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## **ORGINAL RESEARCH ARTICLE**



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## NUTRITIONAL HABITS, COMORBIDITIES, QUALITY OF LIFE AND ACCEPTANCE TO HEMODIALYSIS TREATMENT

## \*,1Adalvane Nobres Damaceno, <sup>2</sup>Tainã Vidal Maciel and <sup>3</sup>Bruna Parnov Machado

<sup>1</sup>MSc in nursing, Professor in Faculdade Integrada de Santa Maria (FISMA), Rio Grande do Sul, Santa Maria, Brazil <sup>2</sup>Nurse, Faculdade Integrada de Santa Maria (FISMA), Rio Grande do Sul, Santa Maria, Brazil <sup>3</sup>MSc in nursing, Professor in Integrated School of Santa Maria (FISMA), Rio Grande do Sul, Santa Maria, Brazil

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#### ABSTRACT

**Objective:** To analyze the perception of patients with Chronic Renal Disease related to hemodialytic treatment. **Method:** This is a qualitative, descriptive and exploratory study developed with nine patients on hemodialysis treatment followed in a renal clinic. The data collection took place in March and April of 2017 through a characterization questionnaire and focused interview. The data were submitted to thematic analysis. **Results:** There were three categories: the sodium and Chronic Renal Disease; Diabetes Mellitus in chronic renal patients and patient acceptance of hemodialysis. **Conclusion:** Patients with chronic renal disease who are undergoing dialysis treatment have to adapt to new routines and modify their daily routine.

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## **INTRODUCTION**

According to the Ministry of Health (Brasil, 2014), chronic diseases account for about 60% of all causes of death worldwide, affecting about 35 million people per year, and an estimated 17% in mortality. According to a Brazilian chronic dialysis survey, the estimated number of patients who started treatment in 2016 in Brazil was 39,714, (Sesso, 2017). Chronic Kidney Disease (CKD) affects 10% of the world's population and affects people of all ages and races. It is estimated that the disease affects one in five men and one in four women between the ages of 65 and 74, with half the population aged 75 and over suffering some degree of the disease (Bastos, 2011). Among the causes is the inability of the kidneys to dispose of waste produced by the organism. The DRC becomes advanced when the percentage of the functional kidney is less than 20%. Renal impairment may be acute (ARF), when sudden and rapid loss of renal or chronic

#### \*Corresponding author: Adalvane Nobres Damaceno,

MSc in nursing, Professor in Faculdade Integrada de Santa Maria (FISMA), Rio Grande do Sul, Santa Maria, Brazil.

function (CRF) occurs, when this loss is slow, progressive and irreversible (Machado, 2014). The growing number of patients with CKD is considered a public health problem (Eckardt, 2013). In addition, in Brazil, attention to DRC is restricted to its more advanced stage, when renal replacement therapy is required. (Sesso, 2017 and Bastos, 2010). Since dialysis treatment has an impact on the life of hemodialysis patients, since diet, social life, physical and mental condition and also the values that guide them are altered by treatment and by the disease itself, and may compromise other dimensions of life (Frazão, 2014 and Fukushima, 2016). From the above, it was elaborated as a guiding question of this study: What is the perception of patients with Chronic Renal Disease in relation to hemodialytic treatment? The objective of this study was to analyze the perception of patients with Chronic Renal Disease related to hemodialysis treatment.

## **MATERIALS AND METHODS**

It is a qualitative, descriptive and exploratory research (Minayo, 2010). Nine patients undergoing hemodialysis were enrolled. The number of respondents was determined by the saturation of the data and by the possibility of reaching the

study objective. The data were collected in the nephrology service of a Renal Clinic attached to a large hospital in the municipality of Santa Maria, central state of Rio Grande do Sul. This renal replacement therapy clinic offers dialysis treatment (peritoneal dialysis) and hemodialysis to individuals with CRI or acute and serves as reference for about 20 municipalities of the State. To be included in the study, the participant should be a CKD patient, over 18 years of age and on hemodialysis treatment. And as exclusion criteria, patients were adopted who, due to renal transplantation, did not require hemodialysis treatment anymore. Data collection was performed in March and April of 2017, through an interview, guided through two moments. The first one characterized the interviewees as to sex, schooling, marital status, family income, occupation and naturalness. In the second moment the focused interview was carried out (Gil, 2010), following a previously elaborated script with questions about the time in which hemodialysis is performed, the discovery and the adequacy to the treatment. Data analysis was performed using the thematic analysis method. (Minayo, 2010). This technique allows to discover the nuclei of meaning that form a communication and whose presence or frequency means something for the desired goal. Operationally, the thematic analysis consists of three stages: pre-analysis, material exploration and treatment of results obtained together with interpretation (Minayo, 2010).

