Article

Relationship between Family Functioning and Self-Care in Patients Undergoing Hemodialysis Treatment

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Theme: Health promotion, well-being, and quality of life

Contribution to the discipline: Based on Dorothea Orem's self-care theory, understanding how families function in patient self-care allows nursing professionals to focus their actions not only on clinical treatment but also on providing psychosocial support to users. The data obtained serve as a basis for designing intervention strategies to strengthen family involvement in the development of patient autonomy, in cases where there is family dysfunction and a self-care deficit. Additionally, this data will form the basis for new initiatives in the field of research and health promotion.

Abstract

Introduction: Chronic kidney disease is a growing public health problem with a high mortality rate. Patients undergoing hemodialysis face physical, emotional, and social challenges, highlighting the importance of understanding how family functionality influences their self-care agency. **Objective:** To describe and correlate family functionality and self-care among hemodialysis patients at a secondary-level hospital. **Materials and Methods:** Observational, descriptive, cross-sectional, and correlational research. The study population consisted of 60 users, i.e., all patients treated at the hemodialysis service of the Isidro Ayora General Hospital in Loja, Ecuador. To analyze family and self-care functionality, the Family APGAR and the ASA Self-Care Agency Assessment scales were used. Spearman's Rho was used to determine the relationship between the two variables. **Results:** 58% of participants had normal family functioning, while 42% had dysfunction (30% mild, 7% moderate, and 5% severe). In terms of self-care, 67% showed a high level, 32% a medium level, and 1% a low level. There is a strong positive relationship between family functioning and self-care ($r = 0.743$, $p < 0.01$). **Conclusions:** Self-care is related to functional family environments, so it is necessary to develop nursing interventions focused on education and strengthening family support networks. The cross-sectional design of the study was a limitation in establishing causality and changes over time, an aspect that should be considered in future research.

Keywords (Source: DeCS)

Family relationships; self-care; chronic renal failure; renal dialysis; family support.

Relación entre funcionalidad familiar y autocuidado de pacientes en tratamiento de hemodiálisis

Resumen

Introducción: la enfermedad renal crónica constituye un problema de salud pública en crecimiento con una alta tasa de mortalidad. Los pacientes en tratamiento de hemodiálisis enfrentan desafíos a nivel físico, emocional y social, lo que resalta la importancia de comprender cómo la funcionalidad familiar influye en su agencia de autocuidado. **Objetivo**: describir y correlacionar la funcionalidad familiar y el autocuidado de pacientes en hemodiálisis de un hospital de segundo nivel. **Materiales y método**: investigación observacional, descriptiva, transversal y correlacional. La población de estudio estuvo compuesta por 60 usuarios, es decir, la totalidad de pacientes atendidos en el servicio de hemodiálisis del Hospital General Isidro Ayora de Loja, Ecuador. Para analizar la funcionalidad familiar y de autocuidado, se utilizó el APGAR Familiar y la escala de Apreciación de Agencia de Autocuidado ASA. Para conocer la relación entre ambas variables se utilizó el Rho de Spearman. **Resultados:** el 58 % de los participantes tuvo una funcionalidad familiar normal, mientras que el 42 % presentó disfunción (30 % leve, 7 % moderada y 5 % severa). En cuanto al autocuidado, 67 % mostró un nivel alto, 32 % medio y 1 % bajo. Existe una relación positiva y fuerte entre funcionalidad familiar y autocuidado ($r=0,743$, $p < 0,01$). **Conclusiones:** el autocuidado está relacionado con ambientes familiares funcionales, por lo que es necesario desarrollar intervenciones de enfermería enfocadas en la educación y el fortalecimiento de las redes de apoyo familiar. El diseño transversal del estudio constituyó una limitación para establecer la causalidad y cambios en el tiempo, aspecto que debe ser considerado en futuras investigaciones.

Palabras clave (Fuente: DeCS)
Relaciones familiares; autocuidado; insuficiencia renal crónica; diálisis renal; apoyo familiar.

