






## SCOPING REVIEW

# Creating the nursing care map in the evaluation of kidney transplant candidates: A scoping review and narrative synthesis

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## Abstract

**Aims:** To analyse the aspects involved in the care of individuals assessed as kidney transplant candidates and to identify the role of nurses in providing specialised care for this population.

**Design:** Scoping review. The results were summarised using a narrative synthesis technique.

**Data Sources:** A review of the literature published between 2001 and 2021 was conducted between October and November 2021 using PubMed, CINAHL and SciELO.

**Review Methods:** The research team agreed on a search strategy based on clinical practice guidelines for assessing kidney transplantation candidates. Quantitative, qualitative and mixed methods studies published in peer-reviewed journals in English, Spanish, French and Portuguese were included.

**Results:** A total of 377 studies were identified, and 49 articles were included after the inclusion and exclusion criteria were applied. The narrative synthesis was structured into four themes: Physical needs; Psychological and quality of life needs; Education and adherence needs; and Nurses' role.

**Conclusion:** Nursing assessment of kidney transplantation candidates should encompass physical, psychosocial and adherence aspects. A variety of methodologies and resources are available for this assessment. Nurses contribute to coordinating access to kidney transplantation, aiming to improve adherence to an appropriate lifestyle to prevent patients from being excluded from kidney transplantation or suffering from kidney transplantation-related complications.

**Impact:** Based on our findings, we managed to design a nursing care map for kidney transplantation candidates combining the main elements of nursing care that should be incorporated into this process. Advanced practice nursing professionals play a crucial role in accessing renal transplant care.

## KEYWORDS

advanced practice nurse, care, kidney transplant, literature review, nephrology, nurse, nursing

No Patient or Public Contribution as the design is a review of the literature.

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## 1 | INTRODUCTION

Kidney transplantation (KT) activity in Spain has been steadily increasing since 1989, when the National Transplant Organisation (Organización Nacional de Trasplantes, ONT) was created. That year, 1039 kidney transplants were performed, rising to 3423 in 2019 (2020 and 2021 were excluded to avoid potential bias from the COVID-19 pandemic), representing a growth rate of almost 230% in KT activity over 30 years (ONT, 2020). This statistically significant increase has made Spain one of the countries with the highest levels of kidney donation and transplantation in the world, which has been linked to a number of milestones dubbed 'the Spanish Model' (Matesanz & Domínguez-Gil, 2016).

The success of this model stems from a specific interdisciplinary organisational approach that ensures the systematic identification of organ donation opportunities and their transition to actual donations (Matesanz et al., 2017). The role played by nurses within these interdisciplinary teams has led to the development of complex management and coordination tasks focused on ensuring the success of the transplant, which have become fundamental pillars for the seamless execution of these procedures (ONT, 2021).

### 1.1 | Background

Although nurses perform coordination and management tasks in organ donation in Spain, they are not yet widely present in the teams assessing KT candidates in hospital settings (Fournier & Lerrat, 2016; Gaietto & Brooks, 2019; Pedreira-Robles et al., 2023; Videloup, 2019). Despite this, evidence from other settings points to the benefits that the presence of nurses in these activities can bring. These benefits are directly associated with increased quality of life and perceived satisfaction; reduced readmission rates; increased patient knowledge and greater promotion of self-care; better clinical patient outcomes; fewer face-to-face visits and travel; and lower financial costs to the health system, among others (Fournier & Lerrat, 2016; Gaietto & Brooks, 2019; Gibbons et al., 2021; Kayler et al., 2020; Kripalani et al., 2014; Mahmud et al., 2019). In addition, international benchmark guidelines for the assessment and management of KT candidates (European Renal Best Practice Transplantation Guideline Development Group, 2013; KDIGO, 2020) strongly recommend the use of an interdisciplinary team including at least a transplant physician, a transplant surgeon and a nurse with expertise in the psychosocial aspects arising in the transplantation process to assess candidates and decide on the suitability of the KT.

Despite the outstanding recommendations on the configuration of interdisciplinary teams, there are no reports available on how KT teams are actually configured at present, neither in Spain nor in other countries. A shortage of experienced nephrology nurses has been reported in the international literature, causing great concern among nephrology professionals and patients (Gaietto & Brooks, 2019; Pedreira-Robles et al., 2023). This concern stems from the profile

of the current population with chronic kidney disease (CKD), who require specific care under official Spanish guidelines on ageing and chronicity (Sánchez-Martín, 2014; Vargas-Marcos, 2015).

The knowledge gap regarding the role of nurses in access to KT offers an opportunity to build a knowledge base using published international reports. This review aims to encourage evidence incorporation and to synthesise previous research by adopting an orderly, methodical, in-depth approach (Guirao-Goris, 2015; Mendes et al., 2008). The question addressed in this review is 'What are the key aspects related to the care of people with kidney transplant and which is the role and responsibility of nurses?'

## 2 | THE REVIEW

### 2.1 | Aim

The main objectives of this review were to analyse the aspects involved in the care of individuals assessed as kidney transplant candidates; to identify the role of nurses in providing specialised care for this population; and the production of the care map according to this process.

### 2.2 | Design

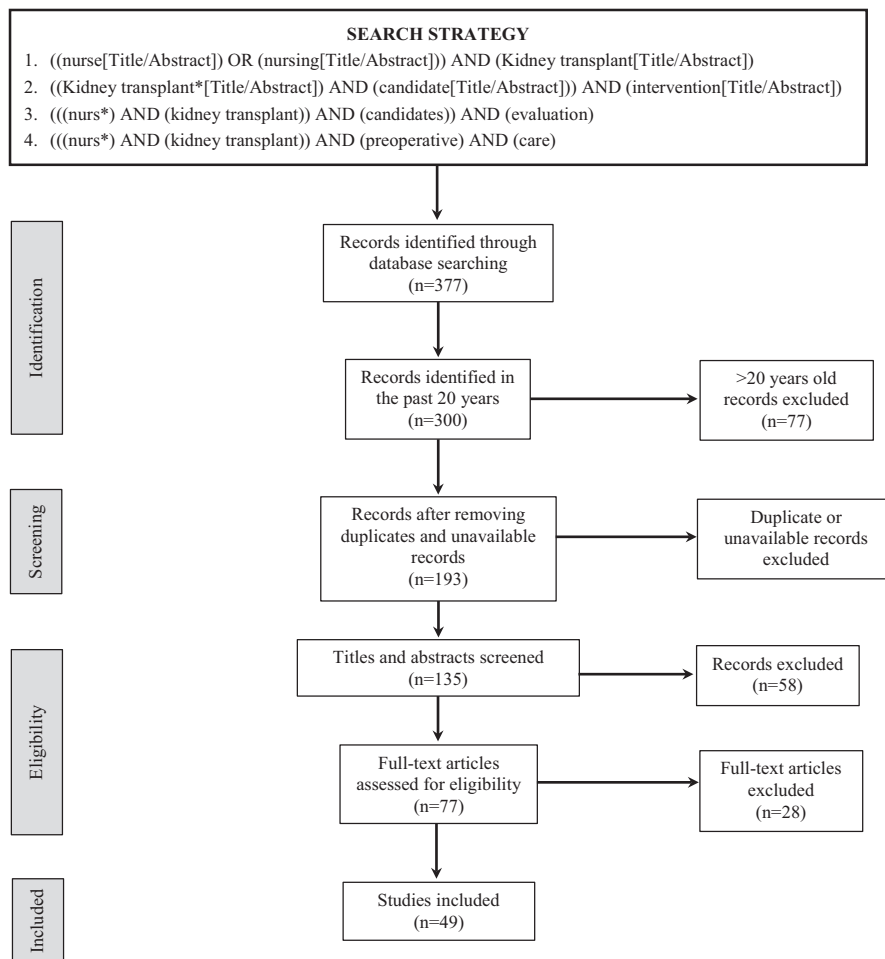
In order to meet the study objectives, a scoping review was carried out on the grounds that this is a broad topic with multiple meanings, methodologies and research designs. These characteristics made it impossible to conduct a systematic review with a higher level of evidence.

The scoping review was based on the PRISMA statement (Page et al., 2021) and on the five steps proposed by Arksey and O'Malley (2005): identifying the research question; identifying relevant studies; study selection; charting the data; and collating, summarising and reporting the results.

The findings were summarised using a narrative synthesis technique. Given the variability of the included studies, this technique allows the results to be presented in a clear, orderly and understandable manner for the reader (Pawson, 2002; Popay et al., 2006).

### 2.3 | Search methods

The benchmark clinical practice guidelines for assessing KT candidates were consulted in order to identify the descriptors to be used in the search (European Renal Best Practice Transplantation Guideline Development Group, 2013; KDIGO, 2020). The research team reached a consensus on the suitability of the descriptors. The MeSH descriptors used in the study were: Nurs\*; Kidney transplant\*; Preoperative; Candidates; Care; and Intervention; which were combined using the Boolean AND/OR operators (Figure 1).



**FIGURE 1** Review search strategy and search selection results.

Two researchers conducted the review between October and November 2021. The databases PubMed, CINAHL and SciELO were used as they are broad, comprehensive, relevant and freely available. English was used as the search language, and articles published in English, Spanish, French and/or Portuguese were eligible for inclusion. Studies published in peer-reviewed healthcare journals in the past 20 years (2001–2021) were included to guarantee research quality. The following were excluded: studies with paediatric patients, pilot methods, letters to the editor, study protocols without results, unavailable full-text articles and duplicates.

In relation to the inclusion and exclusion criteria of articles for this review, it is important to comment that, when the construct of living with CKD is described, time is not understood as a quantitative moment. The phenomenon of living with a disease is understood as a personal experience that encompasses all spheres of the person and their environment (Ramírez-Perdomo & Solano-Ruiz, 2018). In this way, when proposing care plans, it is necessary to conceive the moment of their application and understand the past and the future to adapt this standard (Potter et al., 2015). In this study, reports have been included that collect the entire trajectory of people with CKD in advanced stages, and information related to access to KT has been analysed. This procedure ensures the suitability of the final result: to identify needs unique to people awaiting KT and to clarify how nurses can address those needs in a standardised way and in the

context of an interdisciplinary team. At the same time, all information related to access to the KT in the post-transplant phase was included.

## 2.4 | Search outcomes

References from the database search were exported to a reference management programme, Mendeley v1.19.8, where duplicates were removed. Article titles and abstracts were independently screened for relevance. The full texts of the shortlisted articles were downloaded and assessed for eligibility against the inclusion and exclusion criteria. Any disagreements were resolved through joint discussion until the two reviewers reached a consensus. Discrepancies were addressed without the need for an external opinion.

The search strategy and the results of the studies retrieved are shown in the PRISMA flowchart (Figure 1). The search strategy produced 377 studies, of which 49 were included once the inclusion and exclusion criteria had been applied. The selected studies provide a broad international overview, including references from the United States (13); Australia (5); Iran (5); Brazil (4); Canada (3); the Netherlands (3); United Kingdom (3); Turkey (2); Spain (2); Taiwan (2); South Korea (1); Switzerland (1); Indonesia (1); Hong Kong (1); China

(1); Egypt (1); and Sweden (1). The median publication date of the included studies was 2016 [2010; 2019] (Table 1).

## 2.5 | Quality appraisal

Scoping has been described as a technique for mapping the relevant literature in a particular field of interest. It tends to address broader topics in which many different study designs can be used. However, scoping cannot provide answers to very specific questions with a narrow range of quality assessed studies, as is the case in a systematic review. Therefore, no standard quality assessment was carried out, although publication in peer-reviewed journals was set as an inclusion criterion (Arksey & O'Malley, 2005; Popay et al., 2006).

## 2.6 | Data abstraction

Decisions about which data to extract from individual studies were informed by the review objective. A data extraction sheet was created using Microsoft Excel, which included the following variables: name of first author; year of publication; location; research objectives; research design; sample size; and key related findings. These headings framed the context of each study and allowed the data collected to be organised. Data were extracted by one reviewer and collated by the other reviewer (Arksey & O'Malley, 2005; Popay et al., 2006).

## 2.7 | Synthesis

To synthesise the results, the findings of each included study were summarised individually using interpretation and paraphrasing to address the study objectives. This process sought to ensure that the ideas presented in the original studies were respected. The findings were then grouped into consistent categories arranged by the topic describing the general idea they conveyed. This categorisation enabled more in-depth interpretation and a more efficient approach to addressing the review objective (Siddaway et al., 2019).

## 3 | RESULTS

The 49 articles included are summarised in Table 1. The narrative synthesis is presented below, structured into four themes: Physical needs; Psychological and quality of life needs; Education and adherence needs; and Nurses' role.

### 3.1 | Physical needs

The review shows that absolute contraindications to KT, after exploring the individual's physical sphere, are specific and limited

(Acuna et al., 2018; Burns et al., 2019; Diaz & O'Connor, 2011). The presence of malignant conditions that could jeopardise the survival of the individual or the graft should be assessed, taking into consideration a number of reported barriers or limitations that may be examined and improved or enabled for optimal access to a KT scheme (Haugen et al., 2021; Lockwood et al., 2017; Ortiz Pastelero & Martínez Lara, 2021). Barriers or constraints relating to poor physical fitness are determined by associated comorbidities; obesity; cardiovascular disease; and/or frailty. However, these conditions should be subject to assessment and fitness plans aiming to improve physical capacity and frailty (Alsaad et al., 2021; Buahin & Curran, 2012; Burns et al., 2019; Potluri & Hou, 2010; Quint et al., 2021; You et al., 2008).

More specifically, the review also suggests that unhealthy nutrition, which can lead to increased body weight or the development of de novo diabetes mellitus post KT, should be identified and addressed through dietary improvement and weight control plans (Bloom & Crutchlow, 2008; Chan Chun Kong et al., 2020). The adoption of specialised monitoring strategies aiming to bring about lifestyle changes and reduce risk factors associated with drug use (Buahin & Curran, 2012; Corrêa et al., 2013; Luchsinger & Zimbrea, 2020) or severe pain is also encouraged. These lifestyle factors are described as contributing to increased patient visits to the healthcare system and missed appointments and examinations during the KT candidate assessment process (Hollisaaz et al., 2007). Additionally, cancer prevention (Acuna et al., 2018) and chronic infectious conditions negatively affected by immunosuppressants can also benefit from this type of specialised monitoring (Buahin & Curran, 2012; Grijota-Camino et al., 2021).

Structural and socioeconomic determinants beyond the physical sphere are described as limitations in managing the KT candidate assessment process, including: geographical distance between patients and healthcare facilities; socioeconomic constraints resulting in lack of resources; barriers in oral and cultural communication; greater associated comorbidities; and lack of guidance from a specialist nurse throughout the process (Burns et al., 2019; Hollisaaz et al., 2007; Lockwood et al., 2017).

### 3.2 | Psychosocial and quality of life needs

Within the individual's psychosocial and emotional realms, only uncontrolled factors that may compromise adherence to treatment, such as dementia, psychosis and serious depression, may be considered grounds for exclusion from KT (Buahin & Curran, 2012).

In addition, our review suggests that individuals with chronic kidney disease (CKD) may be impaired in terms of self-awareness, cognition and motivation in self-care. These circumstances are reported with a higher frequency among individuals with a lower socioeconomic and educational status, individuals with fewer comorbidities and individuals diagnosed with concomitant depression (Fisher, 2006; Obadan et al., 2017). According to these reports, actions based on preventive and educational strategies should focus

TABLE 1 Summary of the included study characteristics and key related findings.

Author, year, location	Purpose	Research design	Sample	Key related findings
Acuna et al., 2018, Canada	To assess the availability, quality, and consistency of recommended cancer evaluation prior to transplantation in Clinical Practice Guidelines for the selection of solid organ transplant candidates	Literature review	Data from 52 Clinical Practice Guidelines	Most Clinical Practice Guidelines recommended that work-ups for transplant candidates should be up-to-date for age and sex appropriate cancer screening, based on the recommendations for the general population
Aghakhani et al., 2021, Iran	To determine the effects of a self-care education programme on the QoL in KT patients	Randomised, controlled trial	59 KT patients	Three educational sessions performed about (1) the nature of the disease, its aetiology, clinical symptoms, diagnosis, treatment, and complications; (2) the principles of medication administration and side effects; and (3) diet, physical activity and self-care activities. An emphasis on teaching self-care knowledge and skills for transplant patients in nursing care education programmes was suggested
Akyolcu, 2002, Turkey	To review the stat of knowledge in renal transplantation education	State of knowledge review	Data from previous studies	Professional nurses must ensure that patients and families understand the transplantation and therapeutic regimen and provide health education. It should be remembered that certain physiological, psychosocial and pathological conditions might inhibit the education process. Before renal transplantation the patient's understanding of the procedure and follow-up regimen and also the patient's ability to cope with a complex medication regimen are assessed. The nurse and the patient and family should work together to set realistic, achievable goals, the aims of which are mutually agreed. The agreed goals of health education should be documented in a care plan, which will also provide reinforcement for both the nurse and patient
Alsaad et al., 2021, USA	To highlight the importance of measuring frailty in KT candidates and recipients	Literature review	Data from previous studies	Frailty is associated with many adverse outcomes in renal disease and KT populations. It is pivotal to expand the utility of frailty measurement in clinical practice, recognise the burden of frailty, and identify appropriate interventions to mitigate the adverse effects of frailty
Beck et al., 2019, the Netherlands	To develop a nurse-led, self-management (support) intervention for KT recipients	Intervention Mapping protocol	Literature review, focus groups, individual interviews, and observations	It's been developed a nurse-led self-management support intervention that included the following key elements: a general, open structure that leaves room for individual preferences and tailoring of support; a holistic approach encompassing medical, emotional, and social self-management challenges; promoting shared decision making between nurses and patients; and patient empowerment by supporting self-efficacy and intrinsic motivation
Been-Dahmen et al., 2018, the Netherlands	To investigate self-management challenges and support needs experienced by KT recipients	Qualitative, descriptive study	41 KT patients	Participants wished to receive disease specific knowledge and instruction, share personal experiences with fellow patients, share and discuss not only medical but also emotional and social issues with nurses and wanted to be encouraged through positive feedback

TABLE 1 (Continued)

Author, year, location	Purpose	Research design	Sample	Key related findings
Bell & Ross, 2002, USA	To review practice issues in KT process	State of knowledge review	Data from previous studies	Educating patients regarding treatment options is an integral part of nephrology nursing. In all practice settings the nurse should advocate for patients interested in transplantation. Close communication between the nephrology providers and the transplant centres is key to success. An understanding of the general indications, exclusion criteria, and customary evaluation protocol for renal transplantation helps ensure appropriate referrals, efficient evaluations and better patient outcomes
Bennett & Hany, 2009, Indonesia	To explore the healthcare literature to identify barriers to KT in particular in relation to Indonesia	Literature review	Data from 6 previous studies	There are many complex socio-economic, geographical, legal, cultural and religious factors that contribute to low KT rates. Nurses, can play a role in overcoming some barriers. Community education programmes, improving their own education levels and by increasing empowerment in nursing may contribute to improved KT rates
Bissonnette et al., 2013, Canada	To evaluate the effectiveness of an advanced practice nurse-led interprofessional collaborative chronic care approach, guided by the chronic care model, on achieving clinical targets for renal transplant patients with CKD	Quantitative, case-control study	180 KT patients (61 in the experimental group and 119 in the control group)	The results of this study indicated that interprofessional, advanced practice nurse led, collaborative care approach increase the proportion of patients that achieved targeted clinical outcomes and received recommended processes of care. The intervention included: (i) use of evidence-based standards of care in the form of medical directives to guide and outline the scope of practice for the advanced practice nurse; (ii) a policy outlining the expectations and roles of each member of the interprofessional team; (iii) a collaborative practice environment supported by weekly interprofessional patient rounds; (iv) advanced practice nurse and nephrologist case review on the day of the patient clinic visit; and (v) a structured approach to monitoring and follow-up of clinic patients based on practice guidelines for CKD and renal transplant patient management. The evaluation showed that patients exposed to the advanced practice nurse-led clinic were more likely to attain targeted clinical outcomes, participate in discussions about end-stage renal disease treatment options and have fewer emergency room visits and hospital admissions
Bloom & Crutchlow, 2008, USA	To review the state of knowledge regarding the epidemiology, pathogenesis, and health implications of transplant-associated hyperglycemia	State of knowledge review	N/A	Prediabetic states and their identification provides an opportunity to counsel patients and to initiate appropriate lifestyle changes. Lifestyle intervention should promote dietary carbohydrate moderation and exercise in all recipients and weight loss in those who are overweight
Brown et al., 2011, UK	To determine the effect of changing and expanding access to information on rate and type of donation	Quantitative, descriptive and retrospective study	400 pre-KT patients	Pre-dialysis education programme is a important element of care for patients with ESRD. The aim of such a programme is to decrease the mystique surrounding treatment, provide patients with objective information about ESRD treatment options, help them make suitable choices, and promote self-care. Where it is a common belief among renal professionals that self-care therapies are under-used, pre-emptive transplantation is similarly underutilised. Transplant educational seminars increase in the proportion of pre-emptive transplants and the proportion of non-related donors



TABLE 1 (Continued)

Author, year, location	Purpose	Research design	Sample	Key related findings
Buhin & Curran, 2012, UK	To give an overview of the various socio-psychological components, blood tests and diagnostic tests needed in the transplant work-up process	Literature review	Data from UK Clinical Practice Guidelines	Effective coordination before any transplantation is vital and the role of transplant coordinator nurse is a key in getting transplant recipients ready. Teamwork, and prompt, efficient communication with the multidisciplinary team coupled with the cooperation of the patient is the key to the successful and timely work-up
Burns et al., 2019, Australia	To explore possible reasons for a demonstrated a higher rate of people being listed as suitable for transplant in a non-transplanting unit	Quantitative, descriptive and prospective study	274 haemodialysis patients	The most common reasons for people not to be listed were malignancy, obesity and cardiovascular disease. Barriers to assessment for renal transplant suitability are not only determined by physical comorbidities, but also by the patient's geographical access to medical facilities and the availability of guidance through the process of assessment by a specialist Renal Transplant Coordinator nurse
Chan Chun Kong et al., 2020, Canada	To determine the incidence, risk factors, and outcomes of both pre-transplant diabetes mellitus and new onset of diabetes after transplant patients	Quantitative, descriptive and retrospective study	132 KT patients	Important risk factors for "new onset of diabetes after transplant" were age and previous peritoneal dialysis, and a risk factor for poor glycaemic control was type of donor. Our study adds to the body of knowledge for these risk factors, and their recognition in this patient population may be useful to prevent a deterioration in glycaemic control. Overall, early identification of impaired glycaemic control will allow implementation of lifestyle modifications, adjustments of immunosuppressive, and initiation of glucose-lowering therapies as indicated, thereby preventing progression of diabetes and associated complications
Chen et al., 2007, Taiwan	To examine the influence of symptom distress, social support and demographic characteristics on QoL in renal transplant recipients	Quantitative, descriptive and retrospective study	113 KT patients	QoL in renal transplant patients was significantly related to age, employment status, household income, symptom severity, symptom frequency, and social support. Symptom distress was negatively related to QoL in renal transplant recipients. Medical personnel can enhance QoL by increasing patients' social support. This includes providing support by giving patients the information they need to understand their disease and treatment, and teaching/assisting family members in giving support. Medical personnel also can actively implement strategies to decrease symptom distress. Implications for renal transplant teams who care for transplant recipients and their families are as follows: (1) Recruit a transplant Clinical Nurse Specialist; (2) Provide financial support to renal transplant recipients who have low household incomes
Corrêa et al., 2013, Brazil	To identify the complications in patients that have received a renal transplant	Quantitative, descriptive and retrospective study	179 KT patients	There is a need for a multidisciplinary team to rethink their practices with respect to length of stay, invasive procedures and care with patients that are smokers, because these situations demonstrated to directly affect the recovery of patients and the survival of the graft

TABLE 1 (Continued)

Author, year, location	Purpose	Research design	Sample	Key related findings
de Oliveira & Soares, 2016, Brazil	To verify the patient's pathway to the surgical procedure; find out the guidance provided in the mediate preoperative period; and discuss the importance of nurse/patient communication	Qualitative, descriptive study	4 nurses and 5 resident nurses	It is a must to adapt nurse's actions to the horizons available in terms of human and material resources, so that they can appreciate emotional aspects and understanding on the other during the manifestation of interest and the feasibility of performing a KT as prepared as possible. There is a need to provide measures that fully inform and involve clients with regard to preparation for renal transplantation, based on the entire preoperative period, significantly contributing to reduce risks arising from the lack of or the fragmentation of communication between a nurse and each patient. It is still necessary to rethink the nurse's role as an educator involved not only in clarifying, but also in interpreting what the individual wants, adapting her/his working reality to the routine of nursing practice, advising a patient with enthusiasm to self-care
Demet et al., 2018, Turkey	To present ways to increase quality of care after transplanted and outlined standardised nursing care to reduce work and time loads by ensuring integrative and systematic approaches of nurses	Case Report study	1 KT patient	After KT, patients can have a number of issues diagnosed by the nursing staff, and appropriate nursing procedures must be made. These are: Bleeding risk; Acute pain; Risk of inefficiency in respiratory functions; Infection risks; Risk of rejection; Risk of deterioration in liquid-electrolyte balance; and Training subjects for patients, families, and relatives
Diaz & O'Connor, 2011, USA	To identify the management and potential preventive strategies for perioperative cardiovascular and renal complications among solid-organ transplant recipients	Literature review	Data from 67 previous studies	Meticulous attention to all aspects of the transplant process, including operative events and early allograft function, is necessary to minimise morbidity
Ferreira et al., 2014, Brazil	Identify the nursing diagnoses applied to KT recipients at a Brazilian hospital	Quantitative, descriptive and retrospective study	165 KT patients	Six nursing diagnoses were most prevalent among KT recipients in the postoperative period: risk for infection, impaired urinary elimination, ineffective protection, bathing self-care deficit, impaired tissue integrity, and acute pain
Fisher, 2006, USA	To help clinicians gain a better clinical picture and assessment of people who choose to participate as kidney recipients by using a clinical interview protocol	Literature review	Data from previous studies	Motivation, compliance, and ongoing mental health issues need to be considered in light of a person's right to self-determination and directionality of his or her health. Guidelines should be used with respect to the potential donor's cultural, ethnic, and religious background. Clinical social workers play a vital role in the care and psychosocial evaluation of potential kidney recipients and donors
Ghadami et al., 2012, Iran	To define patients' experiences from their received education about the process of KT	Qualitative, descriptive study	18 KT patients	Patients' did not receive adequate knowledge about KT process. This issue reveals an unstructured and uncoordinated education given to KT patients by health team members during KT process. With regard to high motivation of the patients, designing such educational programme based on self-management in the process of KT for these recipients is essential. Nurses in their educational role can enable the patients through educating them about problem solving methods and selection of the best solution to preserve their transplanted kidney and consider renal transplant recipient self-management as their first priority towards these patients



TABLE 1 (Continued)

Author, year, location	Purpose	Research design	Sample	Key related findings
Gheith et al., 2008, Egypt	To identify compliance of KT patients to the recommended lifestyle behaviours	Quantitative, descriptive and prospective study	100 KT patients	The results found that patients have good compliance with immunosuppressive agents with partial degree to other lifestyle behaviours. The conclusion is that intensive assessment of patients before and after transplantation should be done to identify their needs which help to improve their compliance. The nurse must provide the KT patients with the necessary knowledge of the recommended lifestyle behaviours. Variables evaluated: Adherence to immunosuppressive agents and other medications (antihypertensive, antidiabetic or vitamins); Adherence to recommended diets (low-fat diet, high-calcium diet, low-carbohydrate diet or low-salt diet); Compliance with Infection Prevention (daily bathing, avoid overcrowded transportation, avoid infected persons in the family, teeth brushing, menstrual hygiene and perinatal hygiene of women); Practice daily exercise (walking)
Grijota-Camino et al., 2021, Spain	To assess treatment compliance, treatment safety, and tuberculosis development as markers of the effectiveness of this programme in daily clinical practice	Quantitative, descriptive and retrospective study	1568 pre-KT patients	Specialist nurses evaluated all patients. Prior to visits, they reviewed medical histories, and at the first visit, they completed a clinical epidemiological survey about TB symptoms and risk factors for infection. Our experience provides important evidence on the feasibility of preventive therapy for TB before KT when delivered as part of a comprehensive nurse-led programme
Haugen et al., 2021, USA	To evaluate the inclusion of inflammatory biomarkers with traditional physical frailty phenotype components among KT candidates and recipients	Quantitative, descriptive and prospective study	1154 KT candidates and recipients	Measuring the physical frailty components is sufficient and there is no added predictive value of also measuring inflammatory markers
Hedayati et al., 2017, Iran	To assess adherence to immunosuppressive therapy and lifestyle recommendations along with some related factors among KT patients	Quantitative, descriptive and retrospective study	183 KT patients	After KT, adherence to lifestyle recommendations (taking medication, preventing of infection, self-monitoring of rejection signs, referring to outpatient clinics, healthy eating, physical exercise, and sun protection) is critical for a positive prognosis. 58% of patients showed good adherence to medications intake and others were partially adherent. 79% had partial adherence to the prevention of infection. Less than 10% of the participants with transplant rejection symptoms controlled rejection symptoms through measurement of weight and daily fluid intake and output, body temperature, and feeling the transplant area. The adherence of patients to the prevention of cardiovascular disease was relative. Only 11% performed regular exercise. 41% had excess weight and 8% were obese
Hollisaaz et al., 2007, Iran	To assess the correlation between the severity of pain and health care utilisation among KT patients	Quantitative, descriptive and retrospective study	122 KT patients	The severity of pain (assessed using the SF-36 Bodily Pain Scale) seems to increase the amount of health care use among KT patients. To minimise associated costs, appropriate pain rehabilitation programmes are suggested

TABLE 1 (Continued)

Author, year, location	Purpose	Research design	Sample	Key related findings
Li et al., 2020, China	To provide a valuable reference for the continuous care of transplant patients discharged from hospitals	Quantitative, descriptive and retrospective study	100 KT patients	The patient's knowledge about self-monitoring, correct medication, reasonable diet, and proper exercise, along with their self-care abilities, were significantly improved after the implementation of transitional care. Transitional care can improve the patient's disease knowledge and self-care ability and thus increase the patient's QoL
Lipford et al., 2018, USA	To investigate dialysis staff perceptions of renal transplant disparities in the Southeastern United States	Mixed methods study	509 dialysis staff	These findings suggest that dialysis facilities should educate staff on existing renal transplantation disparities, particularly gender disparities, and collaboratively work with transplant facilities to develop strategies to actively address modifiable patient barriers for transplant
Lockwood et al., 2017, USA	To quantify patient-reported barriers to completing the pre KT evaluation and to identify predictors of successful evaluation completion	Quantitative, descriptive and prospective study	100 pre-KT patients	Patient reported barriers to completing the pre KT evaluation were identified and grouped these barriers into 5 categories: communication-related barriers (32%); physical health-related barriers (25%); socioeconomic-related barriers (20%); psychosocial related barriers (14%); and access-related barriers (10%)
Low et al., 2015, Australia	To assess the effectiveness of interventions to improve medication adherence in adult KT	Literature review	Data from 12 previous studies	The findings of this review suggest an intervention targeting behavioural risk factors or a combination of behavioural, educational and emotional changes is effective in enhancing medication adherence. Effectiveness of an intervention may be further enhanced if patients are encouraged to participate in the development process
Luchsinger & Zimbren, 2020, USA	To assess the current literature on treatment for addiction transplant candidates and recipients	Literature review	Data from 39 previous studies	Treatment of addictive disorders for transplant patients is promising; however, there is important need for further research to explore effective and innovative interventions in this population. When designing an addiction intervention in transplantation patients one must consider the target clinical population, the therapeutic intervention to be used, the clinical setting in which the intervention will be implemented and the timing of the intervention in relation to the transplantation events
Luk, 2004, Hong Kong	To explore HRQoL of Chinese KT patients in Hong Kong	Qualitative, descriptive study	34 KT patients	Consistent with other studies, participants were unsure of exactly what they had been told about before the operation. Those with a strong preference for seeking and receiving health-related information show a statistically significant improvement in emotional well-being and QoL. Participants might benefit from early counselling on diet and exercise. The earlier problems are identified, the more proactive measures can be undertaken to reduce statistically significant morbidity
McKinney et al., 2021, USA	To characterise the barriers and facilitators they experience in supporting transplant candidates, and to refine the KT Candidate Support framework, used for guiding interventions that enable more effective support to improve clinical and patient-centred outcomes	Qualitative, descriptive study	5 focus groups composed by 23 KT family members	Friends and family members of KT candidates feel that the impact of kidney disease affects the whole family, and express a desire to be an integrated and effective part of the care team. Their ability to help their patients is inhibited by several potentially modifiable barriers, including inadequate knowledge, difficulty communicating with patients, need for guidance about how to be involved, and resistance from patients to their involvement due to a feeling of burden

TABLE 1 (Continued)

Author, year, location	Purpose	Research design	Sample	Key related findings
Mollazadeh & Hemmati Maslakpak, 2018, Iran	To determine the effect of Teach-back training on self-management in KT recipients	Randomised, controlled trial	84 KT patients	Educational content was implemented with Teach-back training method for each patient in the intervention group in at least 5 sessions of 60 minutes. Each patient was evaluated using self-management educational needs, self-monitoring and self-care behaviour in daily living, early detecting and coping with abnormalities after KT, stress management and non-categorised cases. The patient was then asked to express what was described in his or her own words so that we could make sure she/he understood. The researchers evaluated the cases not understood by the patient, and if the client cited more than 75% of the correct answers, it meant that the training was effective; otherwise, the process of repeating the material continued. These training sessions were conducted for 3 months
Muehrer, 2009, USA	To evaluate the literature specific to sexuality after kidney and kidney/pancreas transplant, identify gaps in the literature, and suggest directions for future research	Literature review	Data from 15 previous studies	There are several factors that may affect sexuality and sexual functioning among transplant recipients including comorbid chronic illnesses, pre-transplant dialysis, and medication side effects. Numerous studies have shown that problems with sexual functioning are prevalent in the transplant population, and problems with sexuality have a strong negative association with QoL and life satisfaction. Because improving QoL and sexual health promotion are important goals of nursing and medical care, the sexual needs and concerns of transplant recipients are important issues to address
Obadan et al., 2017, USA	To understand the relationship(s) between CKD self-awareness and diagnosed CKD	Quantitative, descriptive and retrospective study	345 adults with type 2 diabetes	CKD awareness was found to be lower than diagnosed CKD rates. Factors associated with awareness include race, educational status and cardiovascular disease. Targeted strategies to increase CKD awareness may lead to improved health outcomes
Ortiz Pastelero & Martínez Lara, 2021, Spain	To determine the altered physical, psychological, and social components of HRQoL maintained by KT recipients as a way to improve quality of care through the most appropriate nursing interventions	Literature review	Data from 30 previous studies	The factors that have presented a negative association with HRQoL have been female gender, sedentary lifestyle, low income, side effects of immunosuppressive medication, the appearance of complications, the presence of comorbidity, negative emotions and body dissatisfaction. Among the functions of the nursing professionals during the clinical follow-up of the KT patient, the prevention of infections, attention to potential signs of rejection, health education, emotional counselling, sleep hygiene measures, enhancement of self-esteem and body image, interventions for the best therapeutic adherence and help for self-management
Ozdemir Koken et al., 2019, Turkey	To determine the nursing diagnoses and interventions applied to KT recipients	Quantitative, descriptive and retrospective study	Data for nursing care plans of 100 KT recipients	The most commonly used nursing diagnoses in the care of KT recipients were: risk of infection; deficient knowledge; risk for bleeding; acute pain; and risk for falls. The most common interventions were: examining the infection-related laboratory findings; limiting the number of visitors; and setting aside time for patient questions and concerns

TABLE 1 (Continued)

Author, year, location	Purpose	Research design	Sample	Key related findings
Potluri & Hou, 2010, USA	To discuss the impact of increased body mass index on transplant and patient survival, risk factors for the development of obesity post-transplant, and available pharmacologic and surgical treatment options and their effect on transplant function	Literature review	Data from previous studies	Obesity at the time of transplant is a major risk factor for complications post KT, and weight gain post KT is a frequent complication, increasing the risk of obesity-related complications in previously normal-weight people
Quint et al., 2021, the Netherlands	To assess the quality of evidence of the included studies, determine the prevalence of frailty among KT candidates, and evaluate the relationship between frailty and associated patient characteristics and outcomes after KT	Literature review	Data from 14 previous studies	Prevalence of preoperative frailty in KT recipients was 17.1%. The presence of frailty is associated with lower rates of pre-emptive transplantation, older recipient age, higher rates of delayed graft function, and longer length of stay. This information is deemed pivotal to implement programmes to tackle and decrease the rate of frailty among this group of patients
Ribeiro et al., 2021, Brazil	To identify feelings, experiences, and expectations of KT patients, generated from the diagnosis of CKD until the post-transplant period, highlighting the challenges for nurses to incorporate individualised care to cope throughout the disease process	Qualitative, descriptive study	7 KT patients	Nurses play an important role in the follow-up of KT, through implementation of actions aimed at integral care and valorization of connections as a strategy that brings solutions and favours the totality of care. The use of communication management skills and individualised health care strategies by nurses can help patients, in different psychological conditions, to reduce tensions, speed up their rehabilitation, improve how to cope with the disease, increase adherence to treatment and mitigate negative feelings
Veater & East, 2016, UK	To critically examine recent research concerning the prevalence, detection and impact of depression among KT recipients, leading to recommendations for practice improvement	Literature review	Data from 12 previous studies	The review confirmed that KT recipients experience less depression than those who receive other renal replacement therapies. Routine screening for depression is highly recommended yet rarely seen in practice
Weng et al., 2017, Taiwan	To determine the factors related to immunosuppressant therapy adherence in KT recipients in Taiwan	Quantitative, descriptive and retrospective study	145 KT patients	Gender (male), low income, high school or college education, years after transplantation and concerns about medication taking were negatively associated with adherence
Wilden, 2008, Australia	To provide the nephrology nurse with an overview of KT so they can support their clients who are currently undergoing preparation for KT	State of knowledge review	Data from previous studies	The dialysis nurse is placed in the ideal position to help enable and prepare renal patients for transplantation. The most important role of the nephrology nurse in this process is to help maintain a potential transplant recipient in a healthy condition by providing efficient and effective dialysis. However, it may also involve organising tests and assessments for the patient and providing education. The transplant workup process involves much more than ensuring the patient is fit for surgery. It is about ongoing assessment of the risks and benefits of transplantation to the patient so that they can have the best health outcomes possible

TABLE 1 (Continued)

Author, year, location	Purpose	Research design	Sample	Key related findings
Williams et al., 2014, Australia	To review the literature on non-adherence to immunosuppressive medicines in KT	Literature review	Data from 6 previous studies	Few investigations have been conducted to enhance medicine adherence in KT recipients. Strategies that may improve adherence include pharmacist-led interventions (incorporating counselling, medicine reviews and nephrologist liaison) and nurse-led interventions (involving collaboratively working with recipients to understand their routines and offering solutions to improve adherence). Strategies that have shown to have limited effectiveness include supplying medicines free of charge and providing feedback on a participant's medicine adherence without any educational or behavioural interventions.
Williams et al., 2016, Australia	To obtain an understanding of how health professionals support the KT patient to take their medications as prescribed long term	Qualitative, descriptive study	5 focus groups with KT professionals	Although medication adherence was a collective responsibility, communication was often one-way chiefly as a result of staffing and time constraints, hindering effective partnerships necessary for medication adherence. Expert skills in communication and adherence counselling are necessary to identify barriers affecting medication adherence. Patients need to be systematically screened, prepared and supported long-term within an accommodating healthcare system for the reality of caring for their transplanted kidney
Yngman-Uhlin et al., 2016, Sweden	To explore the experiences of haemodialysis patients who are waiting for a KT	Qualitative, descriptive study	8 haemodialysis patients	Patients in haemodialysis treatment who are waiting for a renal transplant experience uncertainty and are affected both physically and psychologically. These patients need more support during the pretransplantation period to feel prepared. The guidelines state that all pretransplant patients must receive detailed information about estimated waiting time, the transplantation procedure, and complications due to immunosuppressive treatment. This includes being mentally prepared for a dialysis-free life and for returning to a more normal life without dialysis treatment and with reduced self-care responsibilities. Even though renal transplantation has a markedly positive outcome with respect to physical conditions and patients have decreased self-care demands compared to patients in dialysis treatment, a renal transplant is a life-altering experience. The expectations of patients have been described as being too high and one sided; this is attributed to positive messages from the media and also from health care personnel. Support in the transition from being a waiting pretransplant patient in dialysis to being a post-transplant patient is lacking. This area requires more attention, particularly since a recently published longitudinal study showed associations between early post-transplant HRQoL plus kidney function and long-term patient outcome. A pretransplant education programme to prevent medical and psychosocial issues that could affect patients' post-transplant status is highly recommended
You et al., 2008, South Korea	To show that nursing intervention using the DanJeon Breathing Exercise Programme (DJBEP) improved the QoL of recipients after KT	Quantitative, quasi-experimental study	29 KT patients (15 experimental group and 14 control group)	The exercise programme improves the muscle strength and flexibility of KT patients. The study included a control group without intervention, and a 9-week exercise programme taking 60 minutes per one round, for the intervention group. The assessment was reviewed every 2 weeks. By blood chemistry and physical strength testing, the data of the experimental group compared with the control group revealed enhanced results of serum cholesterol, serum creatinine, grip, back muscular strength, the sit-and-reach and the level of stress

on increasing self-awareness of CKD and motivation to attain clinically beneficial goals.

The review also suggests that the prevalence of depression among individuals with CKD is high, while individuals on the waiting list for KT and post KT have a lower prevalence of depression than the remaining CKD population. Despite this, depression is still a major problem that needs to be identified and addressed. It is essential to assess emotional disturbances, such as depression, in order to enable early intervention (Veater & East, 2016). Furthermore, poorer health-related quality of life (HRQoL) is also common in this population, especially among females, people with associated comorbidities, the older people, individuals with sedentary lifestyles, people with low socioeconomic status and individuals with comorbidities resulting from pre-existing conditions and/or treatments (Chen et al., 2007; Fisher, 2006; Ortiz Pastelero & Martínez Lara, 2021). Pain (Hollisaaz et al., 2007), sexual dysfunction (Muehrer, 2009) and poor physical condition (You et al., 2008) are identified as the main factors negatively affecting HRQoL in this review, which also highlights the potential actions that nurses can take to prevent complications and ensure proper follow-up of this population using education and counselling in all their facets (Ortiz Pastelero & Martínez Lara, 2021; You et al., 2008; Chen et al., 2007).

### 3.3 | Education and adherence needs

Regarding the educational needs of individuals with CKD who are candidates for KT, the review presents a general consensus on the need for care plans focusing on training and empowerment of certain characteristics among this population in order to enhance the benefits of KT treatment (Aghakhani et al., 2021; Brown et al., 2011; Buahin & Curran, 2012). A number of reports point out that these care plans are often unavailable or are not systematically provided to the whole population with the objectives described (Ghadami et al., 2012; Bennett & Hany, 2009; Luk, 2004), and that these educational plans should be led by expert advanced practice nurses (Aghakhani et al., 2021; Beck et al., 2019; Ghadami et al., 2012; Li et al., 2020; Luk, 2004). The review notes that the following issues should be considered: disease management and treatment (including symptoms, medication, renal replacement therapies, self-care strategies and participation in decision-making); physical exercise; diet; adherence to treatment; and emotions and social relationships (Aghakhani et al., 2021; Akyolcu, 2002; Beck et al., 2019; Brown et al., 2011; Ghadami et al., 2012; Li et al., 2020; Luk, 2004; Mollazadeh & Hemmati Maslakpak, 2018).

The educational processes described in the review are essential to ensure proper adherence to KT treatment (Hedayati et al., 2017). In the population under review, adherence does not only refer to pharmacological treatment but also to 'the transplant lifestyle', which involves infection prevention; self-monitoring of signs of rejection; proper follow-up in KT consultations; healthy eating; physical exercise; and cancer prevention measures (Gheith et al., 2008; Hedayati et al., 2017). In addition, factors that may result in poor adherence

should be considered and assessed: being male; prior non-compliant behaviours; emotional disturbances; low income; educational factors limiting understanding of the importance of good adherence; and high educational factors that may place patients in a position of superiority vis-à-vis the healthcare team (Low et al., 2015; Weng et al., 2017).

The following aspects linked to adherence are crucial: involvement of interdisciplinary healthcare teams working towards a common goal (Bissonnette et al., 2013; Williams et al., 2014, 2016), and involvement of individuals' family circles, who are the primary source of support in improving outcomes (McKinney et al., 2021).

### 3.4 | Nurses' role

As described in each theme, nurses' roles and activities are the main sources for assessing and addressing the identified needs with the goal of improving outcomes in KT treatment and providing coordination and consistency in the KT assessment process (Beck et al., 2019; Bell & Ross, 2002; Ribeiro et al., 2021; Wilden, 2008). Their role is crucial as it can involve educational strategies to encourage referrals to transplantation services, resulting in higher identification rates of patients who are well-informed and interested in this treatment option (Bell & Ross, 2002; de Oliveira & Soares, 2016). After a KT, the most prevalent nursing diagnoses are: Impaired skin integrity; Risk for infection; Deficient knowledge; Risk for bleeding; Acute pain; Risk for ineffective breathing pattern; Risk for imbalanced fluid volume; Risk for electrolyte imbalance; Impaired urinary elimination; Ineffective protection; Bathing self-care deficit; and Risk for adult falls (Demet et al., 2018; Ferreira et al., 2014; Ozdemir Koken et al., 2019). This information is highly relevant to the process of assessing individuals as potential KT candidates so that early prevention and educational interventions can be initiated before the KT process begins (Lipford et al., 2018; Yngman-Uhlin et al., 2016). There are currently no reports on prevalent nursing diagnoses used in assessing KT candidates.

Awareness among nurses of patients' social determinants in all spheres of their lives is vital when it comes to implementing interventions and proposing care plans tailored to their particular needs (Bissonnette et al., 2013; Yngman-Uhlin et al., 2016).

In addition, it is not only necessary to explore the figure of the nurse, who is the primary coordinator in this process, but also to consider all the parties involved in the interdisciplinary healthcare team and expert patients, mentors and patients' families and friends (Been-Dahmen et al., 2018; McKinney et al., 2021), in order to ensure higher-quality outcomes. In the reviewed literature, there is a gap that does not allow a deeper understanding of the nurses' role benefits in the care of people who are candidates for KT or their competency development within the health team.

Based on all the results presented, Table 2 shows the aspects to be considered by nurses when assessing KT candidates, presented by categories and subcategories. This analysis has allowed the elaboration of a standardised care map, so the nurses can apply



Physical needs	<ul style="list-style-type: none"> <li>• Personal and family physical comorbidities</li> <li>• Sex</li> <li>• Age</li> <li>• Dependency and frailty</li> <li>• Body weight and Nutrition</li> <li>• Drug use</li> <li>• Place of residence</li> <li>• Structural and socioeconomic determinants</li> </ul>
Psychological and quality of life needs	<ul style="list-style-type: none"> <li>• Personal and family mental comorbidities</li> <li>• Pain</li> <li>• Self-perception</li> <li>• Quality of life</li> </ul>
Education and adherence needs	<ul style="list-style-type: none"> <li>• History of prior non-compliance</li> <li>• Gender</li> <li>• Educational level</li> <li>• Motivation</li> <li>• Self-care</li> <li>• Family support</li> </ul>

**TABLE 2** Summary of nursing assessment categories to be considered in KT candidates.

it in the access to KT field (Table 3; Bulechek et al., 2013; Moorhead et al., 2018; NANDA International, 2019).

## 4 | DISCUSSION

The findings of this review demonstrate the need to assess physical, psychosocial and adherence aspects in KT candidates. There are clear limitations to accessing KT programmes and ample published evidence from other contexts shows that the role of the nurse can contribute to substantial improvements in outcomes before, during and after KT (Gibbons et al., 2021; Kripalani et al., 2014; Mahmud et al., 2019). This review also provides an understanding of the role of the nurse as the coordinating axis in care plans, whose main objective should be to increase adherence to a healthy lifestyle that prevents patients from being excluded from KT and suffering from KT-related complications. Thus, following this review, we have managed to put forward a standard nursing care process for use with individuals being assessed for KT (Table 3).

With regard to the results relating to these care plans, different methodologies are used and there is substantial variation in the assessment resources available to support the nursing care process with KT candidates. Previous studies have reported that the resources available for the nursing process are not universally accepted and are underutilised in clinical practice (Gazarian et al., 2019; Othman et al., 2019). The nursing process is a systematic method consisting of a number of phases (assessment, diagnosis, planning, implementation and evaluation) that help nurses deliver effective, evidence-based, humanised care focused on achieving desired outcomes. The use of the nursing process helps nurses create care plans that are centred on human responses, treat people as a whole and understand them as unique individuals in need of personalised care rather than condition-focused care (Potter et al., 2015). This review has also shown that there is no protocolised nursing care plan for KT candidates which, once implemented and monitored, would make it possible to consolidate

assessments as a way of improving the agreed interventions and objectives. This is how the literature refers to the benefits of the nursing role in this particular area, but there is no standardised system for doing so using the nursing process (Johnson et al., 2018). The proposed nursing process (Table 3) is sufficiently broad and flexible to be incorporated into other contexts. This is because it has been created following a review of international literature on the study subject. However, only empirical research will be able to demonstrate its applicability in different contexts and, specifically, in Spain, where it was first envisioned.

It is also important to note that a number of studies have reported that the role of the nurse care coordinator for individuals with CKD encourages access to KT, increases the chances of early KT before starting dialysis and improves equity in referrals to transplantation units (Fishbane et al., 2017; Patzer et al., 2017; Videloup, 2019). Educational interventions by dialysis nurses are also shown to significantly increase the level of compliance and adherence to treatment among individuals with CKD (Alikari et al., 2019; Gordon et al., 2016; Wang et al., 2018), thereby increasing the likelihood of maintaining required standards at the time of KT and completing the KT process successfully. Based on this, the standardisation of care plans and the incorporation of nurses to coordinate and direct these interventions are necessary in order to adapt them to the needs of the target population and measure the health outcomes achieved consistently and systematically. According to Patricia Benner's theory (Benner, 1984) and subsequent derived evidence (Fenton & Brykczynski, 1993; Tracy & O'Grady, 2019), the role of the transplant access nurse should be assumed by an expert advanced practice nurse. This new role demands a specific level of personalised care and the ability to coordinate complex care situations. Once again, empirical research should be able to demonstrate the working hypothesis arising from this review.

According to this review, current nursing knowledge and available clinical practice guidelines for the assessment of KT candidates (European Renal Best Practice Transplantation Guideline

TABLE 3 Nursing care map in the evaluation of kidney transplant candidates.

Nursing care map in the evaluation of kidney transplant candidates		Gender (1=M; 2=F; 3=Other; 999=Not revealed)	Date of birth (dd/mm/yy)	Country of birth	Education level (0=NO; 1=basic; 2=secondary; 3=university)	Religion	Reference center	Blood type (0=0; 1=A; 2=B; 3=AB)	KD etiology (1=UK; 2=DM; 3=GLM; 4=HBP; 5=PKR; 6=INF; 7=NAS; 8=Other)	Caregiver (0=No; 1=Yes)
Full name:										
Medical record number:										
DATE OF CONSULTATION (dd/mm/yy)										
CONSULTATION TYPE (in person / remote)										
Panel reactive antibody (PRA) (current and peak)										
Renal replacement therapy (1=ACKD; 2=CT; 3=HD; 4=PD; 5=KT)										
CURRENT DIALYSIS ACCESS (nAVF, pAVF, CVC)										
ESTIMATED GLOMERULAR FILTRATION RATE (ml/min)										
RESIDUAL URINE (ml)										
WEIGHT (Kg)										
HEIGHT (m)										
BODY MASS INDEX (kg/m <sup>2</sup> )										
TOXIC HABITS (0=No; 1=Yes)										
PHYSICAL ACTIVITY (0=<30min/day; 1=>30min/day)										
BARTHEL INDEX (n)										
LAWTON & BRODY SCALE (n)										
PROMIS GLOBAL HEALTH TEST (n)										
PROMIS-29 TEST (n)										
FRIED INDEX (n)										
FRAIL INDEX (n)										
<b>NANDA</b>		00182 - READINESS FOR ENHANCED SELF-CARE								
		DEFINITION. A pattern of performing activities for oneself to meet health-related goals, which can be strengthened.								
<b>NOC</b>		1857 - KNOWLEDGE: KIDNEY DISEASE MANAGEMENT								
		DEFINITION. Extent of understanding conveyed about kidney disease, its treatment, and the prevention of disease progression and complications.								
		RATING. No knowledge (1); Limited knowledge (2); Moderate knowledge (3); Substantial knowledge (4); Extensive knowledge (5)								
INDICATORS	185707 - Strategies to prevent complications									
	185713 - Strategies to increase resistance to infection									
	185714 - Strategies to maintain adequate nutrition									
	185720 - Role of laboratory tests for disease management									
	185721 - Recommended schedule for monitoring blood pressure									
	185722 - Importance of maintaining blood glucose level within target range									
	185724 - Medication therapeutic effects									
	185727 - Potential dangers of taking non-prescription medication									
	185728 - Importance of compliance with treatment regimen									
	185729 - Importance of adequate sleep									
	185734 - When to obtain assistance from a health professional									
	185735 - Available support groups									
	185736 - Available community resources									
	185737 - Benefits of disease management									
<b>NIC</b>		5606 - TEACHING: INDIVIDUAL								
		DEFINITION. Planning, implementation, and evaluation of teaching program designed to address a patients' particular needs								
ACTIVITIES	Establish rapport									
	Determine the patient's learning needs									
	Determine patient readiness to learn									
	Appraise the patient's educational level									
	Determine patient's motivation to learn specific information									
	Enhance the patient's readiness to learn, as appropriate									
	Identify learning objectives necessary to reach goals									
	Adjust instruction to facilitate learning, as appropriate									
	Provide an environment conducive to learning									
	Evaluate the patient's achievement of the stated objectives									
	Correct information misinterpretation, as appropriate									
	Provide time for the patient to ask questions and discuss concerns									
	Select new teaching methods or strategies, if previous ones were ineffective									
	Refer the patient to other specialists or agencies to meet the learning objectives, as appropriate									
Document the content presented, the written materials provided, and the patient's receptivity to and understanding of the information or patient behaviours that indicate learning, on the permanent medical record										
Include the family, as appropriate										
<b>NIC</b>		5602 - TEACHING: DISEASE PROCESS								
		DEFINITION. Assisting the patient to understand information related to a specific disease process								



## 4.1 | Implications for clinical practice and future research

Awareness of the scientific evidence available on the care needs of KT candidates and the main theoretical and methodological aspects considered in clinical nursing practice provides an insight into the complex management of this population. This body of knowledge is needed to ensure the high quality of nursing care and patient safety throughout the care process. The clinical impact of this knowledge, gathered in this review, makes it possible to construct a proposal for a standardised care map based on the scientific evidence available to date (Table 3). Future studies could use these results to explore the applicability of the instrument and analyse its content, suitability and nurses' level of satisfaction with its use. Empirical studies will also be needed to demonstrate the benefits of the role of the expert advanced practice nurse in caring for KT candidates.

## 4.2 | Study limitations

The main limitations of this study are directly linked to the study design. Given the statistically significant variability present in the different contexts reviewed, it was not possible to conduct a systematic review, which would have ensured greater rigour in the data analysed. Instead, a scoping review was carried out. At the same time, gaps have been identified in the literature that have not allowed a deeper analysis of the results and conclusions. Further studies with a narrower focus are needed to provide specific data on each of the aspects identified in this scoping review. The possibility of opening new lines of research on the role of nurses in access to KT also emerges from these gaps detected.

## 5 | CONCLUSIONS

Kidney transplantation has been shown to be the best treatment modality for individuals with chronic kidney disease, and a wide range of aspects must be considered for it to be a truly beneficial treatment option. A thorough understanding of the issues involved in the care of individuals assessed as KT candidates is essential for the success of this therapeutic option. This review has identified these aspects, which have been organised into a standardised care plan for application in clinical practice. This plan can be used to train nurses in the activities they need to perform to improve their care and empower the people with whom they work. The incorporation and integration of the evidence reported in this format can help establish nursing leadership roles and assess their impact on both the health system and individuals. Statistically significant methodological variability is present in different contexts, as summarised in this review, and further work is needed to reach a general consensus among the nursing community involved in access to renal transplantation.

## AUTHOR CONTRIBUTIONS

GP-R, PG and VM-F made substantial contributions to the review conception and design. AB-P, DG-F and DR-P were involved in drafting the manuscript and revising it critically for important intellectual content. All authors read and approved the final manuscript. GP-R takes responsibility for the paper as a whole.

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## CONFLICT OF INTEREST STATEMENT

The study is part of the first author's doctoral thesis in the Doctor of Nursing and Health Programme at the University of Barcelona.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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