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THE EFFECTS OF A BRIEF SUPPORTIVE PSYCHOTHERAPEUTIC INTERVENTION AMONG HEMODIALYZED PATIENTS: A QUASI-EXPERIMENTAL STUDY

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ABSTRACT

Objectives: to assess health-related quality of life and resilience among hemodialyzed patients in the city of Porto, Portugal, before and after the Relaxation, Mental Images and Spirituality psychotherapeutic intervention, and identify factors interfering in these patients' levels of resilience.
Method: a quasi-experimental study was conducted from November 2018 to April 2019 among 17 patients attending two dialysis centers located in Porto, Portugal. A questionnaire addressing sociodemographic and clinical information was applied together with the Kidney Disease Quality of Life-Short Form, a resilience scale, and a brief psychotherapeutic intervention. Each patient attended three intervention sessions, and the instruments were applied before and after the intervention. The Shapiro-Wilk test was performed to verify the normality of data, while the Student's t-test and Wilcoxon test were performed to compare the means, and linear regression was used to identify resilience-associated factors.
Results: after the intervention, quality of life perception improved in virtually all the scale's domains, with statistically significant differences in the *physical function* (p=0.006) and *emotional function* (p=0.021). The resilience assessment revealed a statistically significant improvement in the post-intervention (p=0.002); linear regression analyses showed that having a religion, other pathologies, or a history of transplant is related to increased resilience levels while taking antidepressants or anti-hypertensive medications negatively affect it.
Conclusion: the intervention contributed to improving resilience and some domains concerning the patients' quality of life. Thus, it can be implemented among patients undergoing hemodialysis.

DESCRIPTORS: Complementary therapies. Quality of life. Resilience psychological. Chronic kidney disease. Hemodialysis. Palliative care. Psychosomatic medicine.

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EFEITOS DE UMA INTERVENÇÃO PSICOTERAPÊUTICA BREVE DE APOIO EM PACIENTES HEMODIALISADOS: ESTUDO QUASE-EXPERIMENTAL

RESUMO

Objetivos: avaliar a qualidade de vida relacionada à saúde e a resiliência de pacientes hemodialisados na cidade do Porto, Portugal, antes e após a intervenção psicoterapêutica Relaxamento, Imagens Mentais e Espiritualidade. Identificar os fatores que interferem nos níveis de resiliência destes pacientes.
Método: estudo quase-experimental, realizado com 17 participantes de duas unidades de diálise da cidade do Porto, Portugal, de novembro de 2018 a abril de 2019. Foram utilizados questionário de caracterização sociodemográfica e clínica, escala de qualidade de vida (*Kidney Disease Quality of Life-Short Form)*, escala de resiliência, e intervenção psicoterapêutica breve. Cada paciente recebeu três sessões da intervenção, sendo avaliados pelos instrumentos listados antes e depois. Foram utilizados testes de *Shapiro Wilks* para verificar normalidade dos dados, testes *t de Student* e de *Wilcoxon* para comparação das médias e regressão linear na identificação dos fatores associados à resiliência.
Resultados: a percepção da qualidade de vida foi melhor em quase todos os domínios da escala pós-intervenção, com diferença estatisticamente significativa nas dimensões: função física (p=0,006) e função emocional (p=0,021). Na avaliação da resiliência, verificou-se aumento com significância estatística no período pós-intervenção (p=0,002); análises de regressão linear revelaram que religião, outras patologias e histórico de transplante são fatores relacionados ao aumento dos níveis de resiliência; e uso de medicamentos antidepressivos e anti-hipertensivos são fatores que podem interferir na diminuição da resiliência.
Conclusão: a intervenção contribuiu para melhora na resiliência e de alguns domínios da qualidade de vida dos pacientes, podendo ser estimulada sua aplicabilidade no contexto dos pacientes em hemodiálise.

DESCRITORES: Terapias complementares. Qualidade de vida. Resiliência psicológica. Insuficiência renal crônica. Hemodiálise. Cuidados paliativos. Medicina psicossomática.

