Nursing care the arteriovenous fistulas: literature review

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SUMMARY

Hemodialysis for arteriovenous Fistula is a therapeutic modality of greater choice, because it is a vascular access that offers greater durability in the treatment and offering less risks of complications. The nurse plays an important role in the early identification of those complications and in the maintenance of arteriovenous fistula (AVF), through excellence in patient care with AVF. This study had as its main purpose to meet the nursing care of arteriovenous fistulas in patients with chronic renal failure. The methodology adopted was literature review in books, electronic journal and scientific articles that addressed the theme about chronic kidney disease, arteriovenous fistula, hemodialysis, nursing care in FAV. Were accessed in the databases csielo, lilacs, virtual health library, master's thesis published in the last nine years (2005 to 2014). As for the discussion of results the authors were unanimous with regard to the training of nurses in the care of the patient with AVF. The study made it possible to meet the nursing care to arteriovenous fistula and concludes that the nurse Substititiva Renal Therapy service must be a specialist in Nephrology, endowed with technical and scientific knowledge in relation to the preparation and maintenance of arteriovenous fistula, ensuring durability the FAV and the extension of the life of the patient.
Key words: Hemodialysis; Nursing care; Arteriovenous fistula.

1. INTRODUCTION

According to the Brazilian Society of Nephrology in 2008: in the world about one million and 200,000 people are under hemodialysis treatment. In Brazil, there are approximately 87,044 patients per year, of which 89.4% are in renal substitutive therapy program (COSTA, 2011).

The Online Diary after report with Sespa, in which informs you that in 2011 in Pará there are about of 1,674 patients in dialysis treatment. Already in the year 2013 the number of chronic kidney patients reaches 2000 people on dialysis treatment in Pará as the President of the Brazilian Society alert of Nephrology-Stop Regional, Luis Claudio Pinto.

Second Prezotto (2014) Chronic Renal failure is being considered a major public health problem, with considerable increase in the number of chronic kidney patients in the brazilian population, these data confirmed by the Census 2011 dialysis Brazilian society of Nephrology, where the number of patients with IRC corresponds to an approximate total of 50,128.

Milk et. Al, (2013) and Delhi (2014) confirm that the chronic kidney failure comes reaching relevant proportions within public health, because of the growing number of people affected by disease requiring hemodialysis.

Given that every year grows the number of cases of patients with chronic renal failure on hemodialysis for arteriovenous fistula, this being the highest mode choice. (Milk, 2013).

Hemodialysis for arteriovenous Fistula is a therapeutic modality of greater choice, being a long-lasting and safe access, MILK (2013). Sharma, (2011) adds that the arteriovenous fistula (AVF) presents a survival adequate and has low rate of complications.

For Daugirdas (2010), hemodialysis is done after the making of an arteriovenous fistula, which is formed by a subcutaneous anastomosis of one artery by a native vein adjacent, allowing the direct flow of the artery to the vein.

Fistulas are made in the arm handle (radiocefálica), in the lower arm (ulnar-Basilica), elbow (brachiocephalic) (DAUGIRDAS, 2010).

Despite being a simple procedure, proper planning of the site of anastomosis, which should be in the preoperative and postoperative and setting the time for the beginning of the clip are fundamental to the
success of the surgery (TOREGLANI, 2008).

For this it is necessary to also reduce the problems evidenced with arteriovenous Fistula: thrombosis, lower blood pressure, narrowing of vessel, decreased flow because repeated punctures, bruises, hemorrhages, ischemia in the Member with fistula, these Problems that make patients lose fistulas before five years, this time established by Anvisa. (ANVISA, 2014); (POLIMANTI, 2012).

As described in Barros (apud white, 2005) "the FAV care should be followed in order to increase survival and prevent complications arising from the use.

Patients with chronic kidney failure need to increase survival of fistulas, because they rely on dialysis to survive. Whereas a few manuals and protocols regarding nursing care to patients with CRF patients with arteriovenous Fistula is to formulate the following question: what is the nursing care provided to patients with arteriovenous fistula patients with IRC?

