

EFFECT OF EDUCATIONAL INTERVENTION ON THE QUALITY OF LIFE OF HYPERPHOSPHATEMIC CHRONIC RENAL PATIENTS ON HEMODIALYSIS

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ABSTRACT

Objective: to evaluate the health-related quality of life of hyperphosphatemic chronic renal patients on hemodialysis before and after a nursing educational intervention.

Method: a quasi-experimental before-and-after study, conducted with 63 hyperphosphatemic chronic renal patients from a renal unit of the state of Rio Grande do Sul (Brazil). A sociodemographic and clinical characterization form was used, pruritus intensity record, *Kidney Disease Quality of Life – Short Form* and Nursing Educational Intervention. This included individual guidance, clarification of doubts and a printed manual. Laboratory data and pruritus evaluated before, 30 and 60 days after intervention, and quality of life, before and after two months. Analysis from descriptive and analytical measures.

Results: after the intervention, there was a statistical difference between the mean scores of the following dimensions: Physical function, Emotional function, Energy/Fatigue, List of problems/symptoms and Cognitive function. Significant correlation was found in the following dimensions: Physical functioning, Physical function, Pain, General health, Emotional wellbeing, List of problems/symptoms, Effects of kidney disease, Kidney disease overload, Sleep and stimulation by the dialysis team. With the intervention there was a reduction in phosphorus, creatinine, calcium and parathyroid hormone levels. Itching also decreased. Regarding the evaluation of their health, 31.7% considered it “good” and 58.8% “regular” before the intervention; afterwards, 50.8% and 36.5% rated it as “good” and “fair” respectively.

Conclusion: nursing educational intervention improves health-related quality of life and health perception of hyperphosphatemic chronic renal patients on hemodialysis.

DESCRIPTORS: Quality of life. Renal Insufficiency, Chronic. Renal dialysis. Hyperphosphatemia. Health education.

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EFEITO DE INTERVENÇÃO EDUCACIONAL NA QUALIDADE DE VIDA DE PACIENTES RENAI CRÔNICOS HIPERFOSFATÊMICOS EM HEMODIÁLISE

RESUMO

Objetivo: avaliar a qualidade de vida relacionada à saúde de pacientes renais crônicos hiperfosfatêmicos em hemodiálise antes e após uma intervenção educacional de enfermagem.

Método: estudo quase experimental do tipo antes e depois, realizado com 63 pacientes renais crônicos hiperfosfatêmicos de uma unidade renal do estado do Rio Grande do Sul (Brasil). Utilizado formulário de caracterização sociodemográfica e clínica, registro de intensidade de prurido, *Kidney Disease Quality of Life – Short Form* e Intervenção Educacional de Enfermagem. Esta compreendeu orientação individual, esclarecimento de dúvida e manual impresso. Dados laboratoriais e prurido avaliados antes, 30 e 60 dias após intervenção, e qualidade de vida, previamente e após dois meses. Análise a partir de medidas descritivas e analíticas.

Resultados: após a intervenção evidenciou-se diferença estatística entre as médias dos escores das dimensões Função física, Função emocional, Energia/fadiga, Lista de problemas/sintomas e Função cognitiva. Verificou-se correlação significativa nas dimensões: Funcionamento físico, Função física, Dor, Saúde geral, Bem-estar emocional, Lista de problemas/sintomas, Efeitos da doença renal, Sobrecarga da doença renal, Sono e Estímulo por parte da equipe de diálise. Com a intervenção houve redução nos níveis de fósforo, creatinina, elevação de cálcio e paratormônio. O prurido também diminuiu. Em relação à avaliação de sua saúde, 31,7% a consideraram “boa” e 58,8% “regular” anteriormente à intervenção; após, 50,8% e 36,5% a avaliaram com “boa” e “regular” respectivamente.

Conclusão: intervenção educacional de enfermagem melhora a qualidade de vida relacionada à saúde e à percepção de saúde de pacientes renais crônicos hiperfosfatêmicos em hemodiálise.

DESCRITORES: Qualidade de vida. Insuficiência renal crônica. Diálise renal. Hiperfosfatemia. Educação em saúde.

EFEITO DE LA INTERVENCIÓN EDUCATIVA SOBRE LA CALIDAD DE VIDA DE PACIENTES RENALES CRÓNICOS HIPERFOSFATÉMICOS EN HEMODIÁLISIS

RESUMEN

Objetivo: evaluar la calidad de vida relacionada con la salud de pacientes renales crónicos hiperfosfatémicos en hemodiálisis antes y después de una intervención educativa de enfermería.

