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DO PERSONAL RESOURCES INFLUENCE HEALTH-RELATED QUALITY OF LIFE FOR PEOPLE RECEIVING HEMODIALYSIS TREATMENT IN LATIN AMERICA?

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We used the Kidney Disease Quality of Life Survey and Chronic Illness Resources Survey to determine the personal resources that influence health-related quality of life (HRQOL) of 128 individuals receiving treatment for end-stage renal disease in Antofagasta, Chile. The results showed that personal and community resources protect against disability and physical deterioration among individuals receiving hemodialysis. Further, these resources had a direct influence on HRQOL, especially in relation to the burden of the disease and for those who are not in paid employment. Our findings show the importance of the availability and use of measures required for the community to improve HRQOL, and to protect the physical health of people undergoing hemodialysis.

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There are currently more than 1.2 million people worldwide who are living with *end-stage renal disease* (ESRD) because of hemodialysis (Australian Institute of Health and Welfare, 2010). However, hemodialysis may lead to secondary effects, such as low blood pressure, fatigue, leg cramps, chest pain, and headaches (Lorenzo Sellarés, Torres Ramírez, Hernández Marrero, & Ayus, 1997).

These negatively affect different areas of life, including physical and psychological health, especially at the emotional, cognitive, and social levels, considerably impairing *health-related quality of life* (HRQOL; Contreras, Esguerra, Espinosa, & Gómez, 2007; Urzúa, Pavlov, Cortés, & Pino, 2011). HRQOL is used in a patient-reported evaluation of quality of life changes resulting from medical intervention (Urzúa, 2010).

Measuring HRQOL of patients with chronic diseases, such as ESRD, is increasingly important, because, inter alia, it helps in assessing the quality of care and the efficacy of medical intervention, improves clinical decision making and the estimation of health care needs in communities (Schwartzmann, 2003; Urzúa, 2010), and facilitates the identification of the risk of mortality (Contreras et al., 2007; Joyce et al., 2012). Therefore, in the assessment of health care policy, it is worth considering decisions that affect HRQOL self-reporting in the hemodialysis population (Gorodetskaya et al., 2005).

In general, people who are undergoing hemodialysis have significantly lower HRQOL compared with both the general population and individuals with transplants, with small variations because of differences in cultural factors (Merkus et al., 1997; Spiegel, Melmed, Robbins, & Esrailian, 2008). Various researchers have reported that HRQOL of individuals undergoing hemodialysis is related to factors such as sex (Álvarez-Ude et al., 2001; Germin-Petrović et al., 2011; Vázquez et al., 2004; Wehbe, Salazar, Vaccaro, Wehbe, & Guerrero, 2004), age (Germin-Petrović et al., 2011; Moreno Núñez et al., 2004; Patel, Peterson, & Kimmel, 2005; Wehbe et al., 2004), duration of treatment (Muñoz Sancho, Oto Royo, Barrio Alonso, & Fernández, 2006), level of social activities (Kao et al., 2009), family support and expectations (Bayat et al., 2012; Symister, 2011), self-esteem (Wolcott, Nissenson, & Landsverk, 1988), hostility towards others (Tovbin, Gidron, Jean, Granovsky, & Schnieder, 2003), and religious beliefs (Kimmel, Emont, Newmann, Danko, & Moss, 2003; Patel, Shah, Peterson, & Kimmel, 2002). Further, clinical factors, such as the type of dialysis, disease severity, medical compliance, hemoglobin levels, dialysis adequacy, and nutrition, explain a small percentage of the variability in HRQOL. Similarly, hemodialysis patients have shown lower levels of HRQOL compared to

peritoneal dialysis patients (Atencio et al., 2004; Leaf & Goldfarb, 2009; Merkus et al., 1997; Morales-Jaimes, Salazar-Martínez, Flores-Villegas, Bochicchio-Riccardelli, & López-Caudana, 2008; Moreno Núñez et al., 2004; Ross et al., 2003; Urzúa et al., 2011). In addition, Spiegel et al. (2008) demonstrated that nutritional biomarkers (e.g., albumin, creatinine, body mass index) had moderate to strong relationships with HRQOL.

In the context of this study, *personal resources* are defined as an individual's support for disease management-related behavior, ranging from proximal support (i.e., family and friends) to distal support (i.e., neighborhood or community; Glasgow, Strycker, Toobert, & Eakin, 2000).