The research is justified by the high rate of individuals with chronic renal failure under hemodialysis treatment in the State of Pará, study this that becomes important to improvement in the quality of nursing care in arteriovenous fistulas in patients with chronic renal failure, establish and maintain a durable and reliable access, offering high rates of blood flow associated with low rates of complications is essential. Whereas the nurse plays an important role in the early identification of those complications in arteriovenous fistula (AVF), through the care provided to the client with chronic renal failure (CRF) with AVF. This study had as its main purpose to meet the nursing care of arteriovenous fistulas in patients with chronic renal failure. The methodology adopted was an exploratory study, by means of bibliographical research in books, electronic journal and scientific articles that addressed the theme about chronic kidney disease, arteriovenous fistula, hemodialysis, nursing care in FAV. Were accessed in the databases csielo, lilacs, virtual health library, master's thesis published in the last nine years (2005 to 2014).

2. LITERATURE REVIEW

2.1 this study about nursing care for the patient with arteriovenous fistula of chronic kidney failure.

Second Smeltzer, (2009); Daugirdas, (2010) kidney failure results when the kidneys cannot remove metabolic wastes from the body or perform their regulatory functions. The substances usually eliminated in the urine accumulate organic fluids as a result of impaired renal excretion, leading to disruption in the endocrine and metabolic functions, as well as water and electrolyte disorders-basic acid as a result of this disorder that makes the use of hemodialysis to remove liquids and residues urêmicos of the body when
the kidneys are not able to do it.

To Brunner & Suddarth, (2009) the dialysis is the process of filtering and purification of the blood which aims to extract nitrogenous toxic substances from the blood and remove excess water by replacing the damaged kidney functions, thus prolonging the life of patients with chronic renal insufficiency.

The arteriovenous Fistula is the permanent vascular access safer and longer-lasting, used in renal patients and consists of a subcutaneous anastomosis of one artery with a vein that takes about 30 days to mature and is usually made of non-dominant arm for not limiting the patient's activities wing (ANVISA, 2014; Fermi, 2011; DAUGIRDAS, 2010; Milk, 2013).

![Arteriovenous Fistula](https://www.institutoendovascular.com.br)

**FIGURE 1:** arteiovenosa fistula in radial region. Source: www.institutoendovascular.com.br

### 2.1 TYPES of ARTERIOVENOUS FISTULAS and LOCATION

Fistulas are given title according to the connected vessels: Radiocefalica made in the fist is the first choice as a means of access, because it is simple to be created, have low morbidity and preseva a great following of vein to be punctured and enables the creation of other hits on the same Member (FERMI, 2011).

Brachiocephalic made in the elbow is the second choice, because its advantage is the high flow compared to the handle and the fact of the cephalic vein easier to puncture, this presents some difficulties fistula in his clothing, as it has a limitation on the elbow and upper limb edema may occur and theft nafenômeno.
For Daurgirdas, (2010); DAS Neves Júnior, (2011) there are other fistulas less used are: ulnar fistula-Basilica is anastomosis between the Basilic vein with the ulnar artery is located in the forearm; braquiobasílica the Basilic vein anastomosis-if the brachial artery; radiobasílica that anastomosis-if the radial artery with the Basilic vein. Less frequently used options are the Gracz fistula (which uses the vein that puncture veins arterializa Basilica and the cephalic arm) and the cephalic fistula brachial bidirectional (which arterializa the cephalic veins in the arm and forearm). When all the locations in the non-dominant arm were exhausted, the dominant arm can be used.

SHAH, (2009) the nursing has the key role in the care of the patient with arteriovenous fistula in both pre- and post-surgery, as acts with the client watching so humane and capable, with the goal of making the customer get back their normal activities.

2.2 NURSING CARE in preoperative PERIOD of PATIENTS with ARTERIOVENOUS FISTULA.

Normally the FAV is built on the dominant member identifies with a bracelet this arm, the nurse should guide the patient and the nursing staff so that they will not be allowed to catheterize, punctures, blood pressure check for making the fistula (SHAH, 2009). White, (2005) affirms the need to direct the customers pre-dialíticos about the importance of his vases, evaluate the early indication of site access, respect the maturation period, avoid do dialysis on the day of surgery, and suggests that the nurses should have knowledge and continuous training on access, know how it works, as puncture as wear and early diagnosis of the complications.