Relação entre funcionalidade familiar e autocuidado de pacientes em tratamento hemodialítico

Resumo

Introdução: A doença renal crônica constitui um problema de saúde pública crescente, com alta taxa de mortalidade. Os pacientes em tratamento hemodialítico enfrentam desafios físicos, emocionais e sociais, o que reforça a importância de compreender como a funcionalidade familiar influencia sua capacidade de autocuidado. **Objetivo:** descrever e correlacionar a funcionalidade familiar e o autocuidado de pacientes em hemodiálise em um hospital de segundo nível. **Materiais e método:** pesquisa observacional, descritiva, transversal e correlacional. A população do estudo foi composta por 60 usuários, o que representa a totalidade de pacientes atendidos no serviço de hemodiálise do Hospital Geral Isidro Ayora de Loja, Equador. Para a análise da funcionalidade familiar e do autocuidado, foram aplicados o APGAR Familiar e a Escala de Avaliação da Capacidade de Autocuidado (ASA). A relação entre as variáveis foi verificada por meio do coeficiente de correlação de Spearman (Rho). **Resultados:** 58 % dos participantes apresentaram funcionalidade familiar normal, enquanto 42 % mostraram algum grau de disfunção (30 % leve, 7 % moderada e 5 % grave). Em relação ao autocuidado, 67 % apresentaram nível alto; 32 %, médio e 1 %, baixo. Observou-se relação positiva e forte entre funcionalidade familiar e autocuidado ($r = 0{,}743$; $p < 0{,}01$). **Conclusões:** O autocuidado está associado a ambientes familiares funcionais, evidenciando a necessidade de desenvolver intervenções de enfermagem voltadas à educação e ao fortalecimento das redes de apoio familiar. O delineamento transversal do estudo constituiu uma limitação para estabelecer a causalidade e as mudanças ao longo do tempo, aspecto que deve ser considerado em pesquisas futuras.

Palavras-chave (Fonte: DeCS)

Relações familiares; autocuidado; insuficiência renal crônica; diálise renal; apoio familiar.

Introduction

Chronic kidney disease (CKD) is a complex public health problem and one of the fastest-growing causes of death in the Americas (1). A major consequence of this disease is renal failure, which causes a gradual deterioration of kidney function. Complications can lead to death in patients who have not received renal replacement therapy, which includes hemodialysis, peritoneal dialysis, and kidney transplantation (2).

CKD is defined as an alteration in renal function and structure lasting at least three months, affecting the individual's health status. Currently, only 10 % of the global population and 6 % of the at-risk population are aware of their diagnosis of the condition, demonstrating there is still a limited awareness of the disease (3). The most common causes of its development are diabetes and high blood pressure. There are other related causes such as glomerulonephritis, polycystic kidney disease, lupus nephritis, and kidney cancer. In addition, there are associated risk factors such as advanced age (60 years or older), the presence of cardiovascular diseases such as congestive heart failure, and a family history of CKD, among others (4).

A study conducted in 2019 by the International Society of Nephrology revealed the average number of CKD patients undergoing renal replacement therapy globally was 759 per million population (pmp), with prevalence varying by continent, country, and income level in each region. In the same year, kidney disease was identified as the cause of death for 254,028 people in the Americas, meaning that the age-adjusted mortality rate was 15.6 deaths per 100,000 inhabitants (5).

In Ecuador, there has been a significant increase in patients requiring renal replacement therapy, with a prevalence rate of 1,074 per million population, an incidence rate of 206.5 per million population, and a mortality rate of 14.4 %. Likewise, it was identified that, starting at age 46, the number of people requiring this type of treatment increases, with high blood pressure and diabetes mellitus being the main causes of CKD (2).

The drastic change in lifestyle and habits of people with this disease involves a series of physical and emotional challenges that require the construction of a support network between the family and the patient, with the aim of coping with changes in the patient's health, doing everything possible to enable the individual to maintain a satisfactory life, despite the inconveniences that may arise during treatment. When this support base is deficient, it can generate feelings of incapacity, dependence, and limitations (6).

A functional family allows for effective connection between family members, as there are certain emotional bonds. This state allows the group to achieve the biological, psychological, sociocultural,

educational, and economic goals it needs to successfully fulfill the roles that have been socially and historically assigned to it. Whereas, in a dysfunctional family, behavior is affected because there are behavioral and social problems and emotional manipulation that cause conflicts within the family circle, such as violence, excessive dependence, and communication and role disturbances, among others (7).