EFECTOS DE UNA INTERVENCIÓN PSICOTERAPÉUTICA BREVE DE APOYO EN PACIENTES EN HEMODIÁLISIS: ESTUDIO CASI EXPERIMENTAL

RESUMEN

Objetivos: evaluar la calidad de vida relacionada a la salud y resiliencia de pacientes en hemodiálisis, en la ciudad do Porto, en Portugal, antes y después de la intervención psicoterapéutica: Relajamiento, Imágenes Mentales y Espiritualidad. También, identificar los factores que interfieren en los niveles de resiliencia de estos pacientes.
Método: estudio casi experimental, realizado en 17 participantes de dos unidades de diálisis de la ciudad de Porto, en Portugal, de noviembre de 2018 a abril de 2019. Fueron utilizados: el cuestionario de caracterización sociodemográfica y clínica, la escala de calidad de vida (*Kidney Disease Quality of Life-Short Form)*, la escala de resiliencia y la intervención psicoterapéutica breve. Cada paciente recibió tres sesiones de intervención, siendo evaluados por los instrumentos arriba listados, antes y después. Fueron utilizadas las pruebas: *Shapiro Wilks* para verificar la normalidad de los datos, *t de Student* y de *Wilcoxon* para comparación de las medias; *y, la* regresión linear para la identificación de los factores asociados a la resiliencia.
Resultados: la percepción de la calidad de vida fue mejor en casi todos los dominios de la escala, después de la intervención, con una diferencia estadísticamente significativa en las dimensiones: función física (p=0,006) y función emocional (p=0,021). En la evaluación de la resiliencia, se verificó aumento con significación estadística, en el período después de la intervención (p=0,002). Los análisis de regresión linear revelaron que la religión, otras patologías y el histórico de trasplante, son factores relacionados con el aumento de los niveles de resiliencia; y, el uso de medicamentos antidepresivos y antihipertensivos son factores que pueden interferir en la disminución de la resiliencia.
Conclusión: la intervención contribuyó para la mejora de la resiliencia y de algunos dominios de la calidad de vida de los pacientes, pudiendo ser estimulada su aplicabilidad en el contexto de los pacientes en hemodiálisis.

DESCRIPTORES: Terapias complementarias. Calidad de vida. Resiliencia psicológica. Insuficiencia renal crónica. Hemodiálisis. Cuidados paliativos. Medicina psicosomática.

INTRODUCTION

Chronic kidney disease (CKD) is an abnormality in the kidney's structure or function that persists for three or more months. It is detected by the presence of persistent albuminuria or by a decreased glomerular filtration rate[1]. CKD has become a major public health problem[2], impacting quality of life (QoL) and expenditure with healthcare, affecting from 8% to 16% of the world population[3].

Hemodialysis (HD) is the renal replacement therapy most frequently used among patients with CKD. Even though it prolongs life, changes imposed on the patients' life habits and routines negatively impact QoL[4].

The term "Quality of life" requires a definition because it is a complex and subjective topic. It involves many fields of study, tending to one or another depending on the scientific and political interest to which a given study is related. The definition provided by the Brazilian Self-Healing Association[5], is adopted in this study. It states that Health-Related Quality of Life (HRQoL) is a subset of QoL, frequently used to distinguish a broader sense of QoL related to clinical parameters. HRQoL addresses relevant aspects that comprise health, physical symptoms, and physical, emotional, cognitive, and sexual functions, one's functional state, and the potential consequences of these factors[5].

Researchers have sought to understand the aspects involving the coping strategies and resilience levels of patients undergoing HD and the impact of the CKD on their QoL. The conclusion is that resilience is related to good psychological health[6].

Among the many definitions, resilience is associated with individuals' ability to recover from adversities and see them as an opportunity to grow. Its determinants include biological, psychological, social, and cultural factors that interact with each other and determine how individuals respond to stressful experiences[7]. Self-confidence and social support are considered key conceptual variables as there is a positive association between higher levels of resilience/social support and improved treatment response[8]. Analyzing the patients' HRQoL and resilience levels in this context contributes to the implementation of interventions intended to improve the lives of individuals with CKD, considering the incurable nature of this pathology.

In this study, we adopted the Relaxation, Mental Images, and Spirituality (RIME) technique in the context of palliative care to promote the patients' internal resources. RIME is a brief, complementary and supportive psychotherapeutic intervention, a symbolic and transpersonal approach comprising relaxing techniques, directed imagination, and spirituality elements[9]. Its purpose is to re-signify psychological or spiritual pain, or suffering, enabling patients to strengthen healthy psychological resources and resilience, improving QoL despite the illness[9].

Therefore, this study's aim was twofold: to assess HRQoL and resilience among patients undergoing HD in the city of Porto, Portugal, before and after the implementation of the RIME psychotherapeutic intervention and identify the factors interfering in these patients' resilience levels.