Participation of patients in chronic disease treatment is necessary to prevent specific complications and improve HRQOL (Heidarzadeh, Atashpeika, & Jalilazar, 2010). This includes adherence to a diet, appropriate administration of medication, physical exercise, monitoring of disease symptoms, maintaining regular contact with physicians, searching for information about one's health, and good emotional and social management in interpersonal relationships (Eakin, Bull et al., 2007; Glasgow, Toobert, Barrera, & Strycker, 2005). To support chronic disease self-management, Glasgow et al. (2000) developed the Chronic Illness Resources Survey (CIRS), using a multilevel social-ecological model to assess the support and resources on which people with chronic diseases rely, in terms of family, friends, medical-care teams, and neighborhood/community. Using this survey instrument, various studies have been carried out with samples of patients with nontransmittable chronic diseases, the results of which emphasize the importance of healthy behavior in managing chronic diseases (Glasgow et al., 2000, 2005; Manit, Tuicomepee, Jiamjarasrangsi, & Taneepanichskul, 2011; O'Dell & O'Dell, 2006).

Despite these findings, there have been few studies conducted in Latin America, in which the role that personal resources may have in HRQOL, as perceived by the patient at the time of assessment, has been examined. Our aims in the study were to assess the relationship between personal resources (measured using the CIRS) and HRQOL with a group of patients undergoing hemodialysis in Chile, and to determine which resources influenced the perceptions of these people about their HRQOL. We hypothesized that the personal resources would be positive predictors of the domains of HRQOL that we assessed.

Method

Participants

In this observational, cross-sectional study, we recruited a group of individuals with ESRD who were receiving outpatient hemodialysis in Antofagasta, Chile. Of all the people who were receiving hemodialysis in the city, we evaluated

95% of the patients in a private dialysis center and 76% of the patients receiving hemodialysis at the public hospital. Of the 128 people we evaluated, 68% were receiving treatment at the private health center (n = 87) and 32% at the public hospital (n = 41), 50.8% were men and 49.2% were women, and the age range was between 18 and 81 years (M = 56; SD = 13.80). Mean hemodialysis treatment time was 49 months (SD = 46 months, min. = 1, max. = 205). In the period during which data were collected, only 34 of the 128 participants were in paid employment.

Measures

Kidney Disease Quality of Life Survey (KDQOL-36™; Hays et al., 1997). This questionnaire was designed for patients with renal disease undergoing hemodialysis, and was translated and approved in Spain by Alonso (2008). We (The Kidney Disease Quality of Life Working Group) gained permission to use the questionnaire from the authors of the KDQOL, and made grammatical modifications to include the Chilean Spanish terms. The questionnaire contains 36 items organized in two sections comprising (a) a generic module (Items 1 to 12): questionnaire SF-12 (functional health and well-being from the respondent's point of view), and (b) three specific renal disease modules (Items 13 to 36), composed of symptoms of renal disease (12 items), effects of renal disease (eight items), and the burden of renal disease (four items). Items 13–16 are rated using the following response options: *completely true* (1), *fairly certain* (2), *do not know* (3), *quite lacking* (4), and *totally false* (5). Items 17–36 are rated using the following response categories: *nothing* (1), *a little* (2), *fair* (3), *long* (4), and *very much* (5). These response options are used to assess intensity or frequency.

The SF-12 questionnaire is widely used in population studies (Cunillera et al., 2010; Gandek et al., 1998). It has been validated for the Chilean population and used in surveys of quality of life (QOL) conducted by the Ministry of Health in Chile (Hoffmeister, 2007). Four of the SF-12 items have dichotomous responses (i.e., 0 = no, 1 = yes). Each question is coded numerically and the resulting points are converted into a scale from 0 to 100 points, with higher values reflecting better HRQOL (Morales-Jaimes et al., 2008). Cronbach's alpha reliability for this study was .87 for the overall scale (.72 for SF-12, physical health; .35 for SF-12, mental health; .77 for burden of renal disease; .76 for symptoms of renal disease; and .77 for the effects of renal disease).

