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# Hemodialysis patients with arteriovenous fistula: knowledge, attitude and practice

*Pacientes em hemodiálise com fístula arteriovenosa: conhecimento, atitude e prática*

*Pacientes en hemodiálisis con fístula arteriovenosa: el conocimiento, la actitud y la práctica*

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## ABSTRACT

**Objective:** To identify the knowledge, attitude and practice in self-care patients receiving dialysis with arteriovenous fistula.

**Methods:** Descriptive study and cross-sectional quantitative approach in 30 patients using the AV fistula to performed dialysis at the Barao de Lucena Hospital. **Results:** 97.7% of patients had inadequate knowledge. The attitude was adequate in 70% of those who responded the survey. The self-care practice with the fistula was inadequate in 97.7% of patients. **Conclusion:** Although most patients have an appropriate attitude toward the care of the fistula, their knowledge and practice were inadequate. The inadequate knowledge, probably, influenced the inadequate practice. The use of written material can be recommended as a facilitator for a future educational strategies instrument, since it also allows for subsequent reading by the user, allowing him to overcome any doubts.

**Keywords:** Renal Dialysis; Health education; Self-care; Arteriovenous Fistula.

## RESUMO

**Objetivo:** Identificar o conhecimento, atitude e prática dos pacientes em hemodiálise sobre autocuidado com fístula arteriovenosa.

**Métodos:** Estudo descritivo, corte transversal e abordagem quantitativa. Envolveu 30 pacientes que realizavam hemodiálise por meio de fístula arteriovenosa no Hospital Barão de Lucena. **Resultados:** 97,7% dos pacientes apresentaram conhecimento inadequado. A atitude foi adequada em 70% dos pesquisados. A prática de autocuidado com a fístula foi inadequada em 97,7% dos pacientes. **Conclusão:** Apesar da maioria dos pacientes apresentarem uma atitude adequada em relação aos cuidados com a fístula, seu conhecimento e prática foram inadequados. O conhecimento inadequado, provavelmente, influenciou em uma prática inapropriada. O uso do material escrito pode ser recomendado como um instrumento facilitador para estratégias educativas posteriores, já que também permite uma leitura posterior pelo usuário, possibilitando-lhe a superação de eventuais dúvidas.

**Palavras-chave:** Diálise renal; Educação em saúde; Autocuidado; Fístula Arteriovenosa.

## RESUMEN

**Objetivo:** Identificar los conocimientos, actitudes y prácticas de autocuidado en pacientes en hemodiálisis con fístula arteriovenosa. **Métodos:** Estudio descriptivo, con enfoque cuantitativo transversal. Fueron observados 30 pacientes sometidos a hemodiálisis a través de la fístula arteriovenosa en el Hospital Barão de Lucena. **Resultados:** El 97,7% de los pacientes tenían un conocimiento inadecuado. La actitud fue adecuada en 70% de los encuestados. La práctica de auto-cuidado con fístula fue inadecuado en 97,7% de los pacientes. **Conclusión:** La mayoría de los pacientes tuvo una actitud apropiada con el cuidado de la fístula, pero el conocimiento y la práctica eran inadecuados. El conocimiento inadecuado probablemente influyó en la práctica inadecuada. El uso de material escrito puede ser recomendado como un facilitador para el futuro instrumento de estrategias educativas, ya que permite una nueva lectura por parte del usuario.

**Palabras-clave:** Diálisis renal; Educación en Salud; Autocuidado; Fístula arteriovenosa.

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## INTRODUCTION

The chronic kidney disease (CKD) is a worldwide public health problem and this disease is growing. Currently, in Brazil, there are on average 651 dialysis centers, which are attending about 97,586 patients a year. In the past 11 years, this number shows a growth larger than 100%; the majority of patients were diagnosed with hypertension (33.8%) and *diabetes mellitus* (28.5%) as the underlying disease<sup>1</sup>.