Método: estudio cuasi experimental del tipo antes y después, realizado con 63 pacientes renales crónicos hiperfosfatémicos de una unidad renal del estado de Rio Grande do Sul (Brasil). Se utilizó un formulario de caracterización sociodemográfica y clínica, registro de intensidad de prurito, *Kidney Disease Quality of Life – Short Form* y la Intervención Educativa de Enfermería. Esta intervención incluyó orientación individual, esclarecimiento de dudas y un manual impreso. Los datos de laboratorio y de prurito se evaluaron antes de la intervención, y 30 y 60 días después de la misma; y la calidad de vida se evaluó previamente y después de dos meses. El análisis se realizó a partir de medidas descriptivas y analíticas.

Resultados: después de la intervención se evidenció una diferencia estadística entre las medias de los puntajes de las siguientes dimensiones: Función física, Función emocional, Energía/Fatiga, Lista de problemas/síntomas y Función cognitiva. Se verificó una correlación significativa entre las siguientes dimensiones: Funcionamiento físico, Función física, Dolor, Salud general, Bienestar emocional, Lista de problemas/síntomas, Efectos de la enfermedad renal, Sobrecarga de la enfermedad renal, y Sueño y Estímulo por parte del equipo de diálisis. Con la intervención se registró una reducción en los niveles de fósforo y creatinina, y un aumento del calcio y de la hormona paratiroidea. El prurito también disminuyó. En relación con la evaluación de su salud, el 31,7% de los participantes la consideraron “buena” y el 58,8% “regular” antes de la intervención; luego de la misma, el 50,8% y el 36,5% la evaluaron como “buena” y “regular”, respectivamente.

Conclusión: la intervención educativa de enfermería mejora la calidad de vida relacionada con la salud y la percepción de la salud de pacientes renales crónicos hiperfosfatémicos en hemodiálisis.

DESCRIPTORES: Calidad de vida. Insuficiencia renal crónica. Diálisis renal. Hiperfosfatemia. Educación en salud.

INTRODUCTION

Chronic Kidney Disease (CKD), characterized by a reduced glomerular filtration rate and/or increased urinary albumin excretion, is one of the major noncommunicable diseases that contributes to morbidity and mortality globally, loss of disability-adjusted life years, thus being a growing public health problem.¹ Mineral metabolism disorders that occur in patients with this disease, particularly those hyperphosphatemic on hemodialysis, contribute to bone and heart pathologies, vascular calcifications, and hormonal disorders, are associated with highest mortality² and impact on Health Related Quality of Life (HRQoL).³

In Brazil, the Brazilian Chronic Dialysis Survey points to a global increase in the number of hemodialysis patients, incidence rates and treatment prevalence in recent years.⁴ The estimated total number of patients undergoing this treatment modality in July 2016 was 122,825, representing an increase of 31,500 patients in the last five years, compared to 91,314 patients in 2011.⁴

From the early stages of the disease to its terminal phase, symptoms, restrictions and the treatment itself reflect on the daily lives of these patients.³ In convergence, the experience of patients with Chronic Kidney Disease (CKD) shows dependence on the machine, family and care team, life extension, functional, financial, social limitations, psychological impact, need for adaptation and repercussion on HRQoL.⁵ In addition to hemodialysis treatment, a study showed that factors such as employment, marital status, gender, spirituality/religiosity, hematocrit and hemoglobin levels interfere with HRQoL.⁶ Given this, it is emphasized that its evaluation is relevant because it demonstrates aspects related to the well-being of the person, satisfaction with the current state of health, directly linked to the individual perception of the effects of their disease and instituted treatments.⁷

The circumstances that underlie CKD and renal replacement therapy, such as limitations that impact on biological, emotional and social aspects, can be perceived as stressful by patients. Thus, experiencing the disease causes changes in the personal, family and social daily life of chronic kidney patients and requires attitudes to cope with the situation and reconstruct their own identity. In view of this, meeting the publications of the *National Kidney Foundation*, the need to improve the HRQoL of these patients is recognized and periodic evaluations are suggested as one of the treatment adequacy parameters.⁷

The World Health Organization (WHO) conceptualized Quality of Life (QoL) as the individual's perception of their position in life, in the context of the culture and value system in which they live and in relation to their goals, expectations, standards and concerns.⁸ It proposes a multifactorial nature for this construct, which includes five dimensions: physical health, psychological health, level of independence, social relations, and environment. In the meantime, HRQoL is also considered by the WHO as a factor that addresses aspects related to health perception, physical, social and psychological functions, an important indicator of health and well-being of patients with CKD.