2.3 NURSING CARE in the postoperative period of ARTERIOVENOUS FISTULA.

The care adopted in the period pós-confecção surgical fistula are fundamental to the adequacy of hemodialysis access, and involve: the elevation of the Member in the early days, periodic exchange of dressings for the nurse and perform manual compression exercises with rubber ball to promote the maturation of venous access (MANIVA, 2009).

2.4 FAV care of PATIENTS

The patient must be guided by nursing and need to implement some care with the fistula, among which include: perform daily exercise with rubber ball compression for fifteen minutes three times a day helps keep the fistula; observe any change in the location of the fistula, as heat, pain, Erythema, and swelling, palpation and perception of the thrill (vibration noticeable due to arterial blood mix with deoxygenated
blood), any abnormality should be reported medical and nursing teams; avoid venous puncture and check blood pressure in the arm of the fistula; avoid checking blood pressure in this member, sleeping on the arm of access and any compression, should not remove or allow removal of hair and scabs formed in the region of the fistula. (CASSAVA, 2009; Fermi, 2011).

2.5 NURSING BEFORE HEMODIÁLIÁLISE SESSION

In the dialysis unit, before the puncture, patients should wash the Member what are the fistula with soapy water or another antiseptic solution, empty the bladder, check the weight calculating the final weight and initial to stipulate whether the signals going to ultrafiltration (blood pressure, temperature, pulse and respiration), mainly because the blood pressure severe hypotension can lead to total cessation of fistula says Fermi, (2011); observe concentrations and temperature of the solution dialisadora; check the operation of the machine and prepare all the material necessary for the patient to perform hemodialysis; (White, 2005).

2.5.1 Asepsis fistula

As described by Fermi, (2011) the asepsis of the fistula should be cleaned with antiseptic solution, according to the standardization of control program dede infection prevention and adverse effects (PCPIEA), after asepsis is the arterial puncture should stay away 3 cm of the anastomosis to prevent fistula thrombosis, venipuncture should stay away from the two-inch blood from each other in order to avoid blood recirculation. According to the Handbook of dialysis, (2012) the antiseptic solution before the puncture is the 70% alcohol with cotton balls.

2.5.2 choosing the needle

Choosing the proper needle for each type of fistula is of extreme importance that the gauge is used in accordance with the prescribed blood flow. For a blood flow less than 250 ml needle gauge (18 g, pink); between 250 and 300 ml (17 g, orange); between 300 and 350 ml (16 g, green); between 350 and 400 ml (15 g, yellow); more than 400 ml/min (14 g, purple). The needles should be well secured to avoid trauma, bleeding, or even the output of the needle (FERMI, 2011). For Daurgirdas, (2010) during the initial use of needles are recommended (paragraph 16 to 17) and low blood flow, in mature access are necessary larger needles (15 gauge) to tolerate blood flow required (> 350 ml/min) for the high-efficiency dialysis.

2.5.3 puncture Type

The type of puncture more choice among the authors as Daurgirdas, (2010) was the buttonhole technique (which consists of repeated punctures in the same location, such as a button that uses the same House
several times) that enables the creation of a stable tunnel between the patient's skin and the native fistula (new or mature) should be carried out in the first 10 punches and by the same trained professional and the same court orders the angle of puncture is contraindicated in patients with flabby skin, for being hard to carry out the repeated punctures, according to Paiva, (2008) punçao arteriovenous access, only trained professional should perform this procedure, and the responsibility of every nurse first punches and the more delicate fistulas. The patient should be instructed to allow the handling of your fistula only by qualified professionals.

2.6 NURSING CARE DURING the HEMODIALYSIS SESSION

According to Santa et. Al, 2013 during the hemodialysis session the team must be attentive to monitoring of vital signs, anticoagulation, proper operation of the dialysis machines (temperature, roller fairlead, blood flow, the drugs flow), patient comfort, complications, complaints and questions from patients, the physician's request when needed, and the nurse should carry out supervision of assistants and technicians of the team.