Chronic Illness Resources Survey (CIRS; Glasgow et al., 2000). The CIRS contains 22 items grouped into seven categories: personal resources (helpful things that the individual does for him/herself), family and friends (if the individual is accompanied or aided by them in different areas such as diet, monitoring of treatment, physical exercise), healthcare team (medical support), neighbors and community (if the patient shares activities with others),

community organizations (national or local organizations, church, volunteer programs), work (if the individual's job is flexible and has available facilities, such as an individual having permission to go to the physician during working hours), and health information (how the individual receives information about his/her illness, e.g., through the media, Internet, or newspapers). The 22 items are rated using ordinal Likert scales with responses ranging from 1 (*not at all*) to 5 (*often*).

The reliability and validity of the CIRS was reported by Eakin, Reeves et al. (2007). The internal consistency reliability in this study via Cronbach's alpha was .83 for the overall scale (.65, personal resources; .63, family and friends; .64, healthcare team; .58, neighbors and the community; .55, community organizations; .66, place of work; .52, health information). The CIRS was used to obtain overall indicators of resources, that is, one for individuals in work and another for those out of work, including or excluding the mean for the work condition.

Procedure

Once permission was obtained from the Ethics Committee of the Universidad Católica del Norte (Catholic University of the North) and the healthcare institutions involved, information was gathered on patients admitted for kidney hemodialysis treatment. Inclusion criteria were as follows: with a clinical diagnosis of ESRD, having completed at least one month of hemodialysis, aged 18 years or older, and of adequate physical and psychological condition to complete the questionnaires. All participants were informed of the study objectives and signed a consent form. The participants answered the questionnaire individually while the hemodialysis procedure continued, with the mean duration of completion being 45 minutes. The collected data were entered into a database (SPSS version 17.0).

To perform the statistical analyses, Cronbach's alpha was used for reliability analysis. At the descriptive level, frequencies and means were calculated as measures of the central trend. To evaluate differences between participants grouped by various characteristics and responses, student's t test was used. Pearson's r test was used to assess the relationship between ESRD fields and personal resources, and between time undergoing hemodialysis, age, and HRQOL. To determine the relative weight of each type of resource in overcoming the effects of renal disease in each HRQOL field, a multiple regression analysis was performed using the overall points of the scale as a dependent variable and each of the three fields as independent variables. To confirm adequate adjustment of variables to the regression model, F values were obtained to contrast with the null hypothesis, for which the R value is zero, and, therefore, to decide if there was a significant lineal relationship between the assessed resources and the HRQOL fields. If the p value is less than .05, the null hypothesis is rejected

and it is confirmed that there is a significant lineal relationship. Our data were, therefore, adjusted to the regression model.

Results

Analysis of HRQOL

Table 1 shows the means reported for the fields assessed using the KDQOL-36™, according to sex, type of establishment where the individual was receiving treatment, and overall sample. Statistically significant gender differences were found only for symptoms, for which the mean for women was significantly lower than that for men ($t(126) = 2.809$, $p < .05$). No statistically significant differences were found for type of establishment.

Table 1. *Means and Standard Deviations of Number of Points for Fields of the KDQOL-36™ According to Sex and Type of Healthcare Institution*

HRQOL	Men ($n = 63$)	Women ($n = 65$)	Hospital ($n = 41$)	Private center ($n = 87$)	Total ($N = 128$)
Symptoms	77.11 ± 14.60*	69.16 ± 17.25	70.62 ± 19.12	74.23 ± 14.98	73.07 ± 16.43
Disease effects	59.17 ± 23.35	56.54 ± 23.57	58.31 ± 25.20	57.61 ± 22.67	57.83 ± 23.41
Disease weight	43.94 ± 29.20	42.30 ± 30.09	42.53 ± 34.29	43.39 ± 27.24	43.11 ± 29.55
SF-12 physical	38.71 ± 10.63	35.25 ± 9.41	38.33 ± 9.81	36.31 ± 10.28	36.95 ± 10.14
SF-12 mental	48.87 ± 11.17	45.18 ± 11.88	45.59 ± 11.65	47.65 ± 11.64	46.99 ± 11.64

Note. * significantly higher than average woman. $p < .05$.

No relationship was found between time undergoing hemodialysis and point totals of the fields of HRQOL. The only field that had a significant correlation with age was physical health in SF-12 ($r = -.279$, $p < .01$), indicating that older participants reported worse physical health.

Personal Resources and HRQOL

It is evident from the results shows in Table 2 that perceived resources from one's neighbors and community were positively and significantly correlated with each HRQOL field, and personal resources were positively correlated with each HRQOL field, except for mental health in SF-12. Similarly, the perceived resources from community organizations had a positive correlation with the HRQOL field effects of renal disease. The remaining evaluated resources had no statistically significant relationship with the HRQOL fields reported by KDQOL-36™.