The evaluation of HRQoL in people with chronic diseases has clinical implications as it reflects the physical and mental health of patients, the quality of care and the effectiveness of interventions, favors clinical decision making and definition of community health needs. In addition, caregivers can use HRQoL scores to verify the effects of a given condition on patients and specific treatment, and to assess their progression.⁷

In a study there is an association stated between low QoL scores of chronic kidney patients on hemodialysis with increased hospitalization, mortality in the elderly who do not work, comorbidities and hypoalbuminemia.⁹ A study of 100 individuals undergoing hemodialysis who assessed self-care ability and association with quality of life identified a positive correlation between self-care and HRQoL.¹⁰

It is known that the evaluation of HRQoL should integrate the usual and systematic practice of professionals working in nephrology, as it provides information that enables actions on the most

affected dimensions. Among the goals of the International Society of Nephrology for the next five to ten years there will be an improvement in the management of CKD symptoms and complications.¹¹ Complications manifest themselves with a variety of symptoms, physiological, laboratory abnormalities, and adverse outcomes.¹¹ These complications include hyperphosphatemia, which increases the risk of cardiovascular events, bone mineral disorders, secondary hyperparathyroidism,¹² sleep disorders¹³ and pruritus, impacting HRQOL in several dimensions.¹⁴

Given the above, it is emphasized that the nurse in a Renal Unit has competence and concrete possibilities to intervene with these patients, in order to provide knowledge that favors adherence to treatment, reducing the harmful effects of the disease on the body and the evaluation of their HRQoL. Among the activities that nurses can perform are educational nursing interventions.¹⁵

The present study is relevant because it is a nursing educational intervention with hyperphosphatemic patients undergoing hemodialysis treatment, whose results have direct repercussions on the HRQoL of these subjects, can support the clinical nursing practice and reduce knowledge gaps on the subject with this population. Thus, the objective of this research is to evaluate the health-related quality of life of hyperphosphatemic chronic renal patients on hemodialysis before and after a nursing educational intervention.

METHOD

This is a quasi-experimental research, with a before-and-after design. Data is part of a doctoral thesis, part of which was previously published in an article entitled “Nursing educational intervention to reduce hyperphosphatemia in hemodialysis patients”.¹⁶ The research took place in a renal unit of a philanthropic hospital in the inland of Rio Grande do Sul (Brazil). In the place patients from all over the Northwest region of the state are treated, most of them affiliated to the Unified Health System.

The study was conducted from January 2011 to February 2014. Participants were informed about the objectives of the study and, after agreeing to participate in it, signed the Informed Free Consent Form.

The research population comprised 110 patients; however, 63 participated in the research that met the inclusion criteria, as shown in Figure 1. Patients older than 18 years old with CKD were eligible – glomerular filtration rate <15 mL/min/1,73 m², in hemodialysis and hyperphosphatemia treatment – mean serum phosphate above 5.5 mg/dL in the six months prior to data collection. Patients with verbal communication difficulties, whether due to hearing or speech (dumb) disabilities, and difficulty in understanding the questions that constituted the instruments, verified by the researcher during an interview after repeated explanations to the participant, were excluded.

The study protocol included a sociodemographic, clinical characterization form, pruritus intensity record, Kidney Disease Quality of Life - Short Form (KDQOL-SF™),¹⁷ and Nursing Educational Intervention (NEI). The first comprised the variables of gender, age, marital status, education, income, etiology of CKD, time of diagnosis of the disease, time of hemodialysis treatment, hemoglobin, hematocrit, urea removal index, alkaline phosphatase, parathyroid hormone and serum creatinine, phosphorus, calcium, urea and potassium levels. Clinical data was collected at three time points (before NEI, 30 and 60 days after). The individual perception of pruritus was also evaluated at three moments, based on the intensity in a Likert-type scale with the following scores: 1 – nothing, 2 – a little, 3 – more or less, 4 – a lot and 5 – very much.