As for the machine and its components of hemodialysis Observe the prime, that is the amount of liquid inside the dialyzer; If the levels are elevated, in case you intend to discard partially or totally flush; Bolus-continuous, fractional; Blood flow – 150 to 200 ml/min, and after review after connecting the arterial and venous lines in the patient, the flow of blood dialysis, transmembrane pressure, arterial flow and detectors. Keep track of vitals every 30 minutes, especially the pressure, because hypotension may predispose the clotting; monitor the pressure of the venous sinus, because the increase means that access is with problems such as fistula recirculation that worsens the quality of dialysis and increases the risk of thrombosis; stay tuned as to the operation of the machine and dialisadora solution temperature; provide peaceful surroundings and comfortable leaving the client alone; administer medications as prescription; do not administer medications IM due to heparinization (white, 2005).

Silva and Nunes (2011) complement, if blood extravasation, or hematoma occurs at the moment of puncture, during the session, the needle should be removed, the location must be compressed to hemostasis and perform cold compress on site. As early as the influx (blood pressure) that is characterized by insufficient blood fonecimento to the pump, which can be caused by hypotension due to withdrawal of water and excess products through the process of osmosis, generating flow fall; vessel spasm; needle or clotted access; arterial line and bending the use of needles with incompatible blood flow, you should reposition the needle or perform a new LP, because the needle should be inserted in the vessel wall.

2.7 NURSING CARE in the post PROCESS HEMODIALYSIS:

According to Fermi, (2011) after removing the needles, you must exercise the compression until total
hemostasis, a bleeding for more than twenty minutes should be aware of the amount of anticoagulant and antihypertensive, the dressing should only be withdrawn after 6 hours of termination of dialysis, guide to be kept dry and clean. Ribeiro already (2009) reports that the dressing should be done with a slight compression and not circular with gauze for about five minutes, with duct tape and gauze after full hemostasis. This care is crucial to avoid the heavy bleeding after hemodialysis. Hemostasis of the fistula must be made by means of direct pressure, followed by removal of the needle to prevent hematoma formation on site, as well as control the bleeding into the skin (P, 2008).

As Santa et. al, (2013) at the end of the session, when removing the patient from the machine care must be taken so that there is greater return of blood to the patient with a lower amount of serum and avoid gaseous air embolism through the needle to return.

White (2005) describes that if you remove the transmembrane pressure, reinfundir the blood slowly; check for signs of elimination of edema, local conditions of access, the General State of the patient, checking her vital signs and weight (noting signs of loss); walking conditions and you need rest; Guide about the importance of diet and medications, perform machine cleaning and sterilization of the dialyzer with their blood and venous lines and maintain unity in order. Ribeiro, (2009) adds, in the case of bruising applies cold compresses frequent during the 24 hours who succeed hemodialysis, after guiding the patient to warm compresses and ointment antitrombótica on site.

Customer care in haemodialysis should be done by a nurse with specialty and must receive constant training in this area because it is an impaired with low immune resistance and susceptible to several complications of arteriovenous Fistulas (white, 2005).

For Santana et. al, (2013); The role of the nurse is not restricted in performing techniques or procedures efficiently, but also to plan and implement nursing care, supported by scientific knowledge, use its role as educator to educate patients, stimulating behavior change, thus preventing the potential complications.

### 2.8 COMPLICATIONS in ARTERIOVENOUS FISTULAS

#### 2.8.1 low Flow

According to Fermi (2011), Furtado, (2006) when there is a partial obstruction of the venous branch due to the secondary fibrosis to multiple punctures, being this the most common cause. For the angels and Oselame, (2013) is usually caused by lack of blood flow, usually features venous resistance, fibrosis and obstruction. These situations also increase the incidence of blood circulation and, in this case, the infusion of an angiographic contrast that detects where is the lesion to be made to prevent the loss of the venous access.
2.8.2 Thrombosis.

Second (Fermi, 2011), occurs for low flow in the fistula, dehydration, severe hypotension, or hypercoagulability. In case of obstruction by a blood clot, the fistula can be surgically clear with a Fogarty catheter when it is soon identified the obstruction.

2.8.3 Hand Ischemia

It is more common in patients with previously compromised circulation, such as diabetics and elderly people with atherosclerosis. Is manifested by pain in the Office, or even at rest, and feeling of cold sweat, this happens due to the diversion of circulation (FERMI, 2011).