In the first stage, the choice of the documents for the analysis was made, with the resumption of the initial assumptions of the research. Indicators were developed for understanding the material and interpreting. The second stage comprised the exploration of the material with the search of categories and expressions or significant words. The third step covered the treatment of the results obtained and the interpretation according to the frequency of the content in the transcribed material (Minayo, 2010). This study is part of a matrix project called "Socioeconomic factors that interfere in the nutritional pattern of patients with chronic renal failure" with approval by the Ethics and Research Committee under CAAE nº 63083316.4.0000-5346. The guidelines and regulatory norms of research involving human beings were followed (Brasil, 2012). The interviewees signed the Informed Consent Term after being informed in clear and accessible language about the objectives, benefits and risks of the research and that there would be no obligation to participate The interviews were recorded in audio and later transcribed in a text editor and the software Qualitative Solutions Research NVivo, version 10 (University of Durham, 2011), was used to aid in the organization of the data and the categorization. To preserve the anonymity of the subjects the letters "P" followed by an Arabic number were used according to the sequence of interviews.

## **RESULTS AND DISCUSSIONS**

In this stage, the results of the individual interviews on the perception of patients with CKD related to hemodialytic treatment will be presented and discussed. Table 1 shows the sociodemographic characteristics of the study participants. According to the data obtained, the mean age of the participants was 48.7 years and the mean number of years of treatment was 8 years. Through the interviews with the research participants, three categories emerged: sodium and renal disease; Diabetes Mellitus in chronic kidney patients and patient acceptance of hemodialysis.

## Sodium and chronic renal failure

Sodium chloride is an essential mineral for health, as it has the function of maintaining the various vital and physiological functions for the functioning of our organism. Therefore, in addition to being essential for the regulation of plasma electrolyte levels, salt can seriously impair health if it is consumed in excess (Previdelli, 2011). According to American guidelines proposed by the American Dietetic Association (ADA), the recommended sodium intake for patients with CKD is 2.4 g / day (American Dietetic Association, 2010).

Table 1. Sociodemographic characterization of study			
participants. Santa Maria, Rio Grande do Sul, Brazil, 2016			

Variable	Ν	%
Sex		
Female	03	33,3
Male	06	66,6
Marital status		,
Single	06	66,6
Married	01	11,1
Widow	02	22,2
Scholaruty		
Elementary school (incomplete)	05	55,6
High school	03	33,3
Graduation (complete)	01	11,1
Residence		
Rented residence	01	11,1
Own residence	08	88,8
Area of residence		
Rural	02	22,2
Urban	07	77,7
City		
Santa Maria	01	11,1
Restinga Seca	03	33,1
Agudo	01	11,1
Julio de Castilhos	04	44,4
Persons residing in the residence		
up to 3 people	06	66,6
Up to 5 people	03	33,3
Piped water		
Yes	09	100,0
No	00	0
Main occupation		
Famer	01	11,1
Housewifely	01	11,1
Other	02	22,2
No work	05	55,5
Monthly income in local currency		
Up to a minimum salary	03	33,3
Up to two minimum salary	02	11,1
Up to three minimum salary	03	33,3
Up to fourth minimum salary	01	11,1

Systemic Arterial Hypertension (SAH) and renal function are interconnected, and SAH may be the cause or consequence of renal disease and, when uncontrolled, can lead to damages to the patient's health, such as severe renal injury of a microvascular nature (Malta, 2017).