A study conducted in China showed that family functionality plays an central role in the self-care of patients with early CKD, and there is a positive correlation in patients with good family function, social support, adaptation, and self-management. It was also identified that family education by nursing staff should focus on strengthening relationships, as this encourages patients to self-integrate the disease, thereby improving diet control, exercise management, and medication adherence (8).

A study conducted in Mexico (9) established that this variable was directly related to patient adherence to treatment, proving that the family influences the success or failure of the treatment. Another study conducted in the same country determined that approximately 55% of patients presented moderate to severe family dysfunction; likewise, it was evident that the less family support the patient had, the less interest they showed to treatment instructions (10).

Regarding self-care, it is the ability of individuals, families, and communities to prevent and cope with illness, maintaining their health with or without the support of a healthcare professional (11). The main objective of self-management in health is to maintain a balance of physical, mental, emotional, and spiritual health in the individual to control aspects that may negatively influence their daily activities, thus preventing them from becoming difficult obstacles to overcome. Its relevance lies in the prevention of disease, the improvement of quality of life, and general well-being. For this reason, far from being a privilege, self-care becomes a necessity and a responsibility for each individual in relation to their own health (12).

When addressing this topic, it is essential to mention Dorothea Orem, one of the most prominent figures in the field of nursing, author of several books and articles focused on the profession, and creator of the Self-Care Theory, which centers on the individuals' ability to perform activities related to maintaining their life, health, and well-being. The role played by nursing professionals is very important, as they are responsible for assisting and supporting self-care management, with the aim of enabling individuals to take an active role in caring for their own health (13).

This highlights the influence of social and cognitive aspects on self-management of health, establishing basic internal and ex-

ternal conditioning factors for its fulfillment, including age, gender, family system elements, life factors, adequacy of resources, and socio-cultural orientation. These aspects determine an individual's ability to care for themselves; when there is not an adequate balance of these elements, a deficit is created, and in these cases, the primary function of nursing is to support the person in voluntarily restoring this balance, implementing actions focused on satisfying their needs (14).

Some studies show differences in the level of self-care among hemodialysis patients. A study conducted in Spain analyzed a case (15) in which moderate and high levels were reported, attributed to self-management education; however, another study conducted in Colombia (16) identified inadequate and insufficient levels, highlighting the existence of a problem that requires attention from healthcare professionals.

In this context, nurses must promote self-care by providing all the necessary tools for patients to empower themselves and take care of their own health, especially vulnerable people such as those with CKD. Preventive measures focus on nephroprotection and include aspects such as physical activity according to their abilities, an adequate diet, elimination of tobacco and alcohol consumption, blood pressure control, and adherence to pharmacological treatment. However, implementing and maintaining these changes is a challenge for healthcare professionals, especially in cases where patients do not understand their importance. In this cases, it becomes crucial to design new strategies for a permanent approach focused on health promotion (17).

Based on this background, scientific evidence on the subject is limited. For this reason, the main objective of this research was to determine the relationship between family functionality and self-care in patients receiving hemodialysis treatment. The findings of this study constitute a source of knowledge for nursing professionals, as they facilitate understanding family dynamics and self-care capacity in patients receiving this type of therapy, aspects that allowed the development of evidence-based health promotion strategies focused on each individual and aimed at maintaining their quality of life and health.

Materials and Method

This study is descriptive, observational, cross-sectional, and correlational in nature, with a quantitative approach. It was conducted within the hemodialysis service of a second-level hospital. The study population consisted of 60 users of the hemodialysis service at the Hospital General Isidro Ayora in Loja, Ecuador, including individuals over the age of 18, from both sexes, diagnosed with CKD, receiving hemodialysis treatment for an indefinite period of time,

and who voluntarily confirmed their participation in the study by signing the informed consent form. Individuals who spoke a language other than Spanish and those who had any type of disability or decompensation that affected the signing of the consent form and data collection were excluded.

The information was collected between September and October 2024 using a survey, the first part of which was based on the Family APGAR Scale, a tool used globally to assess perceptions of family functioning, developed and validated by Smilkstein in 1978. This consists of five questions that measure adaptability, participation, development, affectivity, and problem-solving ability in the family. The questionnaire is scored on a Likert scale from 0 to 4, with responses classified as normal family function from 17 to 20 points, mild dysfunction from 16 to 13 points, moderate dysfunction from 10 to 12 points, and severe dysfunction below 9 points (18).