HRQoL assessment was performed using KDQOL-SF™, applied before and 60 days after NEI. KDQOL-SF™ includes generic and specific aspects related to CKD, applicable to patients in a dialysis program, with scores from zero (worst HRQoL) to 100 (best HRQoL).¹⁷ The instrument includes the MOS 36 Item Short-Form Health Survey (SF-36) as a generic measure, supplemented with multi-item scales addressing the particular concerns of the chronic kidney. It consists of 80 items

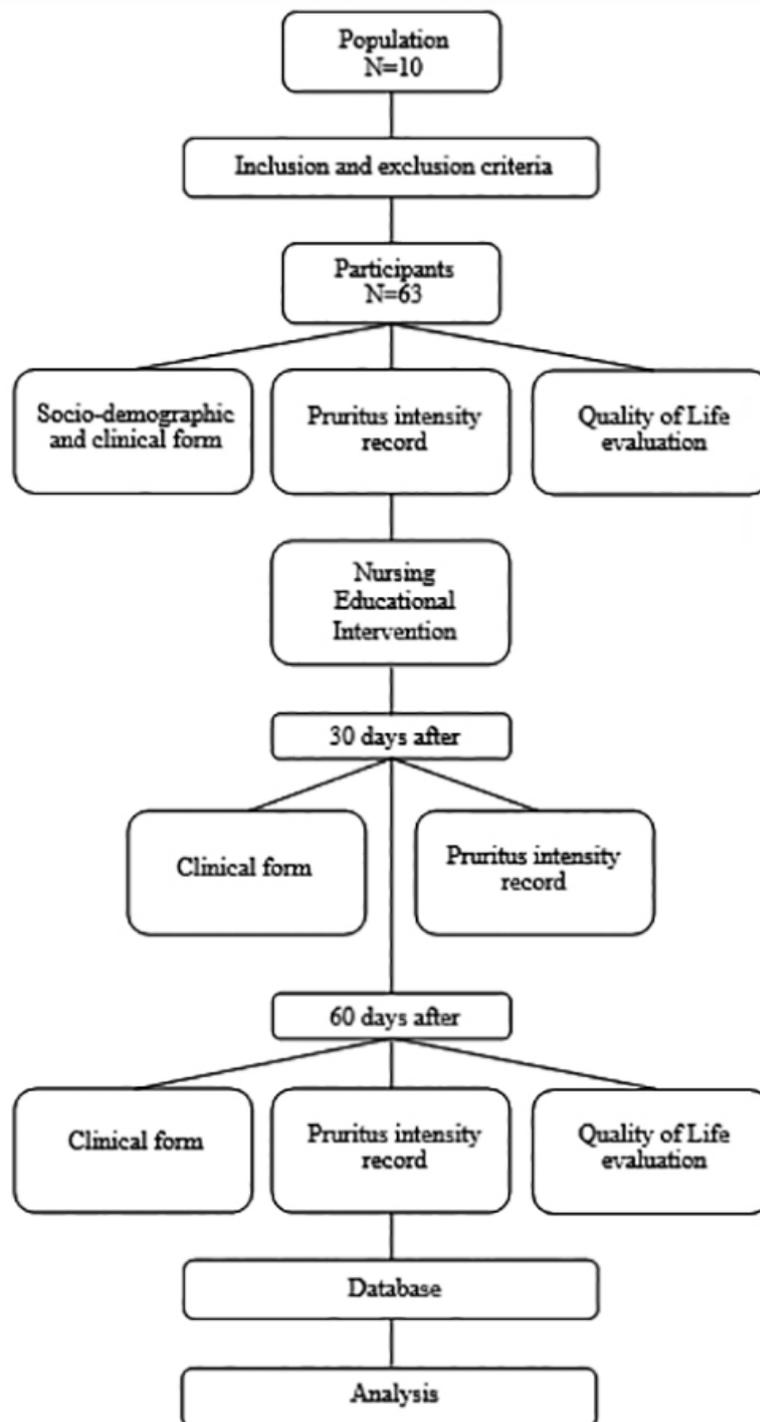


Figure 1 - Flowchart of the study method: from population to analysis

in 19 dimensions: Physical functioning (ten items), Limitations caused by physical health problems (four items), Limitations caused by emotional health problems (three items), Social functioning (two items), Mental health (five items), Pain (two items), Vitality - Energy/Fatigue (four items), General Health Perceptions (five items), and Current Health Status compared to one year ago (one item); it ranges from zero to ten, and is computed separately.