The speech of the participants where it refers to the alimentary conduct, there are two versions in relation to the acceptance of the change of the alimentary habits. The first refers to those who started treatment shortly and know the importance of the change, and the second, who is more time in the dialysis treatment and believes that does not interfere with their change, because it continues eating the same things.

"Look, my food is strong, polenta, fat meat, cassava, potato, I've always eaten all life ... I talked to the nutritionist, but I said I would not admit it, I'll eat everything, I do not follow what she said (P6). "

#### [...] I started on the 19th of last month, had no treatment or anything, and now it has gone. Changed everything, quantity, type of food, the family was already adjusting, reducing the salt and the rest is only decreased in quantity (P9).

The changes in the dietary profile of the patients are fundamental, aiming at a conscious consumption that is opposed to the industrialized foods and prime for the consumption of basic and traditional foods like fruits, vegetables and vegetables (Alvarenga, 2017). The therapeutic intervention to control hypertension in the presence of CKD should initially be based on dietary measures and other changes in lifestyle. Recommendations for diet should adapt dietary components to the different stages of chronic kidney disease (Silva, 2016). Studies (Ribeiro, 2015 and Dobner, 2014) also carried out in renal clinics state that the main objective of an adequate diet is to reduce the progression of renal disease in the earliest stages, thus reducing cardiovascular risk in all stages of the disease. In addition, the goal of blood pressure control in patients on dialysis is lower, and to achieve these, changes in lifestyle are required, including changes in diet and fluid intake

#### **Diabetes and Chronic Kidney Patients**

Diabetes Mellitus (DM) is a group of diseases characterized by high levels of blood glucose (hyperglycemia), resulting from defects in insulin secretion and / or action. The worldwide prevalence of DM has increased significantly in the last two decades and, as a consequence, the increase in the number of people with diabetes, due to factors such as: population aging, increasing levels of obesity and sedentary lifestyle. (20) In a review study (21) that investigated dialysis therapy in the elderly, it was observed that, with the aging of the population, besides the greater prevalence of chronic diseases such as DM and SAH, they not only increase the incidence and complexity of CRF, also, the progressive loss of physiological renal reserve, which over the years leads to anatomical and functional alterations of the kidneys.

The study participants have a concern about diet in relation to DM and SAH and the need to keep the parameters controlled.

[..] I have diabetes, high blood pressure, but I'm developing well, when I got here I was very ugly, very weak. I take great care not to eat foods with too much sugar, and when I come to heme, I do not make insulin (P9).

[...] These times I was scared, I was in the machine and I started to feel very bad, I did not know what it was, I got to call one of the girls, I just remember that my eyes darkened, then I went to see it was the glucose that I had downloaded (P1).

The high incidence of CKD patients is related to DM, which in Brazil reaches more than six million people. Loss of renal function, diabetic nephropathy, affects about 20% to 30% of people with type I and type II DM. The delay in identifying the diagnosis of DM leads to acute and chronic consequences due to the patient's exposure to elevated blood glucose levels over a long period of time, and nephropathy is currently considered the main cause of chronic renal failure (Mascarenhas, 2011).

# Quality of life and patient acceptance of hemodialysis treatment

According to studies that evaluated quality of life through the Kidney Disease Quality of Life-Short Form (KDQOL-SF) (Gonçalves, 2015 and Santos, 2014), the dialysis treatment brings several changes in patients' lifestyle, causing physical, sexual, psychological, family and social, and can often interfere in the quality of life of the same and his family, because they identified negative feelings, such as fear, anguish, disability, economic and social dependence and alteration of self-image. When one has the discovery of a CKD, and the need to initiate a dialysis treatment, is initially faced with considerable difficulty and acceptance, there is physical and psychological suffering of patients. The sudden changes in his daily life, the limitations and confrontation of the hemodialysis treatment is very emphasized at this moment, where the patient is fragile, there is a continuous fear with the possibility of death (Viegas, 2016 and Oliveira, 2016). In addition, it brings an indefinite feeling of acceptance and revolt the various changes in their daily lives in patients who need this treatment to survive, because at the same time that guarantees life, makes the person dependent on the machine. There is a symbolism attributed to hemodialysis, since it has a relation of ambivalence (life and death), although knowing of survival through hemodialysis or transplantation (Oliveira, 2016). In this way, it can be seen in the speech of the deponents, that many of them had difficulty of acceptance at the beginning:

[...] It was very difficult, I had a lot of resistance, but only when I started to do and I was already at the CTI as I was at CTI, I had already had the first hemodialysis there.