In the second part, the ASA scale was used, an instrument that incorporates fundamental aspects of Orem's Self-Care Theory, validated in the Netherlands by Evers and Isemberg in 1993 and translated into several languages, including Spanish (19). In this study, a modified version validated in the Latin American context was used, which has been applied in several studies related to CKD (20).

It should be noted that the instrument was also validated in the Ecuadorian context, obtaining a Cronbach's alpha of 0.83, which demonstrated its reliability (21). The questionnaire consists of 17 closed questions with a score established on a Likert scale, rated from 1 to 5, where 1 is never, 2 is almost never, 3 is sometimes, 4 is almost always, and 5 is always. The sum of the scores obtained was classified as follows: Low self-care capacity with points between 17-28, medium capacity with points between 29-56, and high capacity with points between 57-85. The data obtained were processed using Statistical Package for the Social Sciences (SPSS) software, version 27, applying Spearman's correlation coefficient to establish the relationship between family functionality and self-care.

Regarding ethical considerations, this study was approved by the Human Research Ethics Committee (CEISH, for its initials in Spanish) of the Universidad Nacional de Loja, Ecuador, code UNL-CEISH-OB-2024-0058-P. Additionally, for data collection, participants received complete information about the purpose, risks, and benefits of the study, based on the principles of the Nuremberg Code (22). Similarly, according to the Helsinki Declaration (23), informed consent was requested to ensure voluntary participation, based on the ethical principles of autonomy, beneficence, and non-maleficence.

Results

Most patients are male (58%), adults between 40 and 64 years of age (52%), married (48%), and from urban areas (68%) (Table 1).

Table 1. Sociodemographic Characteristics of Participants

Sociodemographic Characteristics	Item	f	%
Sex	Male	35	58
	Female	25	42
Age	Young adult	10	17
	Adult	31	52
	Senior adult	19	32
Marital Status	Married	29	48
	Single	17	28
	Widower	7	12
	Divorced	4	7
	Common-law marriage	3	5
Place of Origin	Urban	41	68
	Rural	19	32

Note: young adult (20 to 39 years old); adult (40 to 64 years old); older adult (over 65 years old).

Source: Prepared by the authors.

Regarding family functionality, results show that 58% of patients are within normal levels, 30% have mild dysfunction, and a minimal percentage show moderate (7%) or severe (5%) dysfunction. Most users with normal functionality are male (36%), aged between 40 and 64 (27%), married (30%), and urban residents (43%) (Table 2).

Table 2. Family Functionality in Patients Receiving Hemodialysis

Sociodemographic Characteristics		Family Functionality							
		Normal		Mild Dysfunction		Moderate Dysfunction		Severe Dysfunction	
		F	%	F	%	f	%	F	%
Sex	Male	22	36	10	17	2	3,3	1	2
	Female	13	22	8	13	2	3,3	2	3
	Total	**35**	**58**	**18**	**30**	**4**	**7**	**3**	**5**
Age	Young adult	8	13	1	2	1	2	0	0
	Adult	16	27	12	20	1	2	2	3
	Senior adult	11	18	5	8	2	3	1	2
	Total	**35**	**58**	**18**	**30**	**4**	**7**	**3**	**5**

Sociodemographic Characteristics		Family Functionality							
		Normal		Mild Dysfunction		Moderate Dysfunction		Severe Dysfunction	
		F	%	F	%	f	%	F	%
Marital Status	Single	10	16	6	10	1	2	0	0
	Married	18	30	9	14	2	3	0	0
	Divorced	3	5	1	2	0	0	0	0
	Common-law marriage	0	0	1	2	1	2	1	2
	Widower	4	7	1	2	0	0	2	3
	Total	**35**	**58**	**18**	**30**	**4**	**7**	**3**	**5**
Origin	Urban	26	43	10	17	3	5	2	3
	Rural	9	15	8	13	1	2	1	2
	Total	**35**	**58**	**18**	**30**	**4**	**7**	3	5

Source: Prepared by the authors.