The specific part of the kidney disease instrument comprises 43 items and their respective dimensions: Symptoms/problems (12 items), Effects of kidney disease on daily life (eight items), Overload imposed by kidney disease (four items), Working condition (two items), Cognitive function (three items), Quality of social interactions (three items), Sexual function (two items) and Sleep (four items). It also includes three additional scales: Social support (two items), Dialysis team stimulus (two items) and Patient satisfaction (one item).¹⁷

The NEI consisted of individual guidance to patients during hemodialysis sessions, with the aid of a printed and illustrated manual, built and validated by the main researcher in her doctoral process.¹⁵ This intervention was carried out by the researcher herself for 60 days, with an average time of 40 minutes with each participant. It included verbal guidance and questions about CKD, signs and symptoms of hyperphosphataemia, use of phosphorus chelators, nutrition and alternatives to improve HRQoL.¹⁵ The manual with this information was delivered to each individual. There were no losses in the sample and all were interested and participatory, particularly in requesting information and reporting behaviors.

The effects of the intervention were evaluated based on laboratory results, perception of pruritus and HRQoL, including stratification of the health dimension into excellent, very good, good, fair and poor. All information collected comprised a spreadsheet database in Excel and was carried over for analysis in the Statistical Package for the Social Sciences (SPSS for Windows), version 15.0. To verify the difference between the means of the results of the laboratory tests of the patients, the ANOVA and the Tukey test were used. To analyze the relationship between the dimensions of the KDQOL-SF™ at the beginning of the research and after the NEI, the Pearson and t-Student correlation test was used.

RESULTS

Of the 63 study participants, 66.7% were male, 63.5% married and the average age was 58.87±13.12 years old. Regarding the years of study, the median was five years. The monthly income came from retirement for 80.9% of participants.

Regarding the etiology of kidney disease, the highest percentages were Systemic Arterial Hypertension (34.9%), followed by undetermined cause (28.6%) and Diabetes *Mellitus* (11.1%). Regarding the time of diagnosis of CKD, 25% of patients were diagnosed less than two years ago, 50% less than five years and 75% less than 10 years ago, with a mean value of 8.17±9.76 years. Still, regarding the time on hemodialysis treatment, 25% of patients had been on treatment for less than 18 months, 50% for less than 36 months and 75% of them for less than 72 months, with an average of 51.17±44.71 months.

Regarding the results of laboratory tests of the participants, there was a statistically significant reduction in relation to the average creatinine and phosphorus levels at the beginning and after 30 days of the performance of the NEI ($p < 0.001$); however, after 60 days, there was an increase in average phosphorus values compared to the evaluation performed at 30 days. In the comparative analysis between the mean values obtained at 30 and 60 days there was no reduction [5.80 (±1.53) *versus* 6.51 (±1.74)], although it remained below the initial dosage [7.06 (±1.43)].

Analysis of initial creatinine values at 30 and 60 days of NEI showed a reduction with significant statistical differences [11.22 (±3.10), 8.95 (±2.37) and 8.61 (±2, 25) respectively, with $p < 0.001$]. Regarding serum calcium indexes, there was a statistically significant increase between the means before the NEI, 30 and 60 days after [9.33 (±1.34), 9.55 (±1.33), 10.57 (±1.66) respectively, with $p = 0.001$]. Regarding urea, potassium, hemoglobin, hematocrit, urea removal index and alkaline phosphatase, no statistically significant differences were found between the means. Regarding Parathyroid (PTH), there was elevation with a statistically significant difference [465.78 (±524.17) *versus* 519.51 (±621.81), $p < 0.05$] in the measurements obtained at baseline and 60 days after intervention.

Concerning the pruritus evaluation scores before, 30 days and 60 days of the NEI, there was a decrease by the mean and standard deviation of the scores obtained in the referred periods [1.95 (± 1.26), 1.94 (± 1.02) and 1.80 (± 0.86) respectively]. A significant correlation ($p < 0.01$) was identified between the first assessment and at 30 days of the intervention ($r = 0.77$), between 30 days and after 60 days ($r = 0.79$) and between the first assessment and after 60 days ($r = 0.55$).

Table 1 shows the descriptive measures for each of the HRQoL dimensions before and after the NEI and the results of the Student *t* test.