METHOD

This is a quasi-experimental intervention, a before and after study without a control group. This study was conducted, from December 2018 to April 2019, in two private dialysis centers located in a city in the north of Portugal in partnership with the public health system.

The population was composed of adult patients with a CKD diagnosis attending these two centers' hemodialysis programs. The first dialysis center was contacted in December 2018. At the time, this unit provided care to 50 patients, 35 (70%) of whom were older than 65 years. The 15 remaining patients met the inclusion criteria, but four refused to participate. Hence, the sample in this service was composed of 11 participants. The second dialysis center provided a list of 11 patients who met the inclusion criteria, but only six agreed to participate. Therefore, 17 patients composed the final sample and received clarification regarding the study's objectives, instruments, and intervention and were ensured their identities and information provided would remain confidential.

Inclusion criteria were: 18 to 64 years old; having a medical diagnosis of CKD; undergoing HD for at least six months; being mentally oriented in space, time, and person; having preserved cognitive functioning. Exclusion criteria were: having dementia or cognitive deficits (screened through the Mini-Mental State Examination – MMSE)[10]; having sequelae or deficits that impeded the application of the instruments or the RIME technique; or undergoing peritoneal dialysis. The following criteria were adopted for discontinuing the intervention: when a patient verbally manifests the desire to withdraw from the study after the first session, hospitalization, or any absence longer than two weeks.

Below is the flowchart presenting the recruitment of participants, according to Figure 1:

