

REVIEW

Interventions to empower cardiorenal patients: A systematic review

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Abstract

Aims: To identify the most effective interventions to empower cardiorenal patients.

Design: A systematic review of the literature has been carried out.

Data sources: The PubMed, CINAHL, PsycINFO and Cochrane databases were reviewed, and journals in the field were manually searched between January and February 2020.

Review methods: Five randomized clinical trials and quasi-experimental studies that met the selection and CONSORT & TREND methodological quality criteria were selected.

Results: The evidence supports that there are no existing interventions aimed at empowering cardiorenal patients. However, the interventions to empower people with chronic kidney disease and heart failure suggest that their integration should address seven domains: patient education, sense of self-management, constructive coping, peer sharing, enablement, self-efficacy and quality of life.

Conclusion: A gap has been revealed in the literature regarding the empowerment of cardiorenal patients. This review provides relevant information to help design, implement and evaluate interventions to empower these patients by describing the strategies used to empower people experiencing both chronic conditions and the tools used for their assessment.

Impact: There is a need for further research to design, implement and evaluate a multidimensional intervention that favours the empowerment of cardiorenal patients by using valid and reliable instruments that measure the domains that constitute it in an integrated manner. Interventions aimed at empowering the cardiorenal patient should include seven domains: patient education, sense of self-management, constructive coping, peer sharing, enablement, self-efficacy and quality of life.

KEYWORDS

cardiorenal disease, chronic heart failure, chronic kidney disease, empowerment, intervention, nursing

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1 | INTRODUCTION

Chronic kidney disease (CKD) has become one of the major public health problems in recent decades. Its global prevalence is between 10% and 15%, having increased in recent years due to the ageing of the population and changes in lifestyle (Saran et al., 2019), among other factors.

CKD carries a significant increase in the risk of cardiovascular morbidity and total mortality (House et al., 2019). It is estimated that 25% to 63% of patients with heart failure have some form of cardiorenal syndrome (Ronco & Di Lullo, 2017). In fact, the prevalence of cardiorenal patients doubles in cardiovascular patients over 66 years of age (64.5%), which is associated with worse prognosis and significantly decreased survival (77.8%) (US Renal Data System, 2018), increasing healthcare costs up to 93% per person per year (Romero-González et al., 2020).

1.1 | Background

Patients with CKD and heart failure (HF) suffer from multiple physical and psychological symptoms that affect their well-being and share experiences that impact all spheres of life (Li et al., 2018; Olanolizarraga et al., 2016). In addition, they undergo a very complex therapeutic regimen (Beyebach et al., 2018), compliance with which is critical to avoid the appearance of complications and to increase their survival (Beyebach et al., 2018; Murali et al., 2019). However, adherence to this regimen is low (Ghimire et al., 2015; Lambert et al., 2017). Traditional educational interventions aimed at improving adherence have had limited effectiveness, making it necessary to implement a comprehensive approach that addresses behavioural and emotional aspects to achieve changes in patients' behaviour and lifestyle (Murali et al., 2019). Similarly, emphasis is given to the need to involve patients in designing these interventions (Donald et al., 2018; Peng et al., 2019; Romero-González et al., 2020).

In this regard, the World Health Organization (WHO, 2013) and other authors (Castro et al., 2016; Garcimartin et al., 2017) point out the need for professionals to promote innovative care with an educational approach that favours the empowerment of patients since this aspect improves health outcomes, increases patient satisfaction and quality of life, decreases hospital readmissions and, consequently,

reduces health costs. From this approach, Castro et al. (2016) define empowerment as a process that enables people to have greater influence over their own health by gaining greater control of what they themselves define as important.

The literature reveals the need for a change in the approach to all aspects that affect the life situation of patients with the cardiorenal disease to improve their survival and quality of life (Jenkins & Kirk, 2010; Romero-González et al., 2020). Given this need and the difficulty of addressing it, Tsay and Hung (2004) advocate the empowerment of these patients as an alternative to the traditional paternalistic strategy. Knowing the interventions developed to favour this approach will allow for the design and implementation of effective strategies.

2 | THE REVIEW

2.1 | Aims

The main objective of this study was to identify the most effective interventions to empower cardiorenal patients.

2.2 | Design

A systematic review of the most recent literature was carried out following PRISMA standards regarding methodological design: protocol, search process, selection and synthesis of results (Moher et al., 2009).

2.3 | Search methods

A systematic review of studies published in the PubMed, CINAHL, PsycINFO and Cochrane databases was conducted between January and February 2020. In these electronic searches, as illustrated in Table 1, the terms 'empowerment', 'chronic kidney disease', 'heart failure', 'intervention' and their synonyms were combined with the Boolean operators 'AND' and 'OR'. To improve search sensitivity and avoid omitting relevant studies, MeSH terms and the keywords identified in the selected studies were used. The following limits were set: language, English and Spanish; adult population; and year of publication within the last 5 years.

TABLE 1 Search strategy used in electronic databases

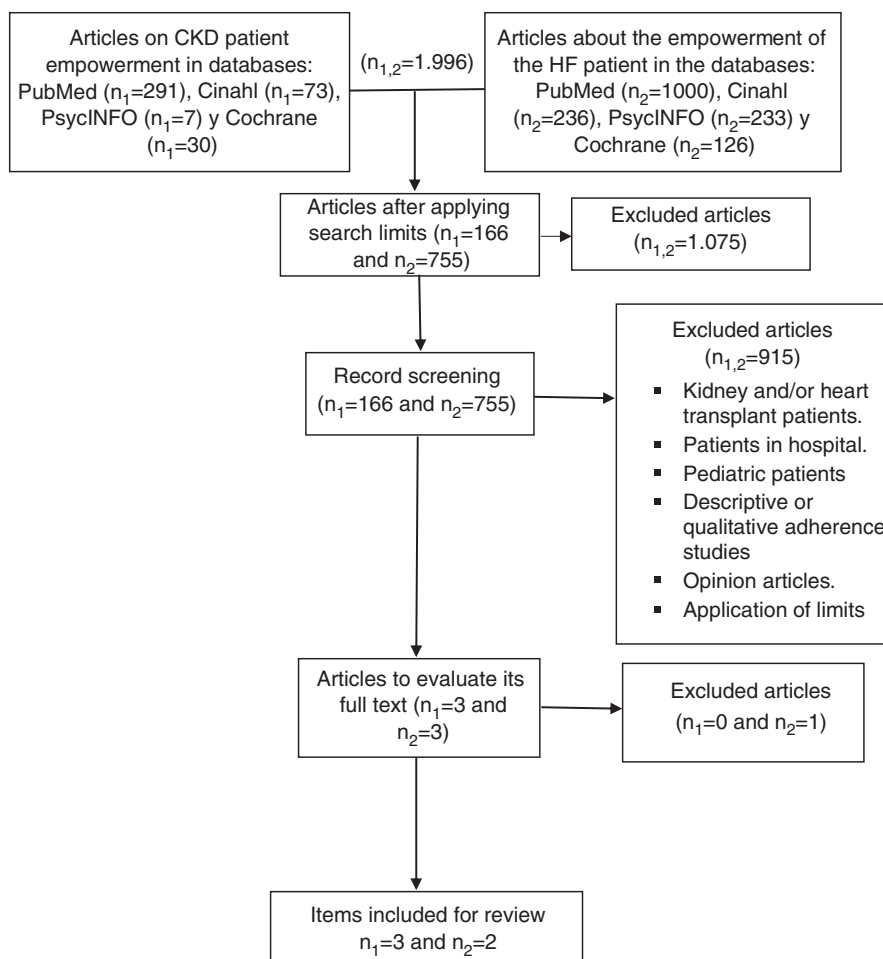
Search Terms						
Empowerment OR		Chronic Kidney Disease OR		Heart Failure OR		Intervention OR
Empowerment [Mesh]	AND	"Renal Insufficiency, Chronic" [Mesh]	AND	"Heart Failure" [Mesh]	AND	Intervention
"Patient Empowerment"		"Kidney Failure Chronic"		"Chronic Heart Failure"		Strategy
"Patient Participation" [Mesh]		"Chronic Kidney Disease"		"Cardiac Failure"		
"Patient involvement"		"Chronic Kidney Failure"		HF		
"Self-management"		CKD				
"Self-efficacy"						
"Self-care"						

^aSubsequently, two similar searches were conducted separately for the terms chronic kidney disease and heart failure.

TABLE 2 Selection criteria for studies

Inclusion	Exclusion
<ul style="list-style-type: none"> Experimental and quasi-experimental studies on interventions that favour the empowerment of CKD and/or HF patients. Reviews on the subject with a rigorous systematic methodology, as long as the studies involved were not included in this review. 	<ul style="list-style-type: none"> Studies that include among their participants patients with other cardiac and/or renal pathologies (renal and/or cardiac transplants). Studies carried out on patients who are admitted to hospital. Studies on pediatric patients Descriptive or qualitative adherence studies Opinion articles

FIGURE 1 Flowchart of the selection of included articles



To complete the electronic searches, the 'snowballing' technique was applied, and manual reviews of the last five years of the journals relevant to the area of interest were carried out: 'Nefrología', 'Journal of the American Society of Nephrology', 'Journal of Renal Care', 'Journal of Nephrology Nursing', 'Journal of Cardiovascular Nursing' and 'European Journal of Cardiovascular Nursing'.

The selection of studies was made based on the application of the inclusion and exclusion criteria presented in Table 2.

2.4 | Search results

The literature search conducted revealed no studies that included interventions to favour the empowerment of cardiorenal patients.

However, it was considered that the literature on interventions to promote the empowerment of CKD patients and heart failure (HF) patients separately could provide relevant information to determine what should be included in an intervention to empower a person experiencing both chronic conditions and what tools should be used for their evaluation. Thus, as illustrated in Figure 1, 1996 studies were retrieved, of which 1075 were excluded after applying the search limits and 915 were excluded for not meeting the inclusion criteria; ultimately, five were selected for analysis.

This selection process was carried out independently by NAG and MVC. They reviewed the articles by title and abstract based on the predetermined selection criteria; in cases where there was disagreement, a third researcher (MOL) was involved in the decision. The same process was followed after full reading of the articles.

TABLE 3 Characteristics of the studies selected in this review

Author, Year, Country	Objective	Design and Sample	Intervention	Instruments	Main results	Quality	Risk of bias
Doyle et al. (2019), Ireland	To evaluate the 'Mikidney' app to empower patients in their CKD self-management	Quasi-experimental pilot (pre-post) N = 20	'Mikidney' mobile application Follow-up: 12 weeks (basal measurement, 6 weeks, 12 weeks)	<ul style="list-style-type: none"> IPAQ-LF Questionnaire 6MWT Test Anthropometric measurements Biochemical parameters Food and exercise diaries Satisfaction Questionnaire 	<ul style="list-style-type: none"> (+) In 6MWT test (-) Reduction of patients with BMI 25 (15%) (+) Decrease of anthropometric parameters, total cholesterol and LDL cholesterol Positive evaluation of application as a reminder of medication, diet and exercise Improvement in: 89% regular exercise, 79% diet, 89% understanding of CKD and 73% adherence to medication 	Trend Statement: 15/22	N/A
Lee (2018), Korea	To determine the impact of an empowerment program on the self-management, self-efficacy, and quality of life of patients with CKD 2-4, who showed poor self-control	Quasi-experimental N = 58	Theoretical framework: self-regulation model. - Initial evaluation - Individual objectives - Group sessions education and support - Telephone follow-up Follow-up: 12 weeks	<ul style="list-style-type: none"> Self-management CKD Instrument Self-Efficacy Questionnaire Questionnaire SF-36 	<ul style="list-style-type: none"> (+) Self-management (+) diet, problem solving, seeking psychosocial well-being (-): treatment adherence, healthy behaviours (+) Self-efficacy (+) Quality of life: physical and mental components 	Trend Statement: 18/22	N/A
Bayoumy et al. (2017), Saudi Arabia	To investigate the effectiveness of an empowerment program to promote compliance among patients with end-stage CKD on haemodialysis	Randomized Clinical Trial N = 60	Components: cognitive and psychological (based on cognitive-behavioural therapy) Group and individual sessions Objectives: - Improve sense of competence and mastery of illness - Reinforce constructive coping development Follow-up: 6 weeks	<ul style="list-style-type: none"> DSI Clinical parameters to assess adherence to diet and fluids KDQOL-SF BDI 	<ul style="list-style-type: none"> (+)Improvement in biochemical adhesion parameters (+) Systolic blood pressure reduction and interdialytic gain (+) Reduction of load and severity of symptoms (+) Improved quality of life for self-informed (+) Less depression 	Consort: 10/25	Unclear
Kordshooli et al. (2018), Iran	- To investigate the effect of the family-centred empowerment model on disease perception in CI patients.	Randomized Clinical Trial N = 70	Based on a family centred empowerment model. Individual and group sessions Four steps: Perceive threat Self-Efficacy Self-confidence Evaluation Follow-up: 8 weeks	BIPQ Questionnaire	<ul style="list-style-type: none"> (+) Better scores on cognitive and emotional dimensions after intervention (-) In the temporal dimension (perception of chronic illness) After the intervention, the perception of the lifestyle as the most important factor causing the disease was maintained. 	Consort: 19/25	Low

(Continues)

TABLE 3 (Continued)

Author, Year, Country	Objective	Design and Sample	Intervention	Instruments	Main results	Quality	Risk of bias
Rakhshan et al. (2015), Iran	- To study the effect of the family empowerment model on the lifestyle of HF patients	Randomized Clinical Trial N = 70	Based on a family centred empowerment model. Individual and group sessions Follow-up: 8 weeks	Lifestyle Questionnaire	(+) Best score in all lifestyle dimensions among the groups after the intervention. (+) Change in score from weak to good in lifestyle.	Consort: 18/25	Low

Abbreviations: (-), non-statistically significant result; (+), statistically significant result; 6MWT, Six minutes walk test; BDI, Beck Depression Inventory; BIPQ, Brief illness perception questionnaire; DSI, Dialysis Symptom Index; IPAQ-LF, International Physical Activity Questionnaire-Short Form; KDQOL-SF, Kidney Disease Quality of Life-Short Form; N/A, Not Applicable; SF-36, Short Form (SF)-36 version 2 questionnaire.

2.5 | Quality appraisal

To evaluate the quality of the selected articles, CONSORT (Moher et al., 2012) and TREND (Des Jarlais et al., 2004) methodological quality criteria were used. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009) were used for reporting. In addition, to determine the risk of bias from the studies, the Cochrane tool was used (Higgins et al., 2011).

2.6 | Data abstraction

The data analysis process was guided by the results obtained in the conceptual analysis of 'Patient empowerment' carried out by Castro et al. (2016). They identified the antecedents, attributes, consequences and empirical references that demonstrate the occurrence of this concept itself (Walker & Avant, 2011, p.16) and which served as guidance during the analysis.

For the integration of findings, the 'following the thread' method was used. This consists of examining each data set in light of 'a thread' or a specific area of study to generate a set of interrelated results for each dataset (Moran-Ellis et al., 2006). In this study, each of the domains identified was used as a starting point to develop the threads. Thus, the results relating to the CKD and HF patient empowerment interventions were examined in light of the identified domains to generate a set of interrelated and complementary findings on cardiorenal patient empowerment for each domain. To facilitate the integration of findings, the results were tabulated in matrices, in two phases: (1) the integration of the set of results of each phenomenon separately and (2) the integration of the findings resulting from the comparison of both phenomena.

2.7 | Synthesis

The data were analysed by considering the research objectives, design and sample, characteristics of the intervention, instruments used to evaluate the intervention, and the main results of the studies reviewed. We synthesized the results through the formulation of intervention domains, the strategies used in interventions and the effectiveness of interventions to empower cardiorenal patients. This analysis process was first performed by two of the researchers separately (NAG and MVC) and then involved the entire research team to compare, clarify and reach a consensus on the findings.

3 | RESULTS

Table 3 summarizes the main characteristics of the included studies (Bayoumy et al., 2017; Doyle et al., 2019; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015). This section presents the

integration of findings resulting from the review of CKD and HF patient empowerment.

3.1 | Domains of the interventions to empower cardiorenal patients

The integration of the findings for the two diseases revealed that interventions to support cardiorenal empowerment should address seven domains. None of the individual interventions addressed all seven domains, as seen in Figure 2 and described below.

3.1.1 | Patient education

This domain seems vital, having been identified recurrently in the five studies reviewed (Bayoumy et al., 2017; Doyle et al., 2019; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015).

Patient education refers to the process of empowering individuals to increase their control over the factors that influence their health so that they can develop the knowledge, skills, attitudes and degree of self-awareness necessary to take responsibility for their health-related decisions effectively. To do this, patients need to have access to information knowledge and understanding of such information (Bayoumy et al., 2017; Doyle et al., 2019; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015). This information is related to disease etiology (Kordshooli et al., 2018; Rakhshan et al., 2015), symptoms (Doyle et al., 2019; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015), complications (Bayoumy et al., 2017; Doyle et al., 2019; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015), treatment options (Doyle et al., 2019), therapeutic regimens (Bayoumy et al., 2017; Doyle et al., 2019; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015), side effects (Kordshooli et al., 2018; Rakhshan et al., 2015), healthy habits (Lee, 2018), nutrition (Bayoumy et al., 2017; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015), physical activity (Doyle et al., 2019; Lee, 2018), disease progression (Doyle et al., 2019; Lee, 2018) and emotional support (Lee, 2018).

3.1.2 | Sense of self-management

This domain is also key to cardiorenal patient empowerment since it is present recurrently in all the studies reviewed (Bayoumy et al., 2017; Doyle et al., 2019; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015).

The sense of self-management refers to the individual's ability to manage the symptoms; treatment; physical, emotional and psychosocial consequences and lifestyle changes associated with living with a chronic condition (Bayoumy et al., 2017; Doyle et al., 2019; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015).

According to the studies reviewed (Bayoumy et al., 2017; Doyle et al., 2019; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015), nursing professionals should play a crucial role in promoting the sense of self-management in cardiorenal patients by helping them establish

individual self-care goals, control symptoms, recognize and manage stressors, seek help and solve problems (Bayoumy et al., 2017; Doyle et al., 2019; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015).

3.1.3 | Constructive coping

This refers to a response mechanism in which individuals use cognitive and behavioural efforts to manage stress and handle its negative effects on psychological well-being, and thus are able to modulate the impact of the disease on their life (Bayoumy et al., 2017; Kordshooli et al., 2018; Rakhshan et al., 2015).

This dimension is present in three of the interventions (Bayoumy et al., 2017; Kordshooli et al., 2018; Rakhshan et al., 2015), in which nurses provided advice on seeking help and problem solving and practiced various coping strategies with patients. Among them, the control of the stress response through cognitive restructuring of stressors and various relaxation techniques were highlighted. These were implemented during the first few minutes of the sessions, and subsequently, patients were encouraged to practice them daily at home (Bayoumy et al., 2017).

3.1.4 | Peer sharing

This domain references sharing information, experiences of the illness, and strategies for problem solving and self-management with other patients (Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015). Some of the strategies used to share among cardiorenal patients are group sessions (Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015). In these sessions, the patients present their problems, difficulties and experiences in the face of specific challenges in self-care and therapeutic regimen follow-up, their experience with the symptoms, the problem-solving process and their actions (Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015).

3.1.5 | Enablement

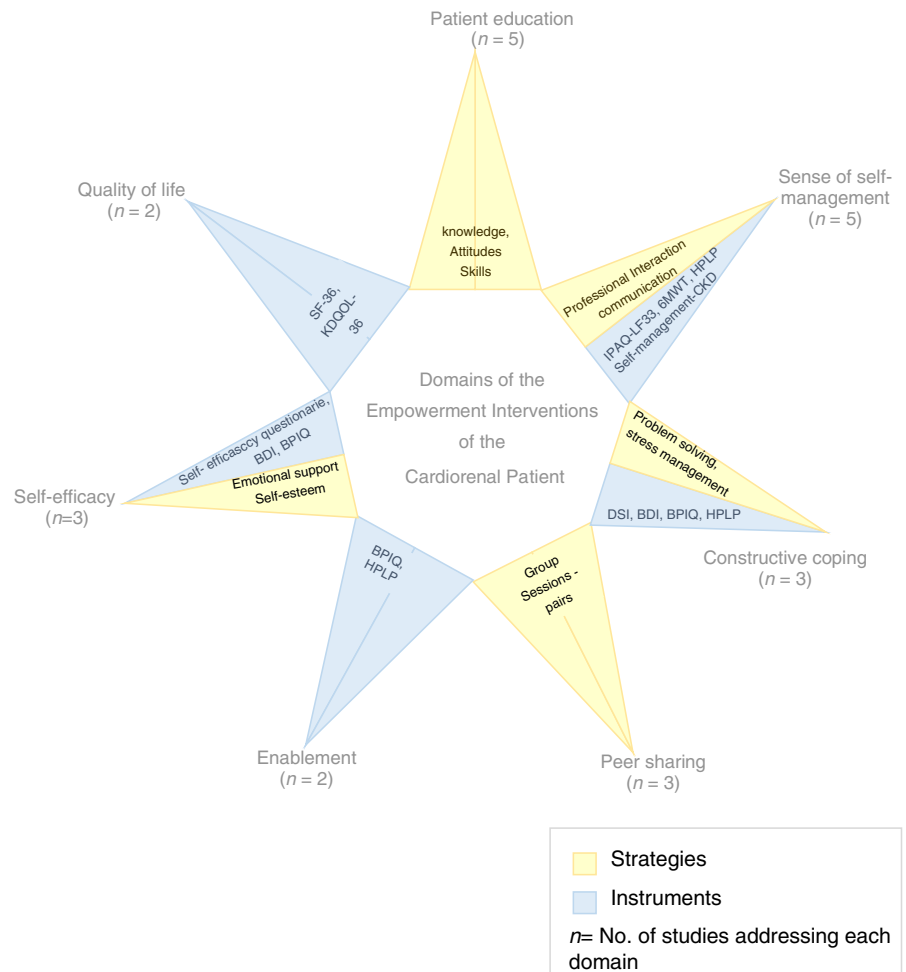
This domain is conceived as the process by which patients become their own resource for managing and optimizing their health and thus benefit from improving their self-efficacy and developing self-care skills (Bayoumy et al., 2017; Lee, 2018).

These aspects were addressed in the interventions of two of the studies reviewed (Bayoumy et al., 2017; Lee, 2018). In these studies, health professionals worked with patients to define their individual goals and success criteria, discuss their concerns and barriers in managing their disease and changing behaviour, and manage the difficulties experienced.

3.1.6 | Self-efficacy

This dimension has been addressed in the interventions of three of the studies reviewed (Kordshooli et al., 2018; Lee, 2018; Rakhshan

FIGURE 2 Graphical representation of the main findings of the review



et al., 2015), in which health professionals provided emotional support to improve patients' self-esteem and confidence to develop their personal performance. Self-efficacy is understood as the cognitive mechanism based on expectations or beliefs about one's confidence and ability to acquire relevant self-care behaviours (Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015).

3.1.7 | Quality of life

Quality of life is a dimension of measurement of a person's well-being that appears as an outcome variable in two of the studies reviewed (Bayoumy et al., 2017; Lee, 2018). According to these studies (Bayoumy et al., 2017; Lee, 2018), it reflects a feeling of satisfaction the patients have with their life in general, an objective evaluation of the living conditions, and the state of physical, mental, social and emotional health experienced by the individuals.

3.2 | Strategies used in interventions to empower cardiorenal patients

Among the various strategies employed, the following stand out: educational sessions (Bayoumy et al., 2017; Kordshooli et al., 2018;

Lee, 2018; Rakhshan et al., 2015), support sessions (Bayoumy et al., 2017; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015), those aimed at improving self-confidence (Bayoumy et al., 2017; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015), telephone follow-ups (Lee, 2018), and the use of mobile applications for control and follow-up (Doyle et al., 2019). However, this last strategy (Doyle et al., 2019) has been limited to merely physical aspects such as medication, diet and exercise, without addressing other areas that affect the person's daily life. In four (Bayoumy et al., 2017; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015) of the five studies, the interventions included individual sessions, group sessions or a combination of both. In most of the studies (Bayoumy et al., 2017; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015), interaction and communication with professionals appeared to be key strategies in addressing several of the identified domains. However, their articulation was not explicitly described.

In addition, several of the studies reviewed (Kordshooli et al., 2018; Rakhshan et al., 2015) included psychosocial interventions. Thus, Kordshooli et al. (2018) and Rakhshan et al. (2015), through a randomized controlled study, evaluated an intervention focused on empowering the family system to improve the level of health in three areas: motivation, psychology and self-dimensionality (knowledge, attitude and perceived threat). To this end, they conducted group and individual sessions in which they worked on perceived

TABLE 4 Instruments used in the studies reviewed

Instruments	Domains				
	Patient education	Sense of self-management	Coping	Peer sharing	Enablement
IPAQ-LF (Doyle et al., 2019)		■			
Test 6MWT (Doyle et al., 2019)		■			
Self-management instrument for CKD (Lee, 2018)		■			
Self-efficacy questionnaire (Lee, 2018)					
SF-36 (Lee, 2018)					
DSI (Bayoumy et al., 2017)			■		
KDQOL-36 (Bayoumy et al., 2017)					
BDI (Bayoumy et al., 2017)			■		
BIPQ (Kordshooli et al., 2018)			■		■
HPLP (Rakhshan et al., 2015)		■	■		■

Abbreviations: 6MWT, Six-minute walk test; BDI, Beck Depression Inventory; BIPQ, Brief illness perception questionnaire; DSI, Dialysis Symptom Index; HPLP, Health-promoting lifestyle profile; IPAQ-LF, International Physical Activity Questionnaire-Short Form; KDQOL-36, Kidney Disease Quality of Life-Short Form; SF-36, Short Form (SF)-36 version 2 questionnaire.

threat, self-efficacy, self-confidence and its evaluation. However, it is necessary to highlight that although these authors (Kordshooli et al., 2018; Rakhshan et al., 2015) reflected that the intervention was family-oriented, they did not detail what it consisted of or how it was integrated into the family system, nor did they clarify what roles the main caregiver and other family members played, which could make it difficult to replicate the study.

Two of the interventions were also multidisciplinary (Doyle et al., 2019; Lee, 2018), being led by a nursing professional with the collaboration of other team members such as physicians (Lee, 2018), nutritionists (Doyle et al., 2019; Lee, 2018) and physiotherapists (Doyle et al., 2019).

The follow-up periods of the interventions varied between six and twelve weeks.

Finally, regarding the context of intervention application, four (Doyle et al., 2019; Kordshooli et al., 2018; Lee, 2018; Rakhshan et al., 2015) were carried out in specialized outpatient care settings, and one was carried out in a haemodialysis unit (Bayoumy et al., 2017).

3.3 | Effectiveness of interventions to empower the cardiorenal patient

To assess the effectiveness of these interventions, it was necessary to have valid and reliable measuring instruments that would evaluate the change produced in the patient in terms of his or her empowerment. To this end, the results of questionnaires, scales, tests or functional tests used to evaluate the interventions described were assessed.

In the literature reviewed, ten instruments were identified, and the application context, reliability, and domains identified for their operationalization are described in Table 4. Most of them were specific, either because of the environment in which they are developed, haemodialysis, or because of the type of disease affecting the patients to whom they were directed, CKD or HF. All the instruments used were validated and demonstrated excellent reliability, as shown in Table 4. However, none of the scales assessed two of the domains that have

Self-efficacy	Quality of life	Context	Operationalization	Reliability
				Internal consistency (Cronbach's alpha)
		Generic	It measures the physical activity in different areas of the daily life, allowing to register the values in total time and caloric consumption, and evaluating the intensity, frequency and duration of the activity.	0.73
		Generic	It measures the aerobic capacity of patients through the maximum possible distance travelled in six minutes, but must be performed by qualified personnel.	0.91
		CKD	It assesses adherence to therapeutic regimen and diet, problem-solving ability, healthy behaviours, and attainment of psychosocial well-being.	0.85
■		CKD	It assesses confidence in treatment and diet compliance, problem solving and stress management.	0.76
	■	Generic	It evaluates eight dimensions: physical functioning, limitation by physical problems, body pain, social role, mental health, limitation by emotional problems, vitality, energy or fatigue and health perception.	>0.8
		CKD in HD	It assesses the patients' physical and emotional symptom burden.	0.91
	■		It assesses eleven dimensions: symptoms/problems, effects of the disease on daily life, disease burden, work situation, cognitive function, social relationships, sexual function, sleep, social support, staff attitude and patient satisfaction.	>0.8
■			It measures cognitive-affective and somatic symptoms, attitudes and poor performance.	0.8–0.9
■			It values the perception of the disease at the level of consequences, time, personal and treatment control, emotional representation, concern and coherence.	0.79–0.89
			It values responsibility for health, physical activity, interpersonal communication skills, spiritual growth, nutrition and stress management.	>0.8

been considered as key in a cardiorenal patient empowerment intervention, patient education and peer sharing.

In addition to these instruments, several studies (Bayoumy et al., 2017; Doyle et al., 2019) included health outcomes that reflected whether the interventions to empower the patient were effective: improvement of biochemical parameters such as phosphorus, potassium or serum calcium, and clinical parameters such as blood pressure or interdialytic weight gain for the evaluation of adherence to the therapeutic regimen.

In this regard, and given the heterogeneity of the outcome measures used in the few studies reviewed, it does not seem possible to determine which intervention is more effective in empowering cardiorenal patients. Despite this, it should be mentioned that in all studies, significant improvements were obtained after implementing the intervention in physical, psychological, and behavioural aspects of disease management. With regard to the physical aspects, improvements were obtained in functional capacity (Doyle et al., 2019), in the burden and severity of symptoms (Bayoumy

et al., 2017), and in clinical parameters (Bayoumy et al., 2017; Doyle et al., 2019) and markers of adherence to treatment (Bayoumy et al., 2017). Concerning the psychological aspects, the study conducted by Bayoumy et al. (2017) obtained improved depressive symptoms, attitudes, and performance referred to by patients, applying an intervention based on cognitive-behavioural therapy. In reference to disease management, Lee (2018) obtained improvements in both the self-management of the disease and the self-efficacy reported by the patients.

4 | DISCUSSION

This review has revealed a gap in the literature on the empowerment of cardiorenal patients. In addition, seven domains to include in interventions to empower these patients were identified as a result of the integration of findings, resulting from the analysis of the literature closest to the phenomenon of interest.

The need to include a patient education dimension in these interventions is a finding consistent with a conceptual analysis in which education was identified as a precursor to patient empowerment (Castro et al., 2016). However, the information provided in the studies reviewed seems insufficient since patient education should focus on not only knowledge but also the capacities and skills that allow the patient to modify his/her behaviour (WHO, 2013). The relationship with health professionals is key here since it favours a climate of confidence that is crucial for patient learning, giving them a sense of security, of being treated with respect, and improving their understanding of their situation (Nygårdh et al., 2012a). This relationship is also a source of support that reduces their anxiety and allows them to perceive that they are receiving holistic treatment (Reid et al., 2016). To foster this relationship of confidence, patients especially value the empathy, dedication, accessibility, competence, readiness/willingness to listen, respect and close dialogue of professionals, and their attitude towards patient participation in decision making (Nygårdh et al., 2012b). All of these aspects allow them to acquire greater control over their lives, identify their problems and seek solutions to them (Reid et al., 2016). For this purpose, professionals must be aware of the importance of this interaction and the need to facilitate patients' reflections on their experience and to enable them to recognize that they are the ones who have control over their situation (Anderson & Funnell, 2010).

Regarding the sense of self-management, this result is consistent with other authors who identified it as one of the consequences of patient empowerment (Castro et al., 2016; Lin et al., 2017). As stated by Barlow et al. (2002), it is a dynamic and continuous process of self-regulation that includes the ability to control one's condition and make the necessary responses to maintain a satisfactory quality of life. These issues seem to be key in the care of cardiorenal patients (Funnell, 2010; Lin et al., 2017) since they enable their confidence, skills and knowledge about their condition to be increased, resulting in greater self-control and control over their lives, health and well-being (Barlow et al., 2002; Castro et al., 2016).

In both the present review and previous reviews, nursing professionals were key to promoting self-management. They concluded that strategies in which there is a patient-professional interaction are more effective in promoting behaviour changes and in increasing self-management in patients with chronic conditions (Funnell, 2010; Grady & Gough, 2014). These strategies are more effective because they allow the definition of objectives and the creation of action plans and often incorporate elements of problem solving, exploration of feelings, and communication strategies, such as reflective listening and motivational interviewing (Funnell, 2010). Other authors suggest that additional aspects should be included in interventions to favour the self-management of chronic patients, such as the management of psychosocial consequences, social support and self-control strategies (Barlow et al., 2002). In addition, recent reviews of the literature (Donald et al., 2018; Welch et al., 2015) on self-management interventions call for the need to involve patients in designing interventions to ensure that their values, culture and psychosocial needs are addressed.

The adoption of constructive coping strategies is a very relevant aspect that positively impacts the adaptations that patients

make in their daily lives and the effectiveness of their self-care (Li & Shun, 2016). Coping allows patients to challenge the tangible consequences of the problem, control the source of stressful events and make personal changes to optimize their situation to learn new skills and become independent (Yasmeen et al., 2015). This is consistent with the concept of empowerment, as it is a process that helps people create hope, confidence and encouragement and provides a new direction in their lives (Chen & Li, 2009).

Moreover, the importance of taking into account the relationship that is established between peers, from patient to patient, should be emphasized. Other studies (Bennett et al., 2018; García-Llana et al., 2019) have pointed out that it is a non-hierarchical and reciprocal relationship through which an experienced patient helps other patients achieve their goals, engage in self-care, and cope with their illness and treatment. This peer relationship is reciprocal, as the people who provide help also obtain benefits by increasing their sense of self-efficacy and giving more significant meaning to their experience of the illness (García-Llana et al., 2019). Thus, three types of support can be offered: emotional, evaluative and informative, based on the patient's experiential knowledge rather than on formal sources (Dennis, 2003).

Enablement is also a key domain that impacts patients' health and quality of life experiences (Desborough et al., 2017). In this issue, professionals play a fundamental facilitating role, and a therapeutic relationship needs to be established, considering the person as a whole, facilitating their learning, recognizing their strengths, and involving them in decision making and the design of future possibilities (Hudon et al., 2011). It is worth mentioning that although this dimension only appears in two of the studies reviewed (Bayoumy et al., 2017; Lee, 2018), it is crucial for the empowerment of the cardiorenal patient since training is one of the attributes of empowerment (Castro et al., 2016) and is aimed at recognizing, supporting and emphasizing the capacities of the patients, thus increasing their control over their own lives (Hudon et al., 2011). Patients are more likely to adhere to therapeutic regimens if they have internalized the need for behaviour change and value it personally than if others try to force them to behave in a way that feels unnatural to them (McCarley, 2009). This finding is also consistent with cognitive-behavioural theory, which explains that people's behaviour is based on the reciprocal interaction between how they think and act (Godin et al., 2008). Therefore, to try to modify their behaviour more effectively, it would be appropriate to work on the cognitive dimension of cardiorenal patients, including their concerns and expectations.

Self-efficacy is revealed as another essential aspect of these interventions since some authors (Farley, 2019) consider it to be a mediator between knowledge and self-care, estimating that the development of strategies to increase self-efficacy will positively impact their health. Increased self-efficacy is associated with greater compliance with treatment, which, together with a change in perceived behaviour, is a promoter of physical and psychological well-being (Tsay & Hung, 2004). Studies have shown that self-efficacy is an influential factor in improving self-care and controlling heart disease risk factors. Self-efficacy allows patients to acquire knowledge and skills to manage their illness and to make informed decisions about their self-care (Aslani et al., 2019).

With regard to the importance of valuing quality of life, this finding is consistent with recent reviews of the concept of patient empowerment, with quality of life improvement being one of the main consequences of this strategy (Barr et al., 2015; Castro et al., 2016).

However, it is worth mentioning that, due to the shortage of literature and the methodological limitations of these studies, there may be domains that have not been identified and others that need to be explored in greater depth. Specifically, just as Castro et al. (2016) reflect, shared decision making should be included as a key domain in the design of multidimensional interventions for the empowerment of the cardiorenal patient. This recommendation is based on the theory of self-determination (Ng et al., 2012), from which it is believed that a person can better regulate their health based on their autonomy, competence and control since they have the right and capacity to make their own decisions about their condition (Aujoulat et al., 2008; McCarley, 2009).

Regarding the follow-up of interventions from the studies reviewed, Chen and Li (2009), in a systematic review of the effectiveness of empowerment interventions in chronic patients, found that shorter intervention periods (6 weeks) resulted in smaller effect sizes. In contrast, the best results were obtained with a 1-year follow-up.

Finally, it should be mentioned that none of the studies reviewed have used an instrument that comprehensively measures patient empowerment, assessing all of the domains identified in these interventions. This result can be attributed to the lack of consensus in the definition of patient empowerment (Anderson & Funnell, 2010; Garcimartin et al., 2017), with no universally accepted standard for its measurement (Barr et al., 2015; McAllister et al., 2012). However, it should be noted that among the available questionnaires, there is one used in different contexts, with high validity and reliability, to measure the empowerment of patients with chronic illness, 'Patient Empowerment in Long-Term Conditions' (Small et al., 2013), which includes six of the seven dimensions identified in this review and which, therefore, could be used to evaluate interventions to empower cardiorenal patients.

4.1 | Limitations

It should be noted that this review has certain limitations. A limited number of databases was analysed, the search was filtered for articles written only in English and Spanish, and the results were analysed on the basis of the authors' publications and not the original data from their studies. Another issue to highlight is that, as explained above, given the gap identified in the literature, the studies analysed were based on interventions to promote empowerment in people with CKD and HF separately; therefore, the integrated results may not be wholly transferable to patients with cardiorenal disease. However, this study has several strengths, including a rigorous search and selection of articles, a thorough analysis of the literature found, a detailed description of the results, and important implications for practice.

5 | CONCLUSION

This systematic review of the literature provides relevant information to support the design, implementation and evaluation of interventions to empower cardiorenal patients, as it describes both the strategies used to empower people who experience chronic conditions and the tools used for their evaluation. The dimensions they address include patient education, sense of self-management, constructive coping, peer sharing, enablement, self-efficacy and quality of life.

However, it is important to note that these findings respond to scarce research on interventions to empower CKD and HF patients and that none of the studies reviewed included a multidimensional intervention addressing all the identified domains or an assessment tool that includes all these domains. In this sense, future intervention-type studies are recommended to design, implement and evaluate a multidimensional intervention that favours the empowerment of cardiorenal patients by using valid and reliable instruments that measure the domains that constitute it in an integrated manner.

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CONFLICT OF INTEREST

No conflicts of interest have been declared by the authors.

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All authors have agreed on the final version and meet at least one of the following criteria (recommended by the ICMJE (<http://www.icmje.org/recommendations/>)): (1) substantial contributions to conception and design, acquisition of data or analysis and interpretation of data; (2) drafting the article or revising it critically for important intellectual content.

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