When incorporating the work field, it became evident that among those who were in paid employment there was a directly proportional relationship between the effects of renal disease, burden of renal disease, and physical health in SF-12 and all resources. This was because the instrument contains a module that is used

to measure effects at work, and was thus completed only by those respondents who were in paid employment. This module further allowed for substratification of those who were, and those who were not, in paid employment, whereby we found that in those who not in paid employment, the total score of the scale of resources was positively correlated with three domains of HRQOL that we assessed (effects of renal disease, burden of renal disease, and physical health).

Table 2. *Correlations Between Fields of the CIRS and HRQOL Scales*

CIRS	HRQOL				
	Symptoms	Effects of renal disease	Burden of renal disease	SF-12 physical	SF-12 mental
Healthcare team	.011	.165	.145	.113	.018
Family and friends	.045	.074	.041	.116	.141
Personal resources	.226*	.208*	.227**	.243**	.141
Neighbors and community	.194*	.268**	.237**	.447**	.200*
Health information	.129	.158	.081	.094	.06
Community organizations	.048	.189*	.085	.11	.085
Total personal resources for nonworkers (n = 94)	.171	.270**	.210*	.284**	.166
Total personal resources for workers (n = 34)	-.013	.095	.217	.29	.084

Note. * $p < .05$ (two-tailed), ** $p < .01$ (two-tailed).

In Table 3 the results show the level of significance for each independent variable as well as the relative weight of each variable in the regression model, for each HRQOL field.

Table 3. *Analysis of Regression for Each HRQOL Field*

Dependent variable	Independent variable	Nonstandardized coefficients		Standardized coefficients			
		B	*SD*	β	*t*	*p*	R^2
Symptoms	(Constant)	60.465	6.991		8.649	<.001*	.087
	Team	-1.342	1.471	-.085	-0.912	.364	
	Famfriends	-1.628	1.501	-.111	-1.085	.280	
	Personal	3.499	1.690	.216	2.070	.041*	
	Neighbors	4.007	2.042	.202	1.962	.052	
	Information	0.829	1.450	.056	0.572	.568	
	Commorg	-0.990	2.253	-.042	-0.439	.661	
Disease effects	(Constant)	27.225	9.813		2.774	.006	.114
	Team	1.537	2.065	.069	0.745	.458	
	Famfriends	-2.651	2.107	-.127	-1.258	.211	
	Personal	2.817	2.372	.122	1.187	.237	
	Neighbors	5.977	2.866	.211	2.085	.039*	
	Information	1.473	2.035	.070	0.724	.471	
	Commorg	3.416	3.163	.102	1.080	.282	

Table 3 continued

Dependent variable	Independent variable	Nonstandardized coefficients		Standardized coefficients			
		B	*SD*	β	*t*	*p*	R^2
Disease burden	(Constant)	10.429	12.474		0.836	.405	.102
	Team	2.020	2.625	.071	0.770	.443	
	Famfriends	-3.759	2.678	-.143	-1.404	.163	
	Personal	6.346	3.016	.218	2.104	.037*	
	Neighbors	7.818	3.643	.219	2.146	.034*	
	Information	-0.929	2.586	-.035	-0.359	.720	
	Commorg	-0.673	4.021	-.016	-0.167	.867	
Physical health	(Constant)	24.769	3.961		6.253	<.001*	.231
	Team	-0.218	0.833	-.022	-0.262	.794	
	Famfriends	-1.131	0.850	-.125	-1.330	.186	
	Personal	1.757	0.958	.176	1.835	.069	
	Neighbors	5.921	1.157	.483	5.118	<.001*	
	Information	-0.238	0.821	-.026	-0.290	.773	
	Commorg	-1.071	1.277	-.074	-0.839	.403	
Mental health	(Constant)	40.193	5.050		7.959	<.001*	.051
	Team	-0.663	1.063	-.060	-0.624	.534	
	Famfriends	0.512	1.084	.049	0.472	.638	
	Personal	0.925	1.221	.081	0.757	.450	
	Neighbors	2.447	1.475	.174	1.659	.100	
	Information	0.013	1.047	.001	0.012	.990	
	Commorg	-0.146	1.628	-.009	-0.090	.929	

Note. Famfriends = family and friends; Commorg = community organizations.