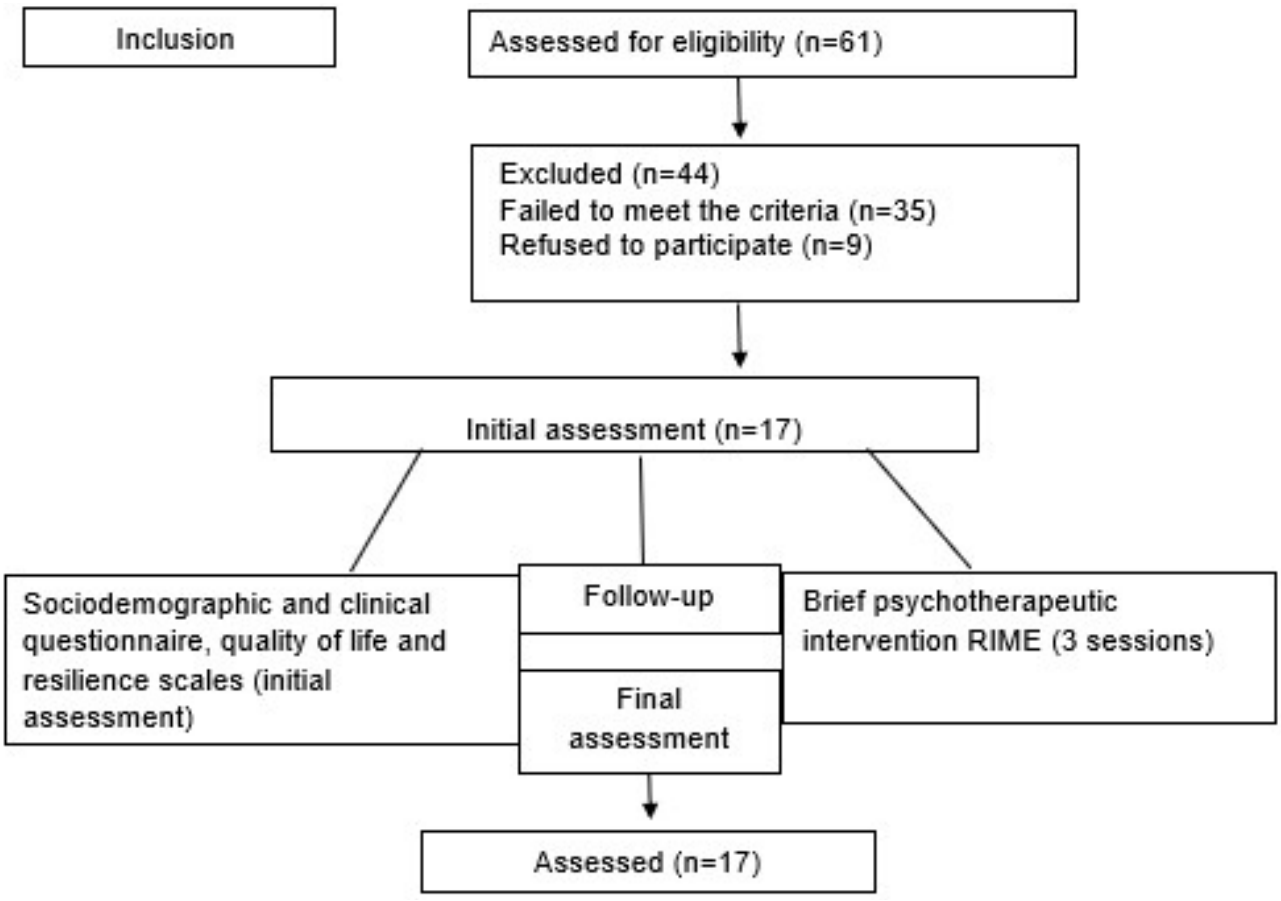

Figure 1 – Flowchart adapted according to the Consolidated Standards of Reporting Trials (CONSORT)[11].

Intervention protocol: three RIME sessions were held with each of the participants. The sessions occurred once a week, on previously scheduled days and times, in a private room reserved specifically for this purpose in the dialysis center's premises (the same procedure was implemented in both dialysis centers). The RIME sessions were scheduled immediately before the dialysis sessions or on days the patients did not undergo HD. Each session lasted 25 minutes on average. Patients would sit comfortably on a dialysis chair regulated to their liking. Most preferred to lie down, in the supine position. The intervention was initiated in January and ended in April 2019.

The setting was adapted for three participants: the first patient wished to receive the sessions in the private room but remain in her wheelchair, while the second, also a patient in a wheelchair, preferred to receive the intervention in the dialysis chair during her dialysis session. Hence, the staff was asked to position her on the last chair beside a wall, and a screen was used to separate her from the others to ensure her privacy while she received the intervention. The third patient manifested a desire to receive the intervention in his home. He reported that the unit's environment tired him, and his request was promptly heeded. The support material used in all the sessions included a personal notebook, used to play relaxation music and for the researcher to take notes before and after the intervention; an album composed of four pictures (size A4 sheet) of nature (flower garden with gentle waterfall, a serene lake at the foot of a mountain, a field with a peaceful river, and a peaceful beach in a serene sea). The participants were assessed at the end of the third RIME session (posttest).

The participants were assessed with a sociodemographic and clinical characterization form, the Kidney Disease and Quality of Life Short-Form (KDQOL-SF™)[12], and a resilience scale. The KDQoL-SF™ is an instrument specifically assessing CKD. Its scores, ranging from 0 to 100, are calculated per dimension; thus, there is no single score resulting from the global assessment of HRQoL; instead, mean scores are obtained for each dimension separately analyzed. Higher scores reflect good HRQoL and lower scores reflect poor HRQoL. The resilience scale contains 25 items rated on a seven-point Likert scale, with a total score ranging from 25 to 175 in the original scale[13], and 25 to 161 points in the version adapted to adult Portuguese patients. Scores equal to or lower than 124 points indicate low resilience levels; between 125 and 145 indicate moderate resilience levels, and above 145 indicate moderately-high to high resilience levels. A single researcher individually applied the instruments and the intervention.

The primary clinical outcomes of interest were variations in resilience and quality of life levels. The study's treatment variable was the brief RIME psychotherapeutic intervention, implemented once a week for three weeks.

R version 3.2.0 was used to analyze data. Descriptive analysis and the Shapiro Wilks test was used to verify data normality along with the Student's t-test (for normally distributed samples) and the Wilcoxon test (for samples that did not meet the normality assumption). The Least Absolute Shrinkage and Selection Operator (Lasso)[14] was used to adjust the multiple linear regression model. The significance level was established at 5%.

The participants confirmed their agreement by signing free and informed consent forms. The study was submitted to and approved by the Institutional Review Board at the *Escola Superior de Enfermagem do Porto* – ESEP (approval report No. 2019/179).

RESULTS

Table 1 presents the distribution of the participants according to their sociodemographic and clinical characteristics. Most of the 17 participants in the sample were men, aged 56.5 years old on average, married or in a stable union, and Catholic. Regarding clinical data, most reported other pathologies, mainly hypertension followed by diabetes, and polypharmacy (±6 medications/day). The

vascular access most frequently used was the arteriovenous fistula (AVF), 23.52% of the patients had a kidney transplant history, and most were on the waiting list for a kidney transplant.