Among the available treatments for CKD in its terminal stage, the hemodialysis is the most utilized (89.4%)<sup>2</sup>, which demands adjustments in the patient's life, since it is a treatment associated with restrictions and that compromises their daily activities. The difficulties imposed by treatment, often, influence the adherence of the renal patient, requiring the use of artifices that assist in the process of adaptation and maintenance of the therapy<sup>3</sup>.

Before starting the hemodialysis is created a permanent or temporary vascular access. For chronic kidney patients is recommended the definitive access, since it allows adequate flow of the prescribed dialysis, during a long time, with fewer complications. The arteriovenous fistula (AVF) is the most appropriate venous access, it is a long-term access that enables the effective dialysis with fewer interventions<sup>4</sup>.

Although this is the best access for dialysis, the fistula is susceptible to various complications such as: blood hypoflow, thrombosis, aneurysm, infection, hand ischemia, hand edema and cardiac overload. The prevention of these complications can be accomplished through the use of appropriate care. In this process, the responsibility for the actions belong to the health team and to the chronic renal patient, which must be instructed in self-care about preparation and in creating a vascular access, and also in the management of his new VA<sup>5</sup>.

In the AVF period of maturation, the care provided is designed to provide greater fistula durability, for example: keeping the arm elevated, avoiding use of circumferential dressings too tight, evaluation of the daily blood flow, and performing manual compression exercises. Furthermore, when using an arteriovenous fistula, some care must be had, such as: proper compression for hemostasia after dialysis, placing aside the member with the access, avoiding great efforts, preventing venous infusions, and preventing assessing the blood pressure, among others<sup>6</sup>.

The knowledge of those informations is essential, since them influence the attitude and the proper practice of self-care of patients with AVF. Failure to comply with these precautions, may complicate the clinical condition of patients, which will lead to interventions more complex and/or hospitalizations<sup>7</sup>.

Based on the assumption that patients with AVF constitute a population at risk of suffering complications, it is relevant to identify the knowledge, the attitude and the practice of self-care in patients with an AVF.

Besides that, this research may provide support for development of future educational strategies, which would allow identifying the main difficulties related to the fistula presented

by patients, as well as their attitude towards accomplishment of the necessary care.

Thus, the study aims to identify the knowledge, attitude and practice of patients with chronic renal failure related to the arteriovenous fistula.

## METHOD

This is a descriptive cross-sectional study with quantitative approach about KAP (knowledge, attitude and practice). It was carried out at the Nephrology sector in the Barao de Lucena Hospital, in Recife - PE, which attends hemodialysis care through three daily shifts, in one room structured with 15 dialysis machines and another room for reuse. In this sector, during a hemodialysis session, the professional team is composed by: a physician, a nurse, seven practical nurses, a stretcher-bearer, a receptionist, and two auxiliary of general services.

The studied population consisted of patients with CKD, using a dialysis service of the type permanent arteriovenous fistula. The sample was equal to the population, it consisted of 30 patients. In the sample were included patients older than 18 years and excluded those who presented neurological or psychiatric disorders, which prevent participation in the research.

The data were collected from June to August 2013; it was done through interviews using a structured questionnaire. The questions were formulated by the researcher and answered by the patient during the treatment, with minimum interference in the answers. The contents of the instrument, for collecting data, were submitted to five judges: three nurses and two specialized physicians. After performing the changes on the instrument, suggested by the judges, it was conducted a pilot test with five patients, which allowed to adequate the instrument.

The first part of the questionnaire contained data related to identification, social and economic information, and dialysis therapy, they were: sex, age, marital status, place of birth, origin, education, occupation, social security status, family income, time on dialysis treatment, and time using the AVF.

The second part assessed the knowledge related to the following questions: a) After the fistula creation, what precautions should be taken? b) What actions should not be done in the arm with the fistula? c) What procedures should not be done in the arm with the fistula? d) How should be done the hygiene in the arm with the fistula? And c) What should be done to reduce the loss of weight during the hemodialysis treatment?

The third part assessed the attitude with the following questions: a) Do you think that the Fistula Care will be beneficial? b) If so, why? c) Do you feel motivated for Fistula Care? Please justify, and d) Do you feel prepared for Fistula Treatment?