Table 1 – Health-related quality of life of hyperphosphatemic chronic renal patients in hemodialysis treatment, before and 60 days after the Nursing Educational Intervention. Ijuí, RS, Brazil, 2014. (n=63)

Dimensions (number of items)	Nursing Educational Intervention				p*
	Before		After		
	X \pm SD	X	X \pm SD	X	
Physical functioning (10)	49.52 \pm 31.01	50.00	52.38 \pm 34.36	60.00	
Physical function (4)	9.52 \pm 22.64	0.00	18.25 \pm 27.39	0.00	0.025
Pain (2)	62.30 \pm 30.04	65.00	66.53 \pm 30.68	77.50	
General health (5)	56.43 \pm 21.24	60.00	54.81 \pm 21.78	55.00	
Emotional wellbeing (5)	78.03 \pm 20.60	84.00	77.33 \pm 22.50	80.00	
Emotional function (3)	19.58 \pm 22.90	33.33	35.45 \pm 43.53	0.00	0.009
Social function (2)	67.46 \pm 26.33	75.00	69.25 \pm 27.66	75.00	
Energy/Fatigue (4)	67.62 \pm 22.18	75.00	74.84 \pm 22.54	80.00	0.031
List of problems/symptoms (12)	76.98 \pm 15.29	79.17	83.47 \pm 12.77	85.42	0.001
Effects of kidney disease (8)	72.27 \pm 19.27	78.13	75.11 \pm 21.01	81.25	
Renal disease overload (4)	48.51 \pm 30.49	37.50	44.94 \pm 38.01	31.25	
Work situation (2)	26.98 \pm 30.88	0.00	18.25 \pm 25.87	0.00	
Cognitive function (3)	86.98 \pm 16.22	93.33	93.01 \pm 11.35	100.00	0.022
Quality of social interaction (3)	83.92 \pm 17.34	93.33	85.24 \pm 16.88	93.33	
Sexual function† (2)	-	-	-	-	
Sleep (2)	70.40 \pm 23.80	77.50	66.19 \pm 27.61	72.50	
Social support (2)	93.12 \pm 21.51	100.00	94.18 \pm 16.16	100.00	
Team stimulus (2)	97.22 \pm 13.55	100.00	95.04 \pm 18.45	100.00	
Patient satisfaction (1)	68.25 \pm 18.14	66.67	66.40 \pm 23.47	50.00	

* *t*-Student test; † Did not answer

As can be seen in Table 1, scores improved with a statistically significant difference in the following dimensions: Physical function, Emotional function, Energy/Fatigue, List of problems/symptoms, and Cognitive function after NEI.

Sequentially, Table 2 shows the correlation between each dimension of KDQOL-SF™ before and two months after the NEI in the patients surveyed.

Table 2 – Correlation between the dimensions of health-related quality of life of the hyperphosphatemic patients before and 60 days after the Nursing Educational Intervention. Ijuí, RS, Brazil, 2014. (n=63)

Dimensions	R	p-value
Physical functioning	0.676	0.001†
Physical function	0.284	0.024*
Pain	0.358	0.004†
General health	0.461	0.001†
Emotional wellbeing	0.471	0.001†
Emotional function	0.120	
Social role	0.334	
Energy/Fatigue	0.323	
List of problems/symptoms	0.513	0.001†
Effects of kidney disease	0.616	0.001†
Kidney disease overload	0.578	0.001†
Work situation	0.080	
Cognitive function	0.035	
Quality of social interaction	0.339	
Sexual function	-	
Sleep	0.412	0.001†
Social support	0.231	
Stimulation by the dialysis team	0.428	0.001†
Patient satisfaction	0.169	

* Significant correlation $p < 0,05$; † Highly significant correlation $p < 0,01$

A strong correlation was evidenced in the following dimensions: Physical functioning, Physical function, Pain, General health, Emotional wellbeing, List of problems/symptoms, Effects of kidney disease, Kidney disease overload, Sleep and stimulation by the dialysis team.

Figure 2 shows the percentages of the responses of hyperphosphatemic patients regarding their health assessment at baseline and after the NEI.