Table 2 presents the mean scores concerning HRQoL obtained before and after the RIME intervention and the results from the Student's t-test. The patients' QoL perception improved in almost all the KDQOL-SF™ domains, with statistically significant differences in the dimensions: *Physical function (p-value=0.006) and Emotional function (p-value=0.02).*

Comparisons of the mean scores the patients obtained in the resilience scale (Table 3) before and after the intervention revealed a statistically significant increase in the post-intervention score (135.0±12.8; *p-value=0.002)*.

Table 4 presents the results concerning the multiple linear regression analysis, the outcome of which was level of resilience while explanatory variables were the patients' sociodemographic and clinical characteristics.

Table 1 - Sociodemographic and clinical characterization of patients undergoing hemodialysis, Porto, Portugal, 2019. (n=17)

Sociodemographic and clinical characteristics	Mean (SD)	%
Sex (M/W) (%)		77.30/22.7
Age (Mean; SD)	56.5± 9.09	
Schooling (%)		
1-4 years		11.78
5-9 years		23.52
≥10 years		64.70
Marital status (%)		
Single		11.80
Married		64.70
Divorced/separated		17.60
Widowed		5.90
Religion (%)		
Catholic		88.24
Evangelical		5.88
No religion		5.88
Practitioner (Y/N) (%)		41.20/58.80
Other pathologies (%)		
Diabetes		23.52
High blood pressure		82.35
Stroke		5.88
Number of medications/day (mean, DP)	6.05 ±3.32	
Medication (%)		
Antihypertensive drugs		70.57
Benzodiazepines		23.50
Anti-glycemic		35.30
Anticoagulant		35.32
Antiacids		64.71
Duration of hemodialysis in months (mean, SD)	71.32±84.71	

Table 1 - Cont.

Sociodemographic and clinical characteristics	Mean (SD)	%
Vascular access (%)		
Arteriovenous fistula		82.30
Central venous catheter		17.70
Kidney transplant (%)		
History of transplant (Yes/No)	3.52/76.48	
Transplant waiting list (Yes/No)	64.70/35.30	

Table 2 – Comparison of the HRQoL scores obtained by the patients undergoing HD, before and after the intervention. Porto, Portugal, 2019. (n=17)

KDQoL Domains	RIME Intervention		
	Pre	Post	p-value*
List of symptoms/problems	81.49±7.58	82.48±11.05	0.765
Kidney disease effects	70.96±16.64	73.35±15.82	0.671
Kidney disease overload	32.35±14.02	35.29±21.64	0.642
Job situation	14.71±34.30	23.53±39.99	0.495
Cognitive function	78.82±19.47	74.51±21.24	0.542
Quality of social interaction	75.29±17.76	73.33±16.67	0.742
Sexual function	91.67±1.20	91.67±0.72	1.000
Quality of sleep	64.85±15.57	67.21±15.05	0.657
Social support	50.98±34.09	69.61±27.79	0.091
Dialysis staff encouragement	83.82±18.10	84.56±17.42	0.905
Global health	50.00±18.03	61.76±19.76	0.079
Patient's satisfaction	62.75±20.86	61.71±21.95	0.791
Physical functioning	52.35±27.79	65.29±22.46	0.146
Physical function	16.18±29.24	51.47±39.99	0.006
Pain	58.97±25.30	71.18±23.17	0.152
Overall health	42.65±16.62	44.12±16.70	0.796
Emotional wellbeing	53.65±16.12	58.82±15.48	0.354
Emotional function	41.18±30.12	66.67±31.18	0.021
Social function	59.56±25.97	68.38±21.25	0.287
Energy/fatigue	49.41±13.79	50.59±11.16	0.786
SF-12 Physical health composite	37.90±8.55	38.01±8.49	0.971
SF-12 Mental health composite	46.43±8.02	48.71±8.49	0.426

*Student's t-test

Table 3 – Comparison of pre- and post-intervention resilience scores obtained by patients undergoing HD. Porto, Portugal, 2019. (n=17)

	Pre-intervention	Post-intervention	
	Mean/SD	Mean/SD	p-value*
Resilience	114,5±35.6	135,0±12,8	*0,002*

*Wilcoxon Test.