The fourth part evaluated the practice of self-care with AVF through the following questions: a) After creating the fistula, which care do you perform? 1) What actions did you avoid in the arm with the fistula? 2) What procedure did you allow in the arm with the fistula? 3) How did you perform the hygiene in the arm with

the fistula? And 4) What did you do to reduce the loss of weight in the hemodialysis?

In this research, due to the lack of other studies that evaluated the knowledge, attitude and practice of renal patients, the three mentioned aspects were evaluated according to the classification established by the author, as follows:

a) Knowledge:

- Adequate: when the user identifies, at least, 50% of the proposed care during the fistula maturation period and 50% of the proposed care while using the arteriovenous fistula for hemodialysis.
- Inadequate: when the user identifies 50% of the proposed care during the fistula maturation period, or a number less than 50% of the proposed care while using the arteriovenous fistula for hemodialysis.

b) Attitude:

- Adequate: when the patient reports that AVF self-care provides benefits and that he feels motivated and prepared to perform such care.
- Inadequate: when the patient does not consider the AVF self-care as being beneficial or when he does not feel motivated to execute the necessary care or when he does not feel prepared to perform it.

c) Practice:

- Adequate: when the user executes, at least, 50% of the proposed care during the fistula maturation period and executes 50% of the proposed care while using the arteriovenous fistula for hemodialysis.
- Inadequate: when the user identifies, at least, 50% of the proposed care during the fistula maturation period or a number less than 50% of the proposed care that must be performed during the use of arteriovenous fistula for hemodialysis.

The data were analyzed using descriptive statistics and encoded using the SPSS software (version 20.00) for creating graphs and tables, with absolute and relative values. The analysis allowed the characterization of the sample; also the identification of the main difficulties mentioned by the users and the association between knowledge, attitude and practice, related to AVF self-care.

The study was conducted in accordance with the law 466/12 of the National Health Council; it was also submitted to the Research Ethics Committee (REC) of the Health Sciences Center of the Federal University of Pernambuco; the data collection was initiated only after approved by the research project of the REC, and when the patient signed the Term of Informed Consent, thus

fulfilling the guidelines contained in the document regarding the participation of the subjects, the contributions, the social relevance of the study, and the privacy and protection of the patients.

## RESULTS

Among the study participants, the sociodemographic characteristics indicated most of participants as being male (56.7%), with a mean age of 55.4 years, ranging from 32 to 81 years. As to the place of birth and origin, most patients came from inside the state (50%) and from the city of Recife (66.7%). Regarding education 56.6% had incomplete primary education, 80% did not work, and 93.3% received some kind of social security benefit. Regarding family income, most users had an income between 2 and 3 minimum wages. The average dialysis treatment time was 31.2 months, ranging from 5 to 117 months. The time of treatment for AVF had a mean of 21.9 months, ranging from 2 to 114 months.

The evaluation of patients' knowledge that used AVF (Table 1) showed that 97.7% had inadequate knowledge. This deficiency was observed, mainly, related to the proper way to take care of the fistula during the maturation period. In this period, the recommendations most mentioned on how to care for AVF access were exercises with a malleable object (40%) and avoiding excessive weight on the member that has the AVF (50%).

However, it was found that the constant verification of the presence of fremitus, in the site of AVF, was mentioned by only 3.3% of patients; maintaining the dressing clean and dry, after surgery, was remembered by 23.3% of users; and, the need of maintain a loose bandage, without compromising the AVF, was not mentioned by any of the patients.

There were found, also, deficiencies regarding the proper way to take care of AVF during the curative period. The cares most mentioned by the patients were: reduction of water intake (96.7%), avoiding excessive weight on the member with the AVF (86.7%), and washing the member with soap and water before hemodialysis (77.3%). Furthermore, also were mentioned by the majority of users to avoid: measurement of blood pressure (66.7%), blood collections (60%), and administration of medicines (70%), on the member that has the AVF. On the other hand, it was observed that only 33.3% of patients knew what to do in case of hematoma formation on the member with the AVF and only 16.7% associated the interdialytic weight gain to excessive sodium intake.