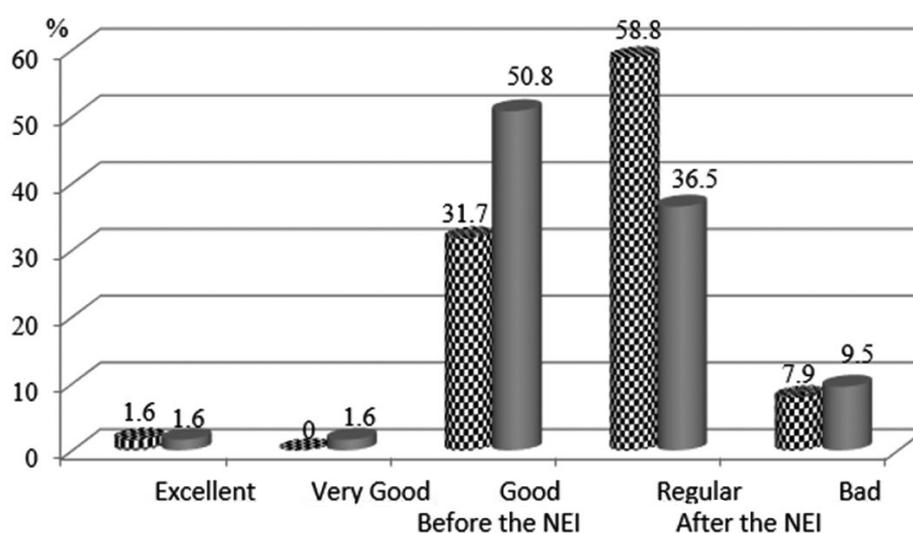


Figure 2 – Percentages related to the evaluation of hyperphosphatemic patients regarding their health, before and 60 days after the educational intervention.

Health was assessed as good by 31.7% of the patients before intervention, by 50.8% after intervention, regular by 58.8% before the intervention and by 36.5% of the patients after the intervention.

DISCUSSION

Regarding the participants' sociodemographic data, the findings are similar to studies of chronic renal patients undergoing hemodialysis treatment in which there is a predominance of males and in stable union.^{10,18} Regarding the time of diagnosis of kidney disease, the average was 8.17 ± 9.76 years and, regarding time on hemodialysis, approximately 4.26 years. A research conducted with 103 chronic renal failure in four renal units in Italy showed that 84.5% of them had dialysis from five to ten years,¹⁹ a result that deviates from the one found in the present study. Still, regarding the time of hemodialysis, this dialysis method is efficient and contributes to the prolongation of life, which allows us to infer that hemodialysis mitigates CKD symptoms and ensures survival.

Regarding the causes of kidney disease, this study identified hypertension, undetermined factors and diabetes, respectively. The determining factors vary worldwide, but diabetes and hypertension are common among high- and middle-income countries and in many low-income countries.²⁰ On the other hand, unknown causes and glomerulonephritis are frequent in Asia, India, and sub-Saharan Africa.²⁰ It is thus understood that health interventions capable of promoting lifestyle changes can prevent CKD or improve HRQoL.

When evaluating the dimensions of KDQOL-SF™, there was a significant difference between the mean scores before and after the completion of the NEI. Of the 18 scores evaluated, the *t*-Student test showed a difference between the means of five of them, which are: Physical function, Emotional function, Energy/Fatigue, List of problems/symptoms, and Cognitive function. This result demonstrates that the NEI contributed to the improvement of the evaluation of hyperphosphatemic chronic renal patients regarding their HRQoL in the mentioned dimensions, also evidenced in the averages of each one.

Regarding physical function, the results of the present study reveal that this dimension was the one that obtained the lowest score, which represents the worst HRQoL. This data converges with results of a study that evaluated the quality of life of 101 participants on hemodialysis, which showed Physical function, Work situation and Physical functioning among the dimensions with the lowest scores. The highest scores were found on Cognitive function, Social support and Sexual function. The authors state that these results relate to decreased ability to perform daily routine activities or work.²¹

The present study showed that two of the highest scores were Social support and Stimulus by the team, which confirms the importance of the relationship between team and patient. A similar result was also found in Brazilian studies²² and international studies.²³ Still, it is noteworthy that the support offered by health professionals is fundamental for a better adaptation and adherence to hemodialysis treatment. In this regard, results from a study of 286 chronic renal failure patients on hemodialysis showed a significant correlation between support from the health team and the scores of the mental component.²⁴

These results reinforce the importance of social support for the individual, with emphasis on family participation, which may favor their acceptance in relation to the disease and to the treatment and, consequently, improve QoL scores.^{19,21,24} In this sense, it is important to include the family in the treatment, to encourage their participation in the process and to provide guidance on pathology and treatment.