Table 4 – Results of the linear regression analysis, with the level of resilience as the outcome and the patients' characteristics as the explanatory variables. Porto, Portugal, 2019. (n=17)

Variables	Estimate	p-value*
Intercept	28.696	0.347
Religion	64.712	<0.001
Other pathologies	23.789	0.012
History of transplant	55.798	<0.001
Antidepressants	-53.421	<0.001
Anti-hypertensive drugs	-65.666	<0.001

*Likelihood ratio test.

DISCUSSION

Regarding the population's sociodemographic profile. this study's findings are in line with other studies addressing chronic kidney patients undergoing HD, in which most participants are Catholic men living in a stable union and aged 56 years on average[15–18].

The results show that RIME improved the HRQoL and resilience levels of Portuguese patients undergoing HD. Analysis of the means obtained in the KDQOL-SF™ suggests that the patient's HRQoL perception improved in almost all domains after the intervention, with statistically significant differences in the "*Physical function*" *(p-value=0.006)* and "*Emotional function" (p-value=0.021)* domains. By integrating relaxing techniques, directed imagination, and spirituality elements, RIME promotes the patients' internal resources, encouraging them to assign new meanings to their pain and suffering, and promoting QoL despite the illness[9]. In this sense, biopsychosocial and spiritual interventions promote mental relaxation and physical and emotional well-being, eliciting hope and facilitating coping strategies, thus, improving these patients' QoL[9,16]. Spirituality supports internal resources, helping these patients accept the disease, favoring their rehabilitation process[16].

A controlled and randomized study addressing 65 patients undergoing HD tested the efficacy of another modality of intervention: cognitive behavioral therapy, the purpose of which is to modify beliefs and behavior. It was administered during HD sessions to decrease the depressive symptoms of patients. Of the 65 patients attending two dialysis centers in New York (USA), 59 completed the study and were allocated into one of two groups: treatment group (n=33) and control group on the transplant waiting list (n=26)[19]. The results revealed that depression improved significantly. Among patients diagnosed with depression at the baseline, 89% of the treatment group were not depressed at the end of the treatment, compared to 38% in the waiting list group (Fisher's exact test, p=0.01). Additionally, the treatment group experienced more significant improvement in the HRQoL, assessed with KDQOL-SFTM (p=0.04)[19]. These findings reinforce that interventions directed to mental health contribute to improving HRQoL and should be encouraged.

One systematic review[20], reports the multiple benefits RIME promoted in other populations, such as patients with incurable diseases re-signifying death's symbolic pain; improved QoL during the dying process; ostomized patients experiencing emotional well-being; improved QoL among breast cancer patients with survival chances; improved QoL among patients with head and neck cancer; and bereaved youth re-signifying spiritual pain, resulting in satisfactory feedback on mourning. Authors state that interventions such as relaxing techniques, meditation, and visualization of guided imagery promote spiritual health, improving the individuals' well-being perception, cognitive processes, and mental and physical health, effectively decreasing anxiety and hopelessness[21–22].

The KDQOL-SF™ best-scored dimension was "*Dialysis Staff Encouragement*", with means equal to 83.82 and 84.56 in the pre- and post-intervention, respectively. The second best score was

obtained in "*Sexual function*", with mean scores equal to 91.67 in the pre- and post-intervention. These findings are in line with those reported by studies addressing the same population[23–24]. In addition to establishing an assertive bond with patients, the staff is also a source of support and encouragement, promoting treatment adherence and favoring improved HRQoL[23].

On the other hand, "*work situation*" obtained the lowest score pre-intervention (14.71±34.30), followed by "*physical function*" (16.18±29.24). These results corroborate other studies[15,17,23] reporting that physical function and work situation are compromised among patients undergoing HD. Physical function is a dimension with the potential to compromise patients' relationship with their professions or routine tasks, considering that these individuals' physical performance and the onset of symptoms such as weakness and malaise interfere in their daily activities, negatively reflecting on their HRQoL. Regarding the patients' work situation, individuals with CKD require three four-hour HD sessions a week, explaining the individuals' difficulties in obtaining and keeping a paid job. For this reason, many of these patients depend on illness benefit payments. Inactive individuals or without a job contract due to their physical limitations usually depend on welfare benefits and have a lower purchasing power, which may also be associated with lower HRQoL.