2.8.3 Pseudoaneurysm.

The pseudoaneurysm of the venous branch is caused by the constant blood extravasation after dialysis needles, pseudoaneurysms require only observation and that take great care to puncture the fistula venous branch outside the site of injury. When an intense thinning of the skin behind the lesion must be repaired surgically (RIBEIRO, 2009)

2.8.4 Infections.

Are rare, but when they occur staphylococcal origin and signs of inflammation at the site, as heat and hyperemia, and should be treated with antibiotics, according to Paiva, 2008 States that the diagnosis is based on local signs of inflammation.

For white, (2005) should be the collaboration of a multidisciplinary team to reduce the number of infections, and is also of fundamental importance to direct customers and their families how to care at home, and also the infection is closely related to those professionals who provide direct assistance to the client, hand washing should be performed in day to day practice.

Another relevant aspect as complications of AVF adds P, (2008) is the thrill and the presence of collateral veins. Both contribute to the stop of the fistula, if collateral vein is punctured can lead to stagnation of access, because blood flow pumped by AVF and evaluated by the intensity of the fret, both in the proximal region as the distal anastomosis.

The nurse should perform a physical examination of the AVF to be sure it is in good working order through observation of the development of the venous outflow, no irregular areas/dilated or aneurismaticas. Straight vein, with several areas that can be used to puncture. Partial collapse of the vein
when the elevation of the limb. On palpation Stirrings in the arterial anastomosis, decreasing along the arterialized vein. Easy to compress. Soft and easy pulse detection in Sounding with stethoscope Low blow (low pitch) diastolic and systolic continuous (SHAH, 2009).

Given these complications Furtado, (2006) corroborates the importance of prevention of the complications of FAVS, and can be avoided if proper care are the they are properly administered.

3 METHODOLOGY

The survey was conducted through literature review, by the analysis of works published between the years 2005 to 2014, in the Portuguese language. Available materials were used in bibliographic databases, LILACS, Scielo and VHL, using key words: hemodialysis, nursing care, chronic kidney disease, arteriovenous fistula.

The data were collected and grouped according to the relevance with the proposed theme, being subsequently analyzed by individual reading.

The result of the research process with the databases were selected 17 (Seventeen) articles published, 03 (three) personal collection books, 01 (a) master's thesis and 04 (four) electronic items of newspapers employed in the preparation of this study, we sought to identify the nursing care in patients under hemodialysis treatment fistulae.

We have included works that were directly related to the theme of the study. Were excluded from jobs that did not show relevant subsidies for research and those that have been published outside the scope of this review date.

For analysis and discussion of the results framework was developed with leading Authors that best addressed the proposed theme, being subsequently analyzed according to the relevance to the study.

4. RESULT AND DISCUSSION

FRAME WITH THE TOP AUTHORS WHO CONTRIBUTED TO THIS STUDY

<table>
<thead>
<tr>
<th>AUTHOR</th>
<th>ARTICLE TITLE</th>
<th>GOAL</th>
<th>METHODOLOGY</th>
<th>LANGUAGE</th>
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<tr>
<td>Santana .2013 et.al</td>
<td>Nursing care provided to patients under hemodialysis Treatment in</td>
<td>Identify the role of the nurse, juntoao patient under</td>
<td>The referential bibliographic descriptive type, in which were found in the existing literature on virtual bases such as Scielo, LILACS and</td>
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<td>Author(s)</td>
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<tr>
<td>Fermi .2011</td>
<td>Dialysis to nursing: guiapráctico</td>
<td>Main purpose of this book is to collaborate on professional training of the nursing staff of the dialysis units. Second Edition, consisting of 18 chapters, 220 páginas totally rewritten and deeply revised, is a new book, with at least twice as many illustrations of them produced especially for him.</td>
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<td>Shah, 2009</td>
<td>Take care of arteriovenous fistula: person of theoretical assumptions are the practical contexts.</td>
<td>Know which nursing care that nurses perform the person with arteriovenous fistula. Descriptive and exploratory study to meet care practices that nurses direct to the person with chronic kidney failure, terminal with arteriovenous fistula. The sample consisted of 98 nurses from 15 hemodialysis centers, using a questionnaire to collect data.</td>
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<tr>
<td>P et.al .2008</td>
<td>Maintenance of arteriovenous fistulas are made in the Centre of Nephrology of Caucaia-EC</td>
<td>Analyze the factors that led patients who perform hemodialysis losing FAV.</td>
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