The significant ten-dimensional correlation of KDQOL-SF™, namely: Physical functioning, Physical function, Pain, General health, Emotional well-being, List of problems/symptoms, Effects of kidney disease, Kidney disease overload, Sleep and Stimulation by the dialysis Team, shows that the NEI contributed positively to the way participants assessed their HRQoL. In this context, an investigation

that identified socioeconomic, demographic, clinical-nutritional, and laboratory factors associated with poorer QoL levels in adults on HD showed that the domains with the worst QoL levels were Work situation, Kidney disease overload, Patient satisfaction, Physical function and General health.²⁵

The analysis of patients' health outcomes currently shows that the NEI may have contributed to their satisfaction by considering differences in the percentages obtained in the "good", "fair" and "very good" responses before and after the completion of the NEI. Hemodialysis has positive effects on CKD health, including symptoms present before dialysis therapy begins. Thus, it is considered that the NEI directed to this group of patients contributed to the reduction of serum phosphate levels, decreased pruritus and perceptions regarding health assessment and HRQoL.

Patients Hyperphosphatemia which CKD is known to be an important complication associated with severe clinical consequences including vascular calcification, bone disease and hyperparathyroidism,¹² which directly affect HRQoL. For the effective management of hyperphosphatemia, in addition to the combination of proper dialysis and the use of phosphate binders, a diet low in phosphorus is recommended, an aspect addressed in the NEI. The results of serum phosphate levels achieved with the intervention reiterate the importance of non-pharmacological measures to control hyperphosphatemia and highlight the role of health professionals, especially of the nurses working in nephrology.

A meta-analysis that explored the effects of nursing intervention on dialysis compliance showed that nursing intervention facilitates patient compliance with dialysis, with a 15% increase in patient compliance compared to standard care.²⁶ Therefore, nursing interventions have shown favorable effects on the physical and emotional health of patients with CKD,²⁷ a result that meets the evidences of the present study and that indicates possibilities of action of the nephrologist nurse.

The outcomes of a randomized controlled trial comparing usual hemodialysis treatment (control, n=101) with treatment based on interactive and guided self-management training (intervention, n=134) showed improvements in clinical markers, self-management ability, and self-management, and self-reported treatment adherence, which can significantly reduce CKF-related complications and improve QoL perception,²⁸ as evidenced in the present study in relation to creatinine, calcium and parathyroid levels. The authors further state that this type of program has a strong potential to supplement usual care by providing an effective and practical model for improving health in hemodialysis patients.

In the research herein analyzed, there was also a decrease in pruritus with the NEI, which may be related to the expansion of self-care by the patient. Review showed that pruritus is a common and stressful symptom in patients with CKD of varying intensity, associated with worse QoL, sleep disorders, depression and mortality.²⁹ The authors indicate the following as treatment: patient's education, skin hydration, dialysis adequacy, phosphate, calcium and parathyroid hormone control, in agreement with the protocol of this study.

Given the results of this research and the different investigations on HRQoL of chronic renal patients undergoing hemodialysis treatment, it is pointed out that nursing interventions play a fundamental role in disease adaptation and treatment adherence, which interfere positively with health assessment and in the perception of QoL. Particularly, the effectiveness of an individualized patient-centric NEI that can be more successful compared to a *one size fits all* is evidenced

Regarding the limitations of this study, we highlight that the study was conducted in a single renal unit, the limited sample size, the absence of a control group and the fact that the nursing educational intervention has been applied only once and not continuously. Still, although nurses are well positioned to influence treatment adherence, the inclusion of all professionals in the multidisciplinary team could maximize educational intervention. Thus, it is suggested that conducting new research with diversified methods could help in the production of new evidence.

CONCLUSION

The results of this study refer to the expansion of knowledge for nursing as a science and point out that the assessment of the quality of life of hyperphosphatemic chronic renal patients undergoing hemodialysis is an important parameter that can be used by health professionals involved in care, with the purpose of qualifying the assistance.

It is concluded that the accomplishment of the nursing educational intervention assisted in the reduction of serum phosphate, creatinine and pruritus levels, favored the elevation of calcium and parathyroid hormone, with a positive effect on the HRQoL dimensions and on the general health assessment of the participants. These results may prompt reflections, discussions and the implementation of innovative interventions to qualify care for this population that requires specific treatment to maintain quality life.

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NOTES

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ETHICS COMMITTEE IN RESEARCH

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CONFLICT OF INTEREST

No any conflict of interest.

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