -axillary with prostheses	4	2.19%

N = 182

Table 6: Profile of current access - Hospital Estadual Mário Covas , in 2015 and 2016

Variables	n	%
CATHETER	40	57.14%
Long Stay	20	28.57%
short stay	03	4.28%
FISTULAS	15	21.43%
distal radiocephalic	23	32.86%
Middle third radiocephalic	06	8.57%
radio basilica	04	5.72%
brachiocephalic _	12	17.15%
Brachio - basilica	02	2.85%
saphenous-femoral	0	0%
Brachio -axillary with prostheses	0	two%

N = 70

Table 7: Global profile of previous accesses, in the years 2015 and 2016

Variables	n	%
PREVIOUS ACCESS		
Long Stay	145	79.67%
short stay	24	13.19%
Fistula with native vein	102	56.04%
fistula with prosthesis	5	2.75%

Table 8: Global epidemiological profile , in the years 2015 and 2016

Variables	n	%
GENDER	40	57.14%
Feminine	99	39.29%
Masculine	153	60.71%
RACE	15	21.43%
brown	106	42.06%
Black	65	25.79%
Yellow	8	3.17%
White	73	28.98%
ASSOCIATED DISEASES	02	2.85%
SAH	225	89.28%
DM	87	34.50%
heart disease		
neoplasm	3	1.20%
SLE	3	1.20%
Others	60	23.80%

N = 252
SAH = Systemic arterial hypertension
DM = Diabetes Mellitus
SLE = systemic lupus erythematosus

Table 9: Complications of fistulas, in the years 2015 and 2016

Variables	n	%
PATIENTS WHO PRESENT COMPLICATION	40	57.14%
YES	146	57.94%
NO	107	42.06%
TYPE OF COMPLICATION	15	21.43%
Thrombosis	106	53.00%
aneurysm	74	37.00%
Infection	7	3.50%
fistula stenosis	5	2.50%
venous hypertension	5	2.50%
major hematoma	two	1.00%
theft syndrome	1	0.50%
pseudoaneurysm		
Congestive heart failure	0	0%
Seroma	0	0%
Pain Neuropathy	0	0%

N = 200

DISCUSSION

From the analysis of the results found, it is observed that the two groups can be considered homogeneous, in this way a statistical analysis was chosen as a single group. A total of 252 patients were interviewed. Of this total, 123 were male and 59 were female. The mean age was 53.30 years old, ranging from 17 to 87 years old (Tables 2 and 3).

Among the analyzed patients, 193 had arteriovenous fistula (AVF) as current access and a total of 59 were undergoing renal replacement therapy through central venous access (catheter). In the first group, the majority, 185, had an autogenous AVF, while only 8 patients had a polytetrafluoroethylene (PTFE) prosthesis. In the second group, 45 patients, approximately 76%, had a long-term catheter and the remainder, 14, used a short-term catheter.

Considering the patients with AVF as dialysis means, it was observed that 61 (33.33%) had the distal radio-cephalic location, 61 (33.33%) were brachio -cephalic, 39 (21.31%) had the medial radiocephalic location, 18 (9.83%) belonged to the superficialized brachial basilica subgroup , while only 4 (2.18%) had brachioaxillary with prosthesis.

In the analysis of the previous use of AVF or catheters as a means of dialysis, it was found that 102 patients, 56.04% of our sample, already had an autogenous AVF and that only 5 (2.75) were in the subgroup of previous prosthesis. As for the previous use of catheters, it was clear that the vast majority, 145 (79.67%), had already used a short-term catheter, while only 24 (13.19%) used long-term catheters (Table 7).

Another point analyzed in this study was the presence of associated diseases (comorbidities) of the patients in question, considering that chronic kidney disease is linked to many of them.

Of this sample, 243 people had an associated disease (96.43%). Occupying a prominent role, Systemic Arterial Hypertension (SAH), with a prevalence of 87.3% (220 patients), followed by Diabetes Mellitus with a prevalence of 34.5%. We also found a prevalence of 22.22% of heart disease, 1.2% of Neoplasia, 1.2% of Systemic Lupus Erythematosus. Still, 23.3% of patients had other diseases that were not addressed in this study.

Finally, the presence of any type of complication in the AVF made was analyzed. Among the possibilities, the most observed were: aneurysm and thrombosis, with a small number of stenosis observed.

Chronic Kidney Disease (CKD) is a worldwide public health problem. In Brazil, this pathology does not have a different impact, with a prevalence of 405 cases per 1 million inhabitants and an incidence of 144 cases per 1 million[22].

According to the Brazilian Society of Nephrology, the main causes of CKD are: SAH, DM, Glomerulonephritis, Hereditary Diseases (such as Polycystic Kidney), Obstructive Pathologies of the Urinary Tract , Infection. Among these, the first two stand out, being identified as the main causes of renal failure and consequent evolution to the need for renal replacement therapy - with emphasis on hemodialysis.

For the maintenance of an effective dialysis treatment, the presence of a vascular access is of fundamental importance, the type used being based on the characteristics and restriction of use of each patient, in view of the possibility of complications inherent to it. Among these types, native or prosthetic arteriovenous fistulas and central venous catheters deserve to be highlighted[7,23].

Due to the social impacts already presented, the National Kidney Foundation – Dialysis Outcomes Quality Initiative (NKF-DOQI), creating guidelines for CKD care and dialysis care, with the aim of reducing complications, reducing costs, increasing the quality of dialysis and patient survival[10,24].

According to the NKF-DOQI, a service should contain a percentage of 70% of patients undergoing dialysis through AVF, and in this study this percentage was exceeded, observing that 79.67% of the individuals evaluated had AVF (either autogenous or with prosthesis).

In 2012, the Brazilian Society of Nephrology developed the Brazilian Census of Dialysis, performing a stratification of those who are submitted to renal replacement therapy. It was found that the vast majority of patients (63.6%) were aged between 19 and 64 years, a fact that was also denoted in this study, where a mean age of 53.09 years was found. This data denotes that advanced age is a risk factor for CKD.

The predisposition regarding sex and the presence of comorbidities were also analyzed. In the present study, a prevalence of 67.58% of males was found among those questioned on dialysis, which corroborates data from the Brazilian Census, which predicts a percentage of 57.7% of this gender. With regard to underlying diseases, a predominance of SAH and DM was found, in line with national data[25].

In those candidates for making an AVF, attention should be paid to the place where it will be made, prioritizing the distal segments to the detriment of the proximal ones. In this way, the following sequence follows: radio-cephalic, brachio-cephalic, brachy-basilic superficialized , graft with prosthesis[26]. We found the presence of 30.22% of cases of distal radiocephalic AVF; 11.54% of medial radiocephalic AVF, which totals a percentage of 41.76 in the radiocephalic territory; as well as a participation of 26.92% of the brachio-cephalic AVF, which denotes compliance with the recommendations. This fact is corroborated when taking into account the previous AVF, noting the large number of radiocephalic 86 (47.25%), demonstrating that the preference continues for this location.

In individuals undergoing venous access via catheter, priority should be given to the right internal jugular vein, taking advantage of the fact that the subclavian vein is associated with central venous stenosis[18].

As with any surgical procedure, creating an AVF is not free of risks and complications. In the data analyzed, the following were identified as the main ones: aneurysm, thrombosis and stenosis, in line with national and international data. The aneurysm is triggered mainly by weakening of the wall resulting from successive punctures. Thrombosis is mainly due to hypotension, post-puncture compression and low flow due to previous stenoses, while stenosis is mainly due to technical failure, extrinsic compression, post-puncture phlebitis and intimal hyperplasia[18].

Thus, it is observed the importance of adapting a service to the guidelines established by the NKF-DOQI, as a way to improve the quality of life of patients with conical renal failure on dialysis.

Arteriovenous fistula still remains the gold standard for performing renal replacement therapy by hemodialysis, both according to the guidelines international institutions, as well as in clinical practice in large centers. This work showed us that this reality is also the case of the hemodialysis services linked to the Centro Universitário FMABC.

As evidenced in the results, there is a prevalence of 76.20% of fistulas among all current accesses. Still, following the KDOQI recommendations, we have a prevalence of only 5.55% for short-term catheters, which are the accesses with the highest complication rates and should only be used in dialysis emergencies due to clinical decompensation in non-dialysis patients , or as a transitional approach in patients already on a renal replacement therapy program.

Furthermore, it was observed that the distribution of associated diseases, such as risk factors for chronic kidney disease, also followed the KDOQI, with a prevalence of 89.28% for systemic arterial hypertension, followed by 34.50% for Diabetes Mellitus. Heart disease was next, with a prevalence of 22.22%.

Regarding the profile of anterior accesses, it shows that 50.79% of the patients already had at least one anterior fistula and that 83.73% of them had at least one anterior catheter.

Compared to other forms of vascular access, arteriovenous fistulas are seen as the best vascular access for most long-term hemodialysis patients, with better long-term results and lower rates of thrombosis, infection, hospitalization and mortality.

The NKF-KDOQI recommends timely referral to allow time to complete preoperative vein mapping, placement, and maturation. However, patients with shorter nephrological care before initiation of dialysis are unlikely to have a usable AVF at baseline for logistical reasons.

Thus, 50.79% of the patients already had at least one anterior fistula and 83.73% of them had at least one anterior catheter. The description of these accesses very much corroborates for better care the one who performs hemodialysis.

In the findings by Lima *et al.,*[26], arteriovenous fistulas are more frequent as initial accesses in the metropolitan region of the state of Ceará, Brazil than in the interior of that state, with equivalence of fistulas in use in both regions. Catheter is the main initial access route. The evaluation of vascular accesses in Ceará demonstrated that hemodialysis services are able to maintain good care parameters for patients with chronic kidney disease[26].