As is shown in Table 3, only personal resources in the symptoms of renal disease field, neighbor resources in the effects of renal disease field, personal and neighbor resources in the burden of renal disease field, and neighbor resources in physical health had significant lineal correlations with HRQOL, and significantly influenced the model.

Resources that are significant have a relative weight in the regression model, similar to those in the specific renal disease fields, but unlike the general physical health field, in which the neighbor resources acquire a relatively higher weight. It is in the latter field that the variation is explained mainly by factors included in the model; hence, the 23.1% of variance explained by the physical health variable.

Discussion

In this study we analyzed the relationship between personal resources and perceived HRQOL in individuals undergoing hemodialysis. Our results are

not consistent with those of the majority of researchers, who found differences between men and women in terms of HRQOL (Álvares et al., 2012; Arenas et al., 2004; Bayoumi et al., 2013; Germin-Petrović et al., 2011; Jofré, 1999; Rodríguez Zamora, 2008; Vázquez et al., 2004). Several researchers have suggested that when people reach adulthood or later stages of life, they achieve higher levels of well-being and satisfaction with life, and are better able to manage chronic disease emotionally as they have become more experienced in coping with stressful events. Further, as health problems are a common type of stressor, such issues are, therefore, expected or predicted by people and it is easier for them to adapt (Yanguas Lezaun, 2006). In our study, the only significant differences we found were in the symptoms field, that is, men reported more symptoms than did women. This result does not agree with that of Vázquez et al. (2004), who found no differences between men and women in severity of disease symptoms.

Therefore, we recommend that researchers develop systematic studies with representative population samples to analyze mean factors and coordinate the perception of HRQOL in men and women being treated for ESRD because of the importance of this relationship with clinical care, for example, emotional status (Álvarez-Ude et al., 2001), associated diseases (Álvares et al., 2012; Arenas et al., 2004; Germin-Petrović et al., 2011), impaired touch, sight, or hearing (Rodríguez Zamora, 2008), sociocultural context (Rambod & Rafii, 2010; Untas et al., 2011), social and marital status, (Álvares et al., 2012; Weisbord et al., 2008), style of coping, especially spiritual/religious (Saffari et al., 2013), and any type of instrument used that could mask HRQOL results if the instrument does not specify nonclinical depression (Jofré, 1999).

We found that the duration of hemodialysis was not related to HRQOL. This is possibly because patients receive four years of treatment, during which there is ample opportunity for them to understand what hemodialysis involves and what its effects are, and control these effects (Ryan & Brown, 2003). Nevertheless, other researchers have revealed that hemodialysis duration predicts lower HRQOL. For example, the treatment duration was found to be positively correlated with mental health, the number of hours in hemodialysis was also found to be negatively correlated with physical health (Guerra-Guerrero, Sanhueza-Alvarado, & Cáceres-Espina, 2012), and it has also been reported that a shorter duration of hemodialysis led to higher HRQOL (Bohlke et al., 2008; Germin-Petrović et al., 2011; Martins & Cesarino, 2005; Morsch, Gonçalves, & Barros, 2006). In contrast, Arenas et al. (2004) reported that a longer duration resulted in worse HRQOL. This suggests that it would be valuable to develop studies in which other variables, such as age and perceived quality of care with HRQOL, are analyzed over different hemodialysis durations.

However, we found that aging had an impact on physical health (SF-12), but not on the other HRQOL fields, which corroborates the findings of previous

researchers (Anees, Hameed, Mumtaz, Ibrahim, & Saeed Kahn, 2011; Bayoumi et al., 2013; Botero de Mejia & Pico Merchán, 2007; Rodríguez Zamora, 2008). In elderly patients undergoing hemodialysis, higher mental HRQOL was found along with a lower quality of physical health (Álvares et al., 2012). This is in part because normal physical deterioration is linked with gradual decline caused by renal disease (Yanguas Lezaun, 2006). Because hemodialysis requires four hours of treatment for each session, plus traveling time, as well as eight hours spent in medical consultation, it is understandable that the patient feels exhausted (Rodríguez Zamora, 2008).