[...] I adapted well, it was quiet, I did not overheat my head, I tried to do what the doctors said, but then I went on hemodialysis and at first I reluctantly tried, but then I got used to it (P5)

[...] Look, this treatment I'm making a great sacrifice, because it's hurting, it has to travel a lot and that's hurting me immensely, but it has to do, both here and at work (P7)

[...] The first day that the doctor told me was something, but then I looked at it as a reality, it is not one of the worst things.

In view of the above, the scientific evidence (Preljevic, 2013; Griva, 2014 and Ottaviani, 2016) indicates patients undergoing hemodialysis are subject to a higher prevalence of mood disorders, such as depression and anxiety. The prevalence rates of anxiety and depression are high, about 30% to 45%, and these conditions raise the morbidity and mortality rates of these patients on dialysis, as well as compromise the immunological and nutritional status.

In the speech of the deponents, we can identify the importance that the employment was for each one.

[...] I went straight to the machine. I had to stop working at once, that was very complicated (P3).

[...] I was sad, I feel sad. There comes a time that gets tired of everything, but I think, the treatment is there (P4).

[...] It is harming my profession, because I work as a broker, have to travel a lot and there it harms me immensely (P7).

In this context, the importance and support of family members is very decisive for these patients to have a positive evaluation about their quality of life. Health professionals must also perform quality care so that the impact of dialysis treatment on the quality of life of these patients and their own family is minimized (Gonçalves, 2015; Santos, 2014; Preljevic, 2013; Griva, 2014; Ottaviani, 2016).

#### Conclusion

The DRC is considered a disease of high morbidity and mortality worldwide. According to the themes that have been mentioned, it can be observed that sodium is an element that can bring several damages to hemodialytic patients, because it raises blood pressure, consequently causes this patient to have a greater retention of liquid, a very damaging factor to the patient with renal failure. DM, also, is a pathology that was mentioned by the participants of the study, since the hemodialysis patient who does not present constant in the glycemic control, has its treatment impaired. And, regarding the acceptance of the hemodialysis treatment, it was observed that all in the initial discovery of the disease, had resistance to acceptance elaborating diverse feelings, but that throughout the treatment they understood the changes in the daily life. One limitation was found in the inability to perform a more advanced assessment of these patients' daily lives for a longer period of time, so that the factors that could be interfering in other dimensions, such as the nutritional pattern of this patient, then we propose studies with daily evaluation and home monitoring for a period. for generalizable responses. cAs a contribution to the field of health, especially to the nursing nucleus, it is reiterated that the adequate accompaniment and assistance in food guidelines, reduce tension and kill the emotional balance, facilitating the adaptation to their new lifestyle. Family support is strengthened by not allowing them to feel repressed or unable to maintain their daily activities.

### REFERENCES

- Brasil, 2014. Ministério da Saúde. Diretrizes Clínicas para o Cuidado ao Paciente com Doença Renal Crônica – DRC no Sistema Único de Saúde. Brasília: Ministério da Saúde;. Disponível em: http://bvsms.saude.gov.br/bvs/ publicacoes/ diretrizes\_clinicas\_cuidado\_paciente\_renal.pdf
- Sesso RC, Lopes AA, Thomé FS, Lugon JR, Martins CT 2017. Brazilian Chronic Dialysis Survey 2016. J Bras Nefrol;39(3):261-266. Disponível em: http://www. scielo.br/pdf/jbn/v39n3/0101-2800-jbn-39-03-0261.pdf
- Bastos MG, Kirsztajn GM 2011. Doença renal crônica: importância do diagnóstico precoce, encaminhamento imediato e abordagem interdisciplinar estruturada para melhora do desfecho em pacientes ainda não submetidos à diálise. J Bras Nefrol; 33:93-108. Disponível em: http://www.scielo.br/pdf/jbn/v33n1/v33n1a13.pdf
- Machado GRG, Pinhati FR. 2014. Tratamento de diálise em pacientes com insuficiência renal crônica. Cadernos UniFOA; 26:137-148. Disponível em: http://web.unifoa.edu.br/cadernos/edicao/26/137-148.pdf
- Eckardt KU, Coresh J, Devuyst O, Johnson RJ, Köttgen A, Levey AS, et al. 2013. Evolving importance of kidney disease: from subspecialty to global health burden. The

Lancet; 382:158-69. PMID: 23727165 DOI: http://dx.doi.org/10.1016/S0140-6736(13)60439-0

- Bastos MG, Bregman R, Kirsztajn GM. 2010. Doença renal crônica: frequente e grave, mas também prevenível e tratável. Rev. Assoc. Med. Bras., 56(2):248-253. Disponível em: http://www.scielo.br/pdf/ramb/v56n2/ a28v56n2.pdf
- Frazão CMFQ, Delgado MFD, Araújo MGA, Silva FBBL, Sá JD, Lira ALBC 2014. Cuidados de enfermagem ao paciente renal crônico em hemodiálise. Rev Rene.; 15(4):701-9. Disponível em: http://www.repositorio.ufc.br/ bitstream/riufc/10441/1/2014\_art\_albclira.pdf
- Fukushima RLM, Menezes ALC, Inouye K, Pavarini SCI, Orlandi FS (2016). Fatores associados à qualidade de vida de pacientes renais crônicos em hemodiálise. Acta paul. enferm. [Internet]., 29(5):518-524.Disponível em: http://www.scielo.br/scielo.php?script=sci\_arttext&pid=S0 103-21002016000500518&lng=pt
- Minayo MCS (2010). O desafio do conhecimento: pesquisa qualitativa em saúde. 12ª ed. São Paulo: Hucitec.
- Gil AC (2010). Como elaborar projetos de pesquisa. 5. ed. São Paulo: Atlas.
- Brasil (2012). Conselho Nacional de Saúde. Resolução Nº 466, de 12 de dezembro de 2012. Disponível em: http://conselho.saude.gov.br/resolucoes/2012/Reso466.pdf
- University of Durham (2011). Information Technology Service. Introduction to NVivo. Duhram: University of Durham.
- Previdelli AG, Andrade SC, Pires MM, Ferreira SRG, Fisberg RM, Marchioni DM (2011). Índice de Qualidade da Dieta Revisado para população brasileira. Rev Saúde Pública.;45(4):794-8. Disponível em: http://www.producao.usp.br/bitstream/handle/BDPI/12797/ art\_PREVIDELLI\_Indice\_de\_Qualidade\_da\_Dieta\_Revisa do\_para\_2011.pdf?sequence=1
- American Dietetic Association (2010). Chronic kidney disease evidence-based nutrition practice guideline. Chicago: American Dietetic Association.
- Malta DC et al (2017). Prevalence of and factors associated with self-reported high blood pressure in Brazilian adults. Rev Saude Publica.;51 Suppl 1:11s. Disponível em: http://www.scielo.br/pdf/rsp/v51s1/0034-8910-rsp-S1518-87872017051000006.pdf
- Alvarenga LA, Andrade BD, Moreira MA, Nascimento RP, Macedo ID, Aguiar AS (2017). Nutritional profile of hemodialysis patients concerning treatment time. J Bras Nefrol;39(3):283-286. Disponível em: http://www. scielo.br/pdf/jbn/v39n3/0101-2800-jbn-39-03-0283.pdf
- Silva ME, Simões MO, Almeida KSM (2016). Qualidade da dieta e consumo de sódio de pacientes em hemodiálise de uma clínica renal da fronteira oeste do Rio Grande do Sul Rev Bras Nutr Clin; 31 (1): 70-4. Disponível em: http://www.braspen.com.br/wp-content/uploads/2016/11/ 14-Qualidade-da-dieta.pdf
- Ribeiro M, Araújo ML, Cunha L, Ribeiro D, Pena G 2015. Análise de diferentes métodos de avaliação do estado nutricional de pacientes em hemodiálise. Rev Cuid.; 6(1): 932-40. Disponível em: https://www.revistacuidarte.org/ index.php/cuidarte/article/view/163/393
- Dobner T et al. 2014. Avaliação do estado nutricional em pacientes renais crônicos em hemodiálise. Sci Med.; 24(1):11-18. Disponível em: http://revistaseletronicas. pucrs.br/ojs/index.php/scientiamedica/article/view/1980-6108.2014.1.15858/11155