Concerning self-care capacity, most patients have high levels (67%), a lower rate have medium levels (32%), and a minimal percentage have low levels (1%) (Table 3). Among those with high capacity, 38% are male, 32% are between 40 and 64 years old, 32% are married, and 47% come from urban areas.

Table 3. Self-Care in Hemodialysis Patients

Sociodemographic Characteristics		Self-Care					
		High Capacity		Average Capacity		Low Capacity	
		f	%	f	%	f	%
Sex	Male	23	38	11	18	1	1
	Female	17	29	8	14	0	0
	Total	**40**	**67**	**19**	**32**	**1**	**1**
Age	Young adult	8	13	2	3	0	0
	Adult	19	32	12	20	0	0
	Senior adult	13	22	5	9	1	1
	Total	**40**	**67**	**19**	**32**	**1**	**1**
Marital Status	Single	11	18	6	10	0	0
	Married	19	32	10	17	0	0
	Divorced	4	7	0	0	0	0
	Common-law marriage	1	2	1	2	1	1
	Widower	5	8	2	3	0	0
	Total	**40**	**67**	**19**	**32**	**1**	**1**
Origin	Urban	28	47	13	22	0	0
	Rural	12	20	6	10	1	1
	Total	**40**	**67**	19	32	1	1

Source: Prepared by the authors.

Regarding the levels of family functionality, based on self-care capacity, it is noteworthy that 83% of patients who achieved normal family functionality had a high self-care capacity, while 58% of individuals with mild dysfunction and 21% of those with moderate dysfunction had an average self-care capacity. Participants with severe family dysfunction had average and low levels of self-care (Table 4).

Table 4. Levels of Family Functionality and Self-Care

		Self-Care Capacity							
		High		Average		Low		Total	
		f	%	f	%	F	%	f	%
Family Functionality	Normal	33	83	2	11	0	0	35	58
	Mild dysfunction	7	18	11	58	0	0	18	30
	Moderate dysfunction	0	0	4	21	0	0	4	7
	Severe dysfunction	0	0	2	11	1	100	3	5

Source: Prepared by the authors.

When analyzing the correlation between family functioning and self-care (Table 5), it was determined that there is a strong and positive relationship between both variables (r=0.743), with these scores being statistically significant ($p < 0.01$), which implies that an increase in one variable will generate an increase in the other and vice versa.

Table 5. Relationship between Family Functioning and Self-Care

Co-Relations			APGAR	Self-Care
	Spearman's APGAR Rho	Correlation Coefficient		0,743**
		Sig. (2-tailed)		0,000
		N		60
	Self-care	Correlation Coefficient	0,743**	
		Sig. (2-tailed)	0,000	
		N	60	
**Correlation is significant at the 0.01 level (2-tailed).				

Source: Prepared by the authors.

Discussion

The data obtained regarding the sociodemographic characteristics of patients treated in the hemodialysis service show that most are adult males, between 40 and 64 years of age, married, and from urban areas. This information is remarkably similar to that described in the study by Tonguino Rodríguez (24), in which male patients predominated (68.2%), aged between 46 and 65 (56%), and married (54.5%).

Within this context, there is agreement with the data issued by the Ecuadorian Ministry of Public Health, as shown in the data from the Ecuadorian Registry of Dialysis and Renal Transplantation (REDT, for its initials in Spanish). Nationwide, the average age of patients undergoing renal replacement therapy is 59.68 years, with the 46-76 age group showing the highest rates of admission to dialysis therapy. Similarly, there are more men than women, with a ratio of 1.4:1 (men:women) (25). However, globally, a longitudinal study conducted with data from the last 30 years showed that the majority of cases of patients with CKD occurred mainly in people aged between 55 and 74 years with comorbidities (diabetes mellitus and hypertension), with the age-standardized incidence and prevalence rates being slightly higher in women, while men had a higher mortality rate and loss of quality of life (26). These data reflect the importance of a gender-based approach that responds to the specific needs of each group population.