It is also noteworthy that the dimension of effects of renal disease in HRQOL was the only one with a positive correlation with resources offered by community organizations. Although the correlation was weak, the result indicated that the participation of people undergoing hemodialysis treatment in gatherings and social meetings held locally or in the community, such as a church, health center, or recreation facility may be a useful treatment option. We suggest that future researchers conduct an analysis of the relationship between informational social support and HRQOL of people receiving hemodialysis treatment. HRQOL has been reported to improve as a result of access to information (Germin-Petrović et al., 2011). In addition, information received by patients being treated for ESRD promotes treatment compliance, frequent guidance helps patients in adapting their lifestyle to reduce comorbidity (Abraham, Venu, Ramachandran, Chandran, & Raman, 2012), and advice helps to delay the progression of renal insufficiency (Abraham & Ramachandran, 2012).

Similarly, the personal resources of people receiving hemodialysis treatment, such as personal goals and projects, and organizing time and daily routines to do more to address health problems, as well as neighbors and community resources, such as recreation, sport, information, safety, and websites that offer healthy food options positively associated with improvement in symptoms of renal disease, the burden and effects of renal disease, and physical health. In this study, personal resources had a positive influence on the symptoms and burden of renal disease on HRQOL. In addition, of all the resources named in the CIRS questionnaire, neighbors and community resources were the only type found to have a positive influence on physical health and on the burden and effects of renal disease in HRQOL. It has been found that for individuals receiving treatment for ESRD, physical exercise improves their general health status and levels of energy, and reduces hemodialysis time owing to reduced fluid retention, leading to improvement in HRQOL (Fayad Saeta, Escalona Labaceno, & Feraud Temó, 2005). Greater variety in recreational activities and daily routine is also associated with a positive assessment of HRQOL and with more social relationships (Rodríguez Zamora, 2008).

With regard to social-environmental and personal support related to self-management of renal disease in patients who are not in paid employment, there is a better perception of HRQOL in terms of physical health, and the effects and burden of renal disease. It has been found that unemployment negatively affects QOL in hemodialysis patients (Bayoumi et al., 2013), and being employed promotes a better QOL (Álvarez-Ude, 2011). It is, therefore, important that the focus in a patient's health care during hemodialysis is on assisting the individual in the identification and use of resources on which they rely in their social, community, and environmental surroundings, to promote HRQOL in times of unemployment.

Finally, the burden of the disease in HRQOL was influenced by personal resources, neighbors, and community resources. Neighbors and the community had a greater correlation with, and influence on, both physical health and mental health in SF-12, and none of the chronic illness resources had weight on mental health in SF-12, only for correlation. It should be noted that the group of people receiving hemodialysis is composed of individuals who are approaching old age, with a longer recommended hemodialysis time, deterioration due to renal disease, and possibly decreased mobility. Among patients undergoing hemodialysis, a negative HRQOL value has been found in the fields of environmental and family surroundings, and social relationships. These people perceive less support from the community with regard to the quality and availability of health care services, transport, recreation, finances, and opportunities to acquire knowledge and learn customs (Theofilou, 2011). This may explain why mental health was not affected by personal resources, regardless of how the respondent felt emotionally. Physical functioning took precedence, with physical activity being the greatest difficulty for elderly patients (Li, Li, & Fan, 2010). Future researchers could analyze the effects of mobility and travel on physical and mental health in HRQOL in different age brackets among those being treated for ESRD.

The results in this study show the importance of the availability and use of measures required for the community to make people's life more bearable when renal disease is a time-consuming burden, and also the importance of protecting their physical health. QOL is determined not only by assessing physical and functional status, but also by social and community surroundings (Yeung & Towers, 2014). Patients' support system and integration in the community promote a higher perception of independence (Lenci & Campbell, 2012) and capacity for self-care (Heidarzadeh et al., 2010). This suggests the need for better planning of health care by supporting resources that people receiving hemodialysis treatment rely on, and by developing intervention programs closely adapted to the needs of older persons, especially with regard to physical needs (Klinkmann & Vienken, 2008), and for those who are unemployed, to promote HRQOL in general. The

data presented here, though preliminary, indicate the need to continue systematic study of the influence of personal resources in HRQOL, by controlling for more sociodemographic and clinical variables in various types of population samples of people with ESRD who are receiving hemodialysis treatment.

There are some limitations in this study. First, as the study design was cross-sectional, our results cannot imply causality. Longitudinal research on personal resources and HRQOL of people undergoing hemodialysis is needed. Second, the sample may not be representative of the entire Latin American population of people who are receiving hemodialysis. Therefore, further confirmation is required, using more diverse and larger groups of people with ESRD who are receiving hemodialysis treatment.

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