- Mascarenhas NB, et al 2011. Systematization of Nursing Assistance to patients with Diabetes Mellitus and Chronic Renal Insufficiency. Rev Bras Enferm, Brasília; 64(1): 203-8. Disponível em: http://www.repositorio. ufba.br:8080/ri/bitstream/ri/3519/1/v64n1a31.pdf
- Franco MRG, Fernandes NMS 2013. Diálise no paciente idoso: um desafio do século XXI - revisão narrativa. J Bras Nefrol;35(2):132-141. Disponível em: http://www.scielo.br /pdf/jbn/v35n2/v35n2a09.pdf
- Costa MS, Sampaio JB, Teixeira OFB, Pinheiro MBGN, Leite ES, Pereira AA 2015. Doenças renais: perfil social, clínico e terapêutico de idosos atendidos em um serviço de nefrologia. Revista Espaço para a Saúde; 16(2): 77-85. Disponível em: http://www.uel.br/revistas/uel/index.php/ espacoparasaude/article/viewFile/20257/pdf\_71
- Gonçalves FA, Dalosso IF, Borba JM, Bucaneve J, Valerio NM, Okamoto CT, et al 2015. Quality of life in chronic renal patients on hemodialysis or peritoneal dialysis: a comparative study in a referral service of Curitiba PR. J Bras Nefrol.; 37(4):467–74. Disponível em: http://www.scielo.br/pdf/jbn/v37n4/en\_0101-2800-jbn-37-04-0467.pdf
- Santos GD, Castilho MS, Viso BF, Carreira GF, Queiroz MI, Mello TR, et al 2014. Qualidade de vida de pacientes em hemodiálise na cidade de Mogi das Cruzes. Diagn Tratamento. 19(1):3–9. Disponível em: http://files.bvs.br/ upload/S/1413-9979/2014/v19n1/a3960.pdf

- Viegas AC; Muniz RM; Schwartz E; et al 2016. Expectativas sociais vivenciadas pelo adulto jovem com a doença renal crônica. Res.: fundam. care. online. jul./set. 8(3): 4850-485. Disponível em: http://www.seer.unirio.br/index.php/ cuidadofundamental/article/view/4411/pdf
- Oliveira APB, Schmidt DB, Amatneeks TM, dos Santos JC, Cavallet LHR, Michel BR 2016. Quality of life in hemodialysis patients and the relationship with mortality, hospitalizations and poor treatment adherence. J Bras Nefrol. 38(4):411-420. Disponível em: http://www.scielo .br/pdf/jbn/v38n4/0101-2800-jbn-38-04-0411.pdf
- Preljevic VT, Osthus RBH, Os IMD, Sandvik L, Opjordsmoen S, Nordhus IH et al 2013. Anxiety and depressive disorders in dialysis patients: association to health-related quality of life and mortality. General Hospital Psychiatry. 35:619-24.Disponível em: https://doi.org/10.1016/ j.genhosppsych.2013.05.006
- Griva K, Kang AW, Yu ZL, Mooppil NK, Foo M, Choong SPMC et al 2014. Quality of life and emotional distress between patients on peritoneal dialysis versus communitybased hemodialysis. Qual Life Res. 23:57-66. Disponível em: https://link.springer.com/article/10.1007%2Fs11136-013-0431-8
- Ottaviani AC, Betoni LC, Paravini SCI, Say KG, Zazzetta MS, Orlandi FS 2016.Associação entre ansiedade e depressão e a qualidade de vida de pacientes renais crônicos em hemodiálise. Texto Contexto Enferm. 25(3):e00650015. Disponível em: http://www.scielo.br/pdf/tce/v25n3/ pt\_0104-0707-tce-25-03-00650015.pdf

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