Furthermore, these patients are in a clinical process of frailty, which is more prevalent among patients with chronic kidney disease (CKD), with those undergoing dialysis being the most fragile. Depression is associated with the presence of frailty among patients with CKD on hemodialysis[27].

Descriptive studies are important to provide comparisons around the world (table 2 and 3). In conditions similar to Brazil, in Africa, CKD is a public health problem, attributed mainly to high-risk conditions such as hypertension and diabetes. Poor data quality restricts the validity of the findings and draws attention to the importance of designing robust future studies[28].

In Africa, the prevalence of CKD ranged from 2% to 41%. The prevalence of CKD in high-risk groups ranged from 1% to 46% in patients with HIV, 11%-90 in patients with diabetes and 13%-51% in patients with hypertension 27 . These data corroborate those described in table 1, as well as in tables 2 to 9. This characterizes chronic kidney disease as a current public health problem.

It is noteworthy that the findings of Hariparshad *et al.,* 29 show that Varying prevalence rates across regions have included disparities in sample size, definitions of CKD, lack of testing for chronicity, and heterogeneous laboratory estimates of eGFR , and better consistency and improved methods for diagnosing and comparing CKD prevalence are essential.

In this way, the findings of this study corroborate for a better understanding of CKD and dialysis replacement are local, regional and national public health problems, with the need for visibility of the data of each service, with the purpose of better understanding of the intervention processes and in the continuous search for better care for this vulnerable population and with a focus on longevity.

CONCLUSION

Chronic kidney disease is highly prevalent with progression to end-stage chronic kidney failure (dialysis). The definition of the epidemiological profile of the population undergoing treatment, as well as the journey of venous accesses for hemodialysis (catheters and fistulas), are fundamental for the multidisciplinary team's learning curve about complications throughout the course of the disease/treatment. The treatment performed in these hemodialysis centers is efficient and in line with what the KDOQI recommends.

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Resumo

Introdução: a hemodiálise é um tratamento que auxilia na sobrevida de pacientes com insuficiência renal, por meio de uma circulação extracorpórea estabelecida para a realização da filtração do sangue, em consequência, há necessidade de um acesso vascular factível, duradouro e eficaz. Existem dois tipos de acesso vascular, as fístulas arteriovenosas, utilizando-se veias autógenas ou próteses, e os cateteres venosos. As indicações para a escolha do tipo de acesso vascular estão relacionadas com a característica e restrição de uso de cada paciente.

Objetivo: analisar o perfil epidemiológico, demográfico e clínico dos pacientes submetidos à hemodiálise em dois serviços de referência na região metropolitana de São Paulo, Brasil e comparar os processos clínicos-cirúrgicos com aqueles definidos pela Diretrizes do Kidney Disease Outcomes Quality Initiative (KDOQI).

Método: foram realizadas coletas de dados em dois hospitais da rede pública, junto aos pacientes submetidos à hemodiálise, através de ficha cadastral e prontuários, no período de agosto a dezembro de 2016. Os voluntários foram informados sobre os procedimentos e objetivos do estudo e, após concordarem, assinaram um Termo de Consentimento. Foram analisadas as variáveis idade, sexo, peso, altura, índice de massa corpórea, tempo de hemodiálise, tipos de acessos já utilizados, complicações referentes aos acessos e doença de base. Foram incluídos pacientes com insuficiência renal crônica submetidos à hemodiálise de ambos os sexos, sem restrição de idade. Os pacientes não aptos à realização a umas das técnicas, fístula arteriovenosa ou cateter, foram excluídos. Os dados levantados foram comparados com as diretrizes do Kidney Disease Outcomes Quality Initiative (KDOQI).

Resultados: realizou-se a inclusão de 252 indivíduos, dos quais 182 são pacientes em tratamento hospitalar de referência na cidade de São Bernardo do Campo, SP e 70 pacientes do Hospital Universitário Estadual Mário Covas, referência Estadual na condução clínica dos pacientes em cuidados de hemodiálise.

Conclusão: a doença renal crônica é de alta prevalência com evolução para a insuficiência renal crônica em estágio final (dialítica). A definição do perfil epidemiológico da população em tratamento, bem como a jornada dos acessos venosos para hemodiálise (cateteres e fístulas), são fundamentais para a curva de aprendizado da equipe multiprofissional acerca das complicações ao longo do curso da doença/tratamento. Ainda, a condução clínico-cirúrgica desta população está em linha com as diretrizes da National Kidney Foundation. O tratamento realizado nestes centros de hemodiálise é eficiente e alinhado ao que o KDOQI preconiza.

Palavras-chave: dispositivos de acesso vascular, terapia de substituição renal, fístula arteriovenosa, cateteres.