Moreover, still about the knowledge, it was identified that only 6.6% of interviewed patients had access to materials addressed to an appropriated care of AVF; the mentioned materials were printed documents and books.

When assessing the attitude (Table 2), the need for self-care with AVF was highlighted by 21 patients (70%) as an adequate attitude; thus, it was identified that all patients recognized that the self-care provides benefits to the AVF.

Also about the attitude. It was observed that 27 patients (90%) felt motivated to execute the self-care and 24 (80%) believed they were prepared to carry on those procedures.

**Table 1.** Distribution of care mentioned about self-care with an AVF

Variables	N = 30	%
Self-care on maturation		
Preventing overweight	15	50
Exercising with a malleable object	12	40
Preventing member injury	9	30
Dressing clean and dry	7	23.3
Verification of fremitus	1	3.3
Loose bandage	0	0
Care during the use		
Reduction of fluid intake	29	96.7
Preventing overweight	26	86.7
Washing the member with the AVF with soap and water before hemodialysis	22	73.3
Do not administer medications in the member with the AVF	21	70
Do not assess blood pressure in member with AVF	20	66.7
Do not perform blood collections on member with AVF	18	60
Administer cold compresses followed by warm compresses	10	33.3
Do not sleep over the arm	9	30
Reduction of sodium intake	5	16.7
Total	30	100

**Table 2.** Distribution of attitude toward self-care of patients with AVF

Variables	N = 30	%
Benefit of self-care		
Yes	30	100
No	0	0
Motivation for self-care		
Yes	27	90
No	3	10
Preparation for self-care		
Yes	24	80
No	6	20
Total	30	100

The self-care practiced by patients with AVF (Table 3) was classified as inadequate by 97.7% of participants in this study. Again, the greatest shortcoming was observed in the practice of self-care during the maturation period of the AVF.

**Table 3.** Distribution of self-care practices performed by patients with AVF

Variables	N = 30	%
Self-care during maturation		
Avoiding traumas on the member	13	43.3
Exercises with a malleable object	12	40
Avoiding excessive weight	11	36.7
Dressing clean and dry	6	20
Verification of fremitus	2	6.7
Loosed bandage	0	0
Care during use		
Avoiding excessive weight load	28	93.3
Avoiding assessing blood pressure on the member with AVF	21	70
Avoiding administration of medications on the member with AVF	21	70
Avoiding blood collections on the member with AVF	18	60
Washing the member with soap and water before hemodialysis	18	60
Reduction of water intake	13	43.3
Administration of cold compresses followed by warm compresses	10	33.3
Avoiding sleeping over the arm	9	30
Reduction of sodium intake	1	3.3
Total	30	100

The most mentioned practices during the maturation period of the AVF were: exercises with a malleable object (40%), avoiding traumas (43.3%), and avoiding excessive weight load on the affected limb (36.7%). The practice of checking the fremitus was mentioned by two patients (6.7%) and maintaining the dressing clean and dry, in the postoperative, was cited by six patients (20%); and, the recommendation of maintaining the dressing always loosed was not referred as being practiced by none of the patients.

The practice of self-care most remembered, by respondents, was to avoid excessive weight on the member with the AVF (93.3%). Furthermore, other practices, to be avoided on the

member with the AVF, were reported by most respondents, such as: assess blood pressure (70%), administration of medications (70%), blood collections (60%); also, it was mentioned that the member's hygiene should be done with soap and water before hemodialysis (60%).

With regard to the care provided in case of hematoma formation on the member with an AVF, only 10 patients (33.3%) reported having applied cold compresses in the first 24 hours and warm compresses in the next day; and five patients (16.7) reported never have had hematoma on the member with the fistula.

Regarding practices to reduce the interdialytic weight gain, only 13 patients (43.4%) reported controlling the water intake and only one (3.3%) informed to have reduced the sodium intake.

The results showed that all patients with inadequate knowledge also practiced an inadequate self-care of the AVF.