Regarding family functionality, it was found that 58% of patients are within normal levels; 30% have mild dysfunction and a minimal percentage show moderate (7%) or severe (5%) dysfunction. The groups with the highest levels of dysfunction are women and people in common-law relationships or widows/widowers. These findings are consistent with the research conducted by (27), in which 56% of participants belong to a functional family, 30.6% to moderately dysfunctional families, and 13.4% to severely dysfunctional families. However, a research conducted in Mexico (10) showed the majority of participants had moderate dysfunction (45.8%), followed by normal functionality (44.2%) and a minimal percentage with severe dysfunction (10%).

In this context, the World Health Organization (WHO) and the Pan American Health Organization (PAHO) describe the family as the basic unit in which decisions related to health promotion, prevention, and treatment are organized and made (28). Thus, the family plays a leading role in supporting patients with illness, especially those with long-term conditions. However, family functioning can be disrupted and undergo drastic changes, as family members must take on new responsibilities that affect their normal activities to cope with the loss of a family member's health (29).

From a systemic perspective, the family is comprised of multiple elements that are in constant interaction. Therefore, a significant event such as a change in the health of one member can affect the others to a greater or lesser extent (30). In this way, family interaction influences the physical and mental health, as well as the social behavior, of each individual. Hence, studying family interaction is crucial for addressing the health-illness process and for developing family interventions that promote well-being (31).

With regard to self-care capacity, most patients have high levels (67%), followed by medium levels (32%), and a minimal percentage have low levels (1%). Low levels are observed in isolation in males, belonging to the older adult group, in cohabiting relationships, and residing in rural areas. These results show a similar trend to those reported in a study in Spain (15), which found that 52% of patients had a high capacity for self-care and 48% had a medium capacity, with no individuals having a low capacity. However, these data differ from a study conducted in Ecuador (32), where 50% of participants had an inadequate level of self-care, 26.70% had an adequate level, and 23.30% had an inadequate level.

In this sense, self-care plays a very important role in the process of adapting to illness, as it strengthens autonomy. Despite this, people often take a passive role in managing their health, and this lack of empowerment can generate additional economic, physical, and psychological costs at the individual, family, and social levels. This is where the family acts as a motivating force, providing security and reducing the patient's emotional burden, thereby facilitating their adherence to self-care practices in relation to their own health (16).

When analyzing the correlation between family functionality and self-care, a coefficient of 0.743 was obtained, indicating a strong positive relationship between these two variables. It can be inferred that as family functionality increases, patients' self-care abilities also improve. Similarly, the bilateral significance level is less than 0.01, evidencing a statistically significant relationship between both variables.

Although no publications have been identified that specifically analyze the relationship between family functioning and self-care in patients receiving hemodialysis treatment, there are previous studies with similar variables, such as a study conducted in Mexico (9), which identified an association between family functioning and therapeutic adherence in patients with CKD. Likewise, in a similar context, research conducted in a Family Medicine Unit confirmed the existence of a moderate and positive relationship between the same variables (10).

Therefore, the findings in this article are supported by evidence and scientific literature, which emphasizes the fundamental role family plays in the physical, emotional, and social well-being of patients with CKD, and determines that people who receive support are better able to self-manage their disease compared to those who do not (33).

For this reason, nursing work is essential, as it plays an educational, clinical, and supportive role, comprehensively addressing the physical, psychological, and emotional dimensions to reduce the impact of the disease and treatment on the patient's quality of life. Health education, which promotes wellness behaviors to cope with the disease, and emotional support for the patient and their family are essential pillars of action to prevent the progression of the disease (34).

One of the main limitations of this study was its cross-sectional nature, which, although it facilitated the identification of the relationship between the two variables in a specific period, did not allow for the establishment of causality or the evaluation of changes in the variables over time. Likewise, conducting the study in larger and more diverse populations would allow for better results and could be considered in future research.

Conclusions

There is a strong positive relationship between family functioning and self-care in patients undergoing hemodialysis treatment, which shows that the family and its environment play a significant role in developing the patient's ability to self-manage their health. Thus, it was determined that higher levels of self-care were associated with functional family environments. Therefore, it is essential to involve the family in the management of CKD, especially in the context of a vitally important treatment such as hemodialysis. Finally, results show it is necessary to design nursing interventions focused on promoting self-care and improving family dynamics, which include educational, psychosocial, and support actions to ensure comprehensive health care that maintains and improves the quality of life of this vulnerable group.

Conflict of interest

None declared.

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