This study's results reveal improved resilience levels among the patients. Low resilience scores were obtained in the pre-intervention (114.5±35.6), while moderate levels (135.0±12.8) were found in the post-intervention, with statistically significant differences (*p-value=0.002*). The resilience scores reported by a study conducted in Iran[25] to investigate the relationship between resilience and treatment adherence among 107 patients undergoing HD are lower (75.04±14.54) than those presented here. The results of the study mentioned above indicate that only 25 (23.4%) of the patients adhered to the treatment while 82 (76.6%) did not. The treatment-adherent patients obtained a statistically significant (p=0.032) higher mean score (80.48±15.71) in the resilience scale compared to non-adherent patients (73.38±13.84). The literature shows that resilience is a unique skill that enables people to prevent, limit, or overcome the harmful effects of challenging events such as chronic diseases. Higher resilience levels are positively associated with a greater likelihood of response to treatment[9,25], ensuring patients adapt better to the disease's restrictions[26].

The linear regression analysis shows that some variables contributed to increase or decrease resilience levels among the patients. Having a religion, other pathologies, or a renal transplant history was significantly related to higher resilience levels. Medications such as antidepressants and anti-hypertensive drugs, however, are related to lower resilience levels. Some are protective factors and decrease the disease's impact, enabling patients to overcome and re-signify their clinical condition. Studies reinforce that having a religious belief or professing a religion positively impacts resilience levels[26,27]. One study conducted in the university hospital of a medical school located in Itajubá (Brazil)[26], assessed the level of resilience of patients with CKD undergoing HD. The results show that 61% of the patients tended to be resilient and religion was one of the biosocial aspects that may have influenced it. Another study verifying the association between resilience and sociodemographic and health variables among 603 individuals with a CKD diagnosis and/or type 2 diabetes mellitus report that religious individuals also presented higher levels of resilience[27].

Regarding other factors, "other pathologies" and "renal transplant" possibly play a positive role in a patient's resilience level. The reason is that a greater level of commitment is required from patients, so that the loss of a transplant may be related to a patient's life expectancy, desire, and need to continue his/her journey of life, to implement improved self-care, and adhere to the treatment, which in turn, positively influence an individual's resilience levels.

This study also reveals factors that do not favor resilience, such as the use of antidepressant or anti-hypertensive drugs. One study addressing the family caregivers of patients with Alzheimer's disease also found a relationship between depressive symptoms and lower resilience levels[28]. That

is, these results suggest that antidepressants directly interfere in the brain neurotransmitters, possibly leading patients to experience lower levels of resilience, considering that these patients may exhibit mood or emotional changes. The literature does not report a relationship between these medication issues and resilience levels, a topic that should be addressed in future studies.

This study reinforces the importance of assessing HRQoL and resilience levels among patients undergoing HD. These variables reveal patients' strengths or weaknesses, enabling the nursing staff and multi-professional teams to devise and implement assertive actions.

This study's limitations include its limited sample size, the lack of a control group, and the impossibility of generalizing results considering this study focused on two specific dialysis services. Therefore, further studies with different designs and addressing larger samples are needed to support new evidence. Additionally, resilience has been a topic seldom addressed in quantitative studies conducted in the nursing field, which hinders comparisons but aggregates value to this study.

CONCLUSION

The pre- and post-intervention assessments show that RIME positively influenced the KDQoL-SFTM "Physical function" and "Emotional function" dimensions among patients undergoing HD. The linear regression analysis also shows variables that improve or decrease the patients' resilience levels. Having a religion, other pathologies, or a renal transplant history, were significantly related to improved resilience, while taking medications such as antidepressants or anti-hypertensive drugs negatively affect resilience levels.

The use of interventions intended to promote psycho-emotional well-being and inner strength enables patients to improve coping strategies and resilience when facing adversities, so they find new ways to deal with challenging experiences.

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NOTES

ORIGIN OF THE ARTICLE

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AUTHORS' CONTRIBUTION

Study's design: Manzini CSS, Orlandi FS.
Data collection: Manzini CSS.
Analysis and interpretation of data: Neto MM, Manzini CSS.
Discussion of results: Manzini CSS, Santos DGM, Damasceno VAM.
Redaction and/or critical review of content: Manzini CSS, Orlandi FS, Elias ACA.
Review and approval of the final version: Orlandi FS, Elias ACA, Sousa CN.

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APPROVAL FROM THE INSTITUTIONAL REVIEW BOARD

The study was approved by the Institutional Review Board at the Escola Superior de Enfermagem do Porto (Opinion report 2019/179).

CONFLICT OF INTERESTS

There is no conflict of interests.

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