However, some cares were little practiced by patients, although they had demonstrated adequate knowledge about them. This fact was observed in reduction of water intake, practice known by 96.7 of patients and carried out by only 43.3%. As shown in Table 4, does not exists a significant association between knowledge and practice of reduction of water intake, indicating that knowing this care was not decisive to perform it.

With regard to hygiene in the member with AVF before hemodialysis, it was also found conflicts between knowledge and practice, since 20% of users had adequate knowledge about not performing this practice. Nevertheless, in table 4 is possible to observe a statistically significant relationship between knowledge and the practice of this care, indicating, probably, that knowledge influences the practice of hygiene in the member with the AVF.

## DISCUSSION

According to the International Classification of Nursing Diagnoses (NANDA), the "deficient of knowledge" can be defined as the absence or deficiency of cognitive information related to a specific topic; thus, the patient and his family are unable to make adequate and conscious decisions about the treatment<sup>8</sup>.

The attitude is defined as the tendency to respond positively or negatively to a given situation, that is to say, how the subject proceeds or the point of view he has on the subject<sup>9</sup>.

The practice of self-care aims at carrying out certain actions, which, through a recommendations model, should contribute to maintaining the integrity and to preserve the vascular access. This practice is a human ability that allows the individual to care for himself<sup>10</sup>.

The knowledge and the attitude can influence the client's practice related to the care of the AVF. In this study, the inadequate knowledge, probably, is responsible for the inadequate practice of respondents, although most of them presented positive attitude towards self-care with the AVF. From this perspective, the deficit of knowledge will lead to a deficit of self-care, since men, unlike other living beings, have the ability of self-reflection and of developing or participating in their own care. Thus, individuals should be self-reliant and take responsibility for their own care needs<sup>10</sup>.

To encourage the patient autonomy, the education is an essential tool; its success depends, besides the effectiveness of messages communication, on the base of scientific information and on the utilization of family channels to target the desired audience. The transmission of effective information increases the knowledge and awareness of individuals, helping them to: search for solutions, change behaviors, and develop capabilities<sup>11</sup>.

On the other hand, education centered on the vertical model, in which knowledge is imposed and often, stimulates the dependence of patients on health professionals. In that model, the professional is considered the only holder of knowledge and it is not taken into account the client's knowledge. It is necessary to share the construction of knowledge aiming to make, the customer, responsible for his own care<sup>12</sup>.

In patients undergoing renal substitutive therapy, the educational practices have great significance. Usually, the act of teaching occurs at random and fragmented, making difficult the learning; probably, this fact inhibits the clarification of doubts. Normally, in dialysis centers is still used the traditional model of health education, in which there is a greater concern about

**Table 4.** Association between knowledge, attitude and self-care practices with AVF

Variables	Practice				
	Adequate		Inadequate		$\chi^2$
Knowledge	N = 30	%	N=30	%	
Hygiene of member with soap and water					0.046
Adequate	17	56.6	8	26.6	
Inadequate	1	3.3	4	13.3	
Reduction of water intake					0.374
Adequate	13	43.3	16	53.3	
Inadequate	0	0	1	3.3	
Total	30	100	30	100	

\* Chi-square test



the current situation of disease, which hinders an more active involvement of users in their own care<sup>13</sup>.

The transmission of information must be accompanied by effective communication, which is facilitated by the presence of a bond of trust between the patient and professionals. In this way, the care of hemodialysis restricted to technical and scientific knowledge may hinder the health education, since the establishment of interpersonal relationships helps to identify the customer needs in the care of fistula<sup>14</sup>.

In this study, patients didn't know important aspects of AVF care, mainly regarding those related to the maturation period. In the postoperative period the maturation of AVF is an important element for its proper functioning. Consequently, is important to provide some essential care to accelerate the maturation of the AVF, such as: elevating the member during the first days, frequent dressing changes, prevention of occlusions that could interrupt the flow in the AVF, inspection of fremitus presence on the access site, palmar compression exercises, and manual relaxation with malleable object<sup>6</sup>.

The lack of knowledge was also observed related to the care of AVF while it was used as venous access. Generally, the treatment of hematoma was inadequate, probably due to a deficient transmission of information to the user, mainly in the case self-care at home. In hemodialysis, when the hematoma appears it must be taken the following steps: Interruptions of the session, withdrawal of the needle, applying compressions on the site, immediately application of cold compresses, and in the following 12 hours verify the possibility of inserting the needle again. Likewise, it is very relevant informing patients about the importance of applying a compress on the day that appears the complication; first a cold compress and then a warm compress<sup>15</sup>.

Avoiding assessing the blood pressure is a very important care, since the evaluation of blood pressure can reduce the blood flow in the fistula, causing thrombosis in the venous access. Avoiding medication administration and avoiding blood collection, are also essential cares; if they are not followed there is the risk of creating hematomas, besides that they can also impair the venous network<sup>5</sup>.

Regarding the care "water intake reduction" most participants knew it, but it was not performed. The water restriction causes great discomfort among renal patients, because the disease requires changing acquired habits throughout life. Many times, the patients consider this care as a limitation, responsible for suffering a decline in their quality of life<sup>3</sup>.

The lack of controlling the water intake could be responsible for appearing complications such as hypotension during withdrawal of fluid excess in the dialysis. Episodes of hypotension may hinder a well-functioning AVF, since they can lead to thrombosis in the access, as a result of excessive reduction of blood volume<sup>16</sup>.

The acceptance of the disease can be a positive factor in fulfilling this care and others recommended for patients with an AVF. The individual with a positive attitude while dealing with the disease becomes an active subject searching information and adapting his lifestyle to his new condition. On the other hand, a

passive attitude when confronting the disease may lead to the problem of non-compliance with the therapy<sup>17</sup>.

Among the study participants, it was observed a positive attitude towards acquiring new knowledge, especially those that impact directly upon the disease. The care and complications of the fistula, represent aspects of interest to patients, since they consider the AVF as a secure access, that allows treatment with low risk and higher quality of life<sup>18</sup>.

In some studies, it was observed a negative attitude in the participants related to the care of the AVF; this attitude may be related to the visual aspect of the arteriovenous fistula and also associated with the permanent dialytic treatment; this point of view may be opposite to the positive image represented by the idea of being a mean to survive. Sometimes, this dilemma could impair the maintenance of the necessary care for having a permanent venous access of quality<sup>19</sup>.

## CONCLUSION

This study concluded that the patients' knowledge about the care of AVF was inadequate. During the maturation period of the venous access, the care related to the dressing was forgotten by most participants. The care verification of fremitus in the fistula site - an important practice to verify if the AVF is working properly - was unknown to almost all respondents.

During the use of AVF in hemodialysis, the care "reduction of water intake" was the best known among patients. On the other hand, the appropriate conduct in case of hematoma during dialysis, was unknown by most patients.

Despite the inadequate knowledge, the attitude of participants related to self-care of AVF was positive in most of the interviews. Everyone recognized the benefits of performing self-care and most of them stated that they were motivated and prepared to practice the proper care of the fistula.

Although the participants demonstrated an inadequate practice, the patients' attitude regarding the care of fistula may influence on their practice. The recognition of the importance of those cares is associated to the effort employed in their maintenance. Probably, the lack of knowledge about the care of AVF was decisive for the inadequate practice of individuals. In the period of AVF maturation, most users did not accomplish the verification of fremitus on the fistula site and did not maintain the dressing clean, dry and loose.

Most patients did not perform the care "reduction of water intake", despite having the knowledge of this practice. Also, a proper hygiene of the member containing the AVF with soap and water, before hemodialysis, was not practice by some users, despite knowing its importance.

Although the studied sample represents all patients treated for arteriovenous fistula in the hospital, the number studied may have been a study limitation. Moreover, in the case of renal patients, the lack of publications about the association of knowledge and attitude with the practice of self-care of AVF, have limited the discussion of the data utilized in this study.

Considering the results of this study and aiming to maintain a continuous program of health education in the hemodialysis room and waiting room - considered as propitious environments for teaching - it is recommended to have training routines for professionals of dialysis. In addition, it is recommended the use of written material which facilitates the educational process and also allows later reading to solve doubts that may appear.

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