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Shared Decision-Making in Choosing Dialysis Modalities for Patients With Chronic Kidney Disease: An Evolutionary Concept Analysis

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ABSTRACT

The concept of shared decision-making, which respects the autonomy of patients with chronic kidney disease in the process of choosing dialysis modalities, has been emphasized. Studies clearly defining the process of selecting dialysis methods for chronic kidney disease patients remain limited. Thus, this study aimed to conduct a Rodgers' evolutionary concept analysis of shared decision-making in choosing dialysis modalities among patients with chronic kidney disease. A comprehensive literature review was conducted using data from six electronic databases from 2013 to 2024. In total, 36 papers were included in this analysis. We found the seven key attributes of shared decision-making in dialysis modalities: "Setting goals for treatment sustainability and life after treatment," "Building a trusting and respectful relationship," "Developing a collaborative partnership," "Effective patient–doctor communication," "Choosing the right dialysis treatment options," "Making personalized and informed decisions" and "Voluntary participation and interactive process." Our knowledge can promote patient-centered communication and contribute to the development of tailored interventions for patients with chronic kidney disease and their family caregivers.

Trial Registration: (PROSPERO) CRD42023453585 (<https://www.crd.york.ac.uk/prospero/>)

1 | Introduction

Chronic kidney disease (CKD) is characterized by a progressive loss of kidney function, persisting for 3 months or more (Evans et al. 2022). Diabetes mellitus and hypertension are the most common causes of CKD (Francis et al. 2024). There are five stages of CKD, each based on the glomerular filtration rate, which measures how well the kidneys filter blood (Sugawara et al. 2024). CKD stage 5 refers to end-stage renal disease or kidney failure (Evans et al. 2022). Chronic kidney disease (CKD), affecting approximately 13% of the global population, is a complex condition with a progressive nature that lacks a definitive cure and poses a substantial challenge to healthcare systems worldwide (Evans et al. 2022; Kalantar-Zadeh et al. 2021). Its

profound impact on global health as a major contributor to morbidity and mortality underscores the urgent need for effective management strategies (Bikbov et al. 2020).

Patients with CKD typically discover their condition through biochemical parameters, such as serum creatinine, estimated GFR, and urine albumin-to-creatinine ratio (Borg et al. 2023). As CKD progresses to stages 4 and 5, patients must decide on renal replacement therapies such as dialysis or transplantation (Chandaran et al. 2021; Schellartz et al. 2021). The two primary dialysis modalities are hemodialysis, which uses a machine to filter blood, and peritoneal dialysis, which uses the patient's abdominal lining as a natural filter (Elendu et al. 2023).

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Summary

- The choice of dialysis modality should reflect the values and goals of patients with chronic kidney disease and their families, and shared decision-making can support better decision making.
- The concept of shared decision-making has shifted from focusing on information sharing to emphasizing partnership and collaboration among patients, families, and healthcare providers in dialysis care.
- The seven key attributes of shared decision-making in dialysis care are interconnected and cyclical, interacting with each other to facilitate better decision-making processes.

Patients often experience uncertainty and conflict when deciding between hemodialysis and peritoneal dialysis because of the advantages and disadvantages associated with each treatment option (Chen et al. 2018; DePasquale et al. 2022). Additionally, many patients feel disempowered because their choices are often influenced by healthcare providers rather than being part of a comprehensive decision-making process (Dahm et al. 2024). To address this issue, it is essential to prioritize patient involvement and adopt an approach that aligns treatment decisions with individual goals (Murphy et al. 2021).

Shared decision-making (SDM) respects patient autonomy by treating them as equal partners and supporting them in making voluntary and informed decisions regarding their care (Amir et al. 2021). The term “shared decision-making” was initially introduced in a 1972 report on medical ethics by Robert Veatch (Veatch 1972). Growing attention to patient-centered care and increasing acknowledgment of patient autonomy in healthcare interactions have advanced patient rights and awareness. However, challenges persist for patients in assuming their roles in SDM (Shafir and Rosenthal 2012). In practice, SDM begins by determining the nature of the problematic situation a patient is facing (Montori et al. 2023). SDM in chronic conditions differs from that in acute settings as it allows for revisiting and modifying decisions over time, requiring greater patient involvement and offering a longer decision-making window (Gionfriddo et al. 2014; Bekker et al. 2023).

A clear definition of the SDM concept is essential for ongoing nursing and research efforts, as it forms the basis for theory development and ensures precise understanding through concept analysis (Walker and Avant 2005). A well-defined SDM framework clarifies the role of nurses in patient-centered care, facilitates communication, and ensures treatment decisions align with patient values (Abu Hatoum and Sperling 2024). In the complex chronic care setting of advanced CKD, where patients often face multiple comorbidities, functional impairments, and frailty near the end of life, SDM is recognized as a fundamental patient right, ensuring that individuals with CKD are actively involved in decisions about their care. By aligning treatment choices with personal values and priorities, SDM can enhance patient empowerment, satisfaction, and health outcomes (Campbell-Montalvo et al. 2022; Frazier et al. 2022).

Given its dynamic nature, SDM has evolved over time, necessitating continuous analyses to assess its applicability in diverse healthcare contexts, including CKD (Aoki 2020). Although SDM has been extensively analyzed in stroke and cardiovascular diseases (Armstrong 2017; Dennison Himmelfarb et al. 2023), its role in dialysis modality selection remains insufficiently explored. Patients with CKD face a critical decision regarding the dialysis modalities they wish to continue if they choose not to undergo kidney transplantation or conservative treatment (Finderup et al. 2021; Kim et al. 2022). However, SDM in this context is particularly complex, as patients with CKD exhibit diverse preferences, experiences, and decision-making processes (van der Horst et al. 2023). Additionally, the prevalence, risk factors, and burden of CKD vary across populations (Wen et al. 2022), leading to differences in SDM perspectives shaped by regional, cultural, and racial factors (Lebovitz et al. 2024; Saeed et al. 2020a).

Rodgers' evolutionary concept analysis method was applied in this study to clarify SDM in dialysis modality selection for patients with CKD. Rodgers' perspective provides an inductive approach that recognizes the continuous evolution of concepts, allowing them to be examined within sociocultural, academic, and theoretical frameworks (Rodgers and Knafl 2000).

Despite the growing interest in SDM, no comprehensive concept analysis has been conducted on its role in dialysis modality selection for patients with CKD. Given this scenario, the present study has the following guiding question: “How does shared decision-making (SDM) influence the choice of dialysis modality for patients with CKD?” Therefore, this study aimed to clarify the concept of shared decision-making (SDM) in choosing dialysis modality for patients with CKD. This study aimed to offer theoretical evidence to support and enhance the implementation of SDM in CKD care, ensuring that decision-making aligns with patient priorities and improves clinical outcomes.

2 | Methods

2.1 | Study Design

This study employed Rodgers' evolutionary concept analysis method to explore the evolution of shared decision-making (SDM) and its application in renal care (Rodgers and Knafl 2000). The analysis was carried out in three distinct phases (Toftagen and Fagerström 2010).

2.2 | The Three Structured Phases to the Research Process

2.2.1 | Initial Phase

The initial phase of this study aimed to identify and analyze the concept of SDM in the context of choosing dialysis modalities for patients with CKD.

The first stage involved identifying the concept, in which we sought to clarify its meaning and deepen understanding within

nephrological practice. SDM is a decision-making model that emphasizes the active participation of patients, allowing their preferences and values to be considered when choosing between modalities such as hemodialysis, peritoneal dialysis, and kidney transplantation. This approach is essential, as it shows that the decision-making process should not be unidirectional, but rather constructed jointly between the patient and the health professional.

In the second stage, the search methods used to gather existing literature on SDM in patients with CKD were defined. The framework of the conceptual analysis was based on the Rodgers method, which emphasizes the dynamic evolution of concepts over time. To ensure a comprehensive investigation, the PubMed, CINAHL, Web of Science, Embase, Cochrane Library, and PsycArticles databases were consulted, in addition to a manual search on Google Scholar to verify additional articles not indexed in traditional databases. The search strategy included the use of MeSH terms and keywords such as “Shared Decision Making,” “Chronic Kidney Disease,” and “Health Professionals”; these were selected to retrieve articles relevant to the topic. The search was limited to the period from 2013 to 2023, with the aim of analyzing updated studies on the concept. Research on SDM has significantly increased since 2010 (Lu et al. 2019). In this study, we conducted a preliminary investigation integrating SDM with chronic kidney disease. Notably, we did not identify any studies published over 10 years ago. Considering the nature of this concept and that recent studies reflect the latest medical environments, technologies, and policy changes, researchers decided to limit their review to literature published within the last 10 years to ensure the most relevant and up-to-date data analysis.

Finally, in the third stage, studies were selected through a systematic review. A total of 4732 articles were initially identified: 595 from PubMed, 58 from CINAHL, 1422 from Web of Science, 2609 from Embase, 44 from Cochrane, and one from PsycArticles. After removing duplicates, 3553 articles remained. Their titles and abstracts were analyzed based on established criteria, resulting in the selection of 185 studies for full-text evaluation. We also conducted a manual search between September and December 2024, adding four additional studies. To ensure the reliability of the selection, decisions were made by two independent reviewers; any disagreements were resolved by consensus. After in-depth analysis, 36 articles were included in the conceptual analysis, as shown in Table S2. To ensure the inclusion of the most up-to-date literature, we conducted a manual search using the six databases mentioned above to identify studies published during the review period (September 1, 2023–December 31, 2024), resulting in four additional articles. The researchers also conducted a manual search on Google Scholar to ensure that no papers were overlooked.

We examined the full text of these articles to ensure that they met our inclusion criteria. Any disagreement on including an article was discussed until a consensus was reached. Finally, 36 papers were included in this analysis. Table S2 shows detailed information on the 36 finally selected studies.

2.2.2 | Core Analysis Phase

The core analysis phase focused on an in-depth exploration of the selected data to understand the dynamics of SDM in clinical nephrology practice.

This analysis was based on the principle that concepts are dynamic, changeable, and influenced by the context in which they are inserted. Thus, a rigorous evaluation of the studies was conducted, highlighting the surrogate terms, antecedents, essential attributes, and consequences of SDM when choosing dialysis. This process was guided by four fundamental questions: What do other concepts have in common with SDM? (surrogate terms); What past events or phenomena are associated with SDM? (antecedents); What are the essential characteristics of SDM? (attributes); and What happens after SDM implementation? (consequences).

The first author and the corresponding author systematically organized the results of each study into separate Word files and compared them to identify similarities and differences in concepts within the academic field, as well as changes in these concepts over time. Each author independently looked for commonalities in the concepts and underwent a consensus-building process. Through this approach, patterns in the data analysis were identified. The authors each judged that the data were saturated when the data were repeated and expressed antecedents, attributes, and consequences as the wholeness of the results.

2.2.3 | Further Analysis Phase

The final phase of the study focused on the systematic organization of the findings, refining and categorizing the antecedents, attributes, and consequences identified in the conceptual analysis. The results were organized in tables and graphs, allowing a clear visualization of the relationships between the different elements of SDM and their impact on the choice of dialysis modality. Data saturation was determined when no new relevant information emerged in the analyzed articles, indicating that the body of evidence was already sufficient to define the concept.

3 | Ethical Consideration

This study was registered with the Institutional Review Board (IRB) of Soonchunhyang University, reviewed and approved, with the opinion that no unethical elements were identified in the research objectives (IRB No.: 202308-SB-090).

4 | Results

4.1 | Definitions of the Concept

SDM can be defined as a process in which patients actively make the best choice through continuous interaction among themselves, healthcare professionals, and their families. It

was confirmed that the concept of SDM gradually evolved over time.

Initially, SDM focused on preserving residual kidney function and prolonging patients' life. It was vital for healthcare professionals to provide possible support and help patients make choices to improve their health. Subsequently, SDM in choosing dialysis modalities increasingly emphasized effective communication and information provision. It developed into a means of improving patients' ability to make choices by providing comprehensive information and education through healthcare professional–patient communication.

Recently, SDM in choosing dialysis modalities has gradually evolved, emphasizing horizontal relationships and valuing partnerships between patients, their families, and healthcare professionals. Furthermore, it has helped in achieving a harmonious life at home, impacting the patient's life, their family's well-being, and the home environment.

4.2 | Contextual Bases of SDM

Table 1 presented the antecedents, attributes, and consequences of SDM for dialysis modalities.

4.2.1 | Antecedents

Antecedents refer to events or phenomena that occurred before the appearance of a concept. The antecedents of SDM for patients with CKD were readiness to engage in the decision-making process, advantages, and disadvantages of different dialysis modalities, awareness, and understanding of CKD, and sufficient time and resources to make decisions.

Regarding the readiness to engage in the decision-making process, patients should have an open mind and be willing to actively participate in the decision-making process for dialysis modalities before starting communication on choosing dialysis modalities with their physicians. Particularly, healthcare professionals and families of patients with CKD should understand the patient's medical condition and the circumstances surrounding the choice of dialysis modality, such as barriers to and facilitators of decision-making.

Also, knowing the advantages and disadvantages of different dialysis modalities by patients and their families is a crucial antecedent. If patients are not provided with sufficient information regarding dialysis modalities and knowledge of life after undergoing dialysis, they may have difficulties in choosing dialysis modalities optimal for them. Patients may be left with uncertainty on which type of dialysis is suitable for them due to the varying advantages and disadvantages of different dialysis modalities.

Regarding awareness and understanding of CKD, patients with more knowledge and awareness of their disease are more likely to make easy and efficient decisions. Healthcare professionals in renal care should be fully aware of the importance of patients' knowledge and insights into their disease or medical conditions.

CKD is a chronic and gradually progressive disease that requires an iterative SDM process over time and many useful resources for dialysis modalities. Owing to frequent and periodic hospital visits during their illness trajectories, patients with CKD require sufficient time and resources to make optimal decisions.

4.2.2 | Attributes

4.2.2.1 | Setting Goals for Treatment Sustainability and Life After Treatment. For patients being considered for dialysis, choosing a treatment method goes beyond the act of choice to setting goals for life after treatment. Patients and healthcare professionals consider this process along with the sustainability of treatment for the rest of the patient's life. They discuss the life of the patient undergoing treatment together and set life directions and goals. Values considered important by patients are also essential in setting treatment goals.

4.2.2.2 | Building a Trusting and Respectful Relationship. Regarding CKD, rather than deciding on a treatment course within a short duration, time is often given for preparation depending on the progression of the disease; therefore, patients and healthcare professionals build a trustful relationship through regular treatment sessions. They maintain a relationship of mutual trust, reliance, and respect. Based on this close relationship, they have profound conversations about the patient's treatment process. These relationships form the foundation for SDM.

4.2.2.3 | Developing a Collaborative Partnership. Patients and healthcare professionals seek to understand their respective positions and establish a two-way cooperative partnership rather than a one-sided relationship. In this process, not only the patients but also their families are included, thereby establishing a cooperative relationship. Healthcare professionals support the position of the patient and family, who consequently cooperate with healthcare professionals. Through these interactions, the common task of selecting treatment options is accomplished.

4.2.2.4 | Effective Patient–Doctor Communication. Healthcare professionals help patients improve their awareness of treatment by providing sufficient information about treatment options. Patients try to make better choices by projecting the information provided by healthcare professionals into their own lives. By gaining knowledge about the treatment process, patients become more involved in the decision-making. Through sufficient communication, patients gain emotional support.

4.2.2.5 | Choosing the Right Dialysis Treatment Options. Patients, healthcare professionals, and families collaborate to select an appropriate treatment option that considers everyone's situation. From the patient's perspective, they want to make the best choice to improve their quality of life by considering their situation, whereas from the healthcare professionals' perspective, they want to make the best choice, considering the patient's condition from a medical perspective. The patients' families want to make the best decisions considering their lifestyles.

4.2.2.6 | Making Personalized and Informed Decisions. Doctors respect a patient's independence and support

TABLE 1 | Antecedents, attributes, and consequences of shared decision-making in dialysis modalities for patients with chronic kidney disease.

Antecedents	Attributes	Consequences
• Readiness to engage in the decision-making process (Fortnum et al. 2015; Allen et al. 2015; Loisel et al. 2016; Stephenson and Bradshaw 2018; Verberne et al. 2019; Ho et al. 2021) • Advantages and disadvantages of different dialysis modalities (Thomas et al. 2016; Harwood and Clark 2014; Allen et al. 2015; Loisel et al. 2016; Stephenson and Bradshaw 2018; O'Riordan et al. 2020; Blake and Brown 2020; Deodhar et al. 2021; Okada et al. 2021; Frazier et al. 2022; Kuo et al. 2022; Verberne et al. 2022) • Awareness and understanding of chronic kidney disease (Harwood and Clark 2014; Allen et al. 2015; Stephenson and Bradshaw 2018; O'Riordan et al. 2020; Blake and Brown 2020; Rao et al. 2021; Stoye et al. 2022; Frazier et al. 2022; Dahm et al. 2024) • Enough time and resources to make a decision (Loisel et al. 2016; Verberne et al. 2019; Kuo et al. 2022; Verberne et al. 2022)	• Setting goals for treatment sustainability and life after treatment (Loisel et al. 2016; Stryckers et al. 2016; Deodhar et al. 2021; Ho et al. 2021; Kim et al. 2022; Okada et al. 2021; Frazier et al. 2022; Porteny et al. 2022; van Dulmen et al. 2022; Verberne et al. 2022; van der Horst et al. 2023; Dahm et al. 2024; Kanbay et al. 2024) • Building a trusting and respectful relationship (Allen et al. 2015; Loisel et al. 2016; Thomas et al. 2016; Stephenson and Bradshaw 2018; Verberne et al. 2019; Saeed et al. 2020a; Okada et al. 2021; Deodhar et al. 2021; Kuo et al. 2022; van Dulmen et al. 2022; Verberne et al. 2022; van der Horst et al. 2023; Gazaway et al. 2024; Meijers et al. 2023; Hole et al. 2023; Kanbay et al. 2024) • Developing a collaborative partnership (Fortnum et al. 2015; Stephenson and Bradshaw 2018; Blake and Brown 2020; Saeed et al. 2020b; Deodhar et al. 2021; Ho et al. 2021; Rao et al. 2021; Frazier et al. 2022; Porteny et al. 2022; van Dulmen et al. 2022; Verberne et al. 2022; Sledge et al. 2023; Dahm et al. 2024; Meijers et al. 2023; Hole et al. 2023; Dahm et al. 2023; Gazaway et al. 2024; Meijers et al. 2023; Kanbay et al. 2024) • Effective patient-doctor communication (Harwood and Clark 2014; Fortnum et al. 2015; Allen et al. 2015; Loisel et al. 2016; Thomas et al. 2016; Stephenson and Bradshaw 2018; O'Riordan et al. 2020; Verberne et al. 2019; Blake and Brown 2020; Saeed et al. 2020a; Deodhar et al. 2021; Ho et al. 2021; Okada et al. 2021; Rao et al. 2021; Kuo et al. 2022; van Dulmen et al. 2022; Verberne et al. 2022; Sledge et al. 2023; Dahm et al. 2023; Gazaway et al. 2024; Hamroun et al. 2023; McPeake et al. 2023; van der Horst et al. 2023; Kanbay et al. 2024) • Choosing the right dialysis treatment options (Harwood and Clark 2014; Fortnum et al. 2015; Loisel et al. 2016; Stryckers et al. 2016; Thomas et al. 2016; Stephenson and Bradshaw 2018; O'Riordan et al. 2020; Verberne et al. 2019; Vandenberg et al. 2019; Blake and Brown 2020; Saeed et al. 2020b; Deodhar et al. 2021; Ho et al. 2021; Rao et al. 2021; Stoye et al. 2022; van Dulmen et al. 2022; Verberne et al. 2022; Hamroun et al. 2023) • Making personalized and informed decision (Rao et al. 2021; Kuo et al. 2022; Porteny et al. 2022; Verberne et al. 2022; Hamroun et al. 2023) • Voluntary participation and interactive process (Harwood and Clark 2014; Fortnum et al. 2015; Allen et al. 2015; Loisel et al. 2016; Stephenson and Bradshaw 2018; Stryckers et al. 2016; Thomas et al. 2016; Verberne et al. 2019; Blake and Brown 2020; Saeed et al. 2020a; Deodhar et al. 2021; Ho et al. 2021; Okada et al. 2021; Kuo et al. 2022; Porteny et al. 2022; Verberne et al. 2022; Dahm et al. 2024; Meijers et al. 2023; Hamroun et al. 2023; Hole et al. 2023; McPeake et al. 2023)	• Ensuring patient and family centered care (Vandenberg et al. 2019; Rao et al. 2021; Frazier et al. 2022; Kuo et al. 2022; Verberne et al. 2022; McPeake et al. 2023) • Improving quality of life of the patients (Saeed et al. 2020a; Okada et al. 2021; Kuo et al. 2022; Sledge et al. 2023; McPeake et al. 2023) • Decreasing decisional conflict (Ho et al. 2021; Okada et al. 2021; Kuo et al. 2022) • Maintaining safety in dialysis treatment (Saeed et al. 2020b; Ho et al. 2021; Okada et al. 2021; Kuo et al. 2022; McPeake et al. 2023) • Living in harmony with family (Saeed et al. 2020a; Ho et al. 2021; Okada et al. 2021; Kuo et al. 2022; McPeake et al. 2023)

the patient in making their own decisions. Information about treatment options provided to patients increases their knowledge and capacity to choose treatment options, which helps them make informed choices.

4.2.2.7 | Voluntary Participation and Interactive Process. Patients voluntarily participate in the process of selecting treatment options and continuously undergo a process of consultation and compromise among themselves, their families, and healthcare professionals. Through continuous interactions and repeated negotiations, uncertainty about the future is reduced, and confidence in the choice is gained.

4.2.3 | Consequences

Based on SDM, healthcare professionals provide patient- and family-centered care. Additionally, a comprehensive and individualized approach to SDM can improve the patient's quality of life by enabling informed decision-making by patients and their family members. Collaborative and trusting relationships in SDM can reduce conflict in decisions. Moreover, effective patient-doctor communication can ensure safety during dialysis and promote optimal treatment adherence. Lastly, patients' right choice of dialysis modality can lead to the maintenance of dialysis and harmony with family members at home.

4.3 | Surrogate Terms

Surrogate terms refer to other words that have similar meanings or something in common with the selected concept. Collaborative partnerships, treatment decision making, and medical decision making were identified as surrogate terms for SDM.

Collaborative partnerships emphasize the essential involvement of patients, their families, and healthcare professionals in decision-making and the building of collaborative relationships between them. Treatment decision-making is a complex process that requires decisions about diagnosis, treatment options, and treatment outcomes. This concept places greater emphasis on treatment option choices. Medical decision-making is the process of establishing a diagnosis or treatment plan based on patient preferences or test information. This concept states that the doctor decides what is good for the patient from a medical perspective and is mainly the subject of the decision.

4.4 | Conceptual Model of SDM for Choosing Dialysis Modalities

Based on these results, this study proposes a conceptual model for SDM in patients with CKD (Figure 1). In this model, each attribute can be presented as an iterative process while helping each other. Patients, their family members, and healthcare professionals work in partnerships as a team and continuously communicate to consider making better choices for the patient. The implementation of SDM in choosing dialysis modalities can contribute to improved patient outcomes and reduced burden on family caregivers. Furthermore, this iterative SDM conceptual model can be modified over time based on the relationships among patients, healthcare professionals, and family caregivers.

5 | Discussion

This study conducted a conceptual analysis of SDM in the selection of dialysis modalities for patients with CKD using an evolutionary analysis approach. The results suggest that SDM in patients with CKD is a complex concept involving multiple

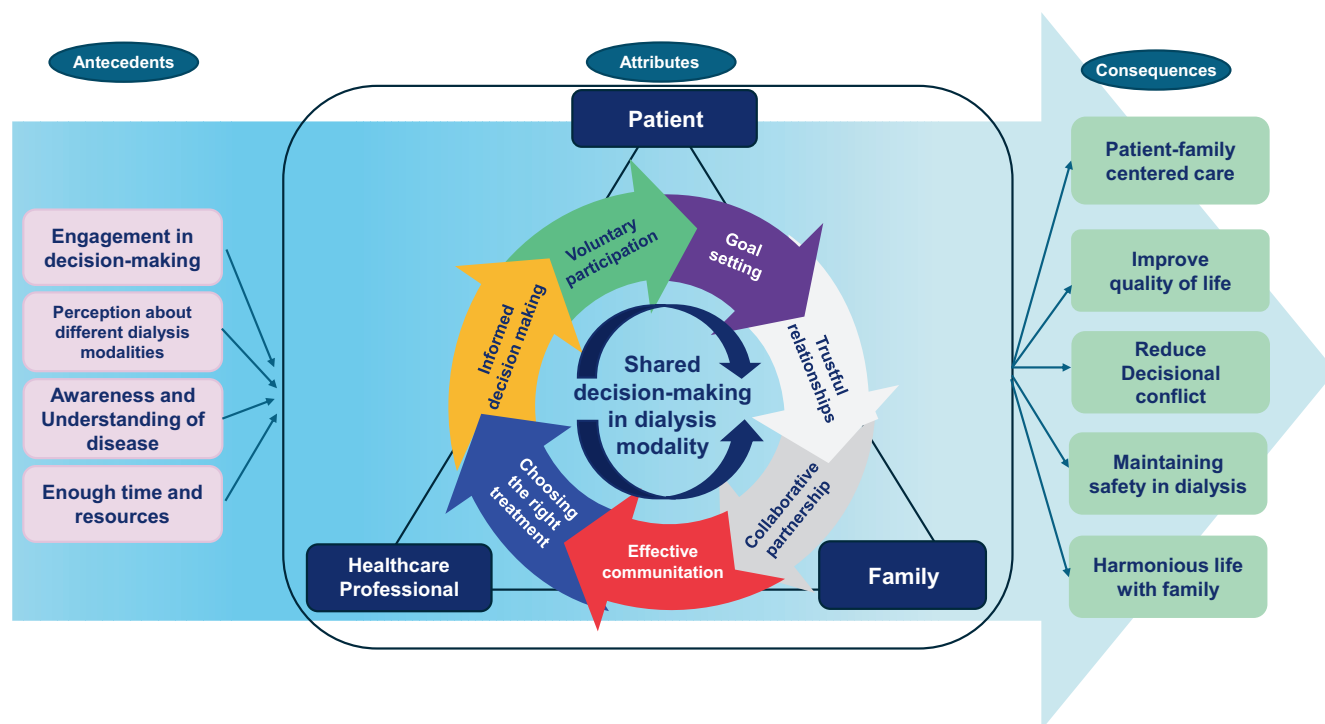


FIGURE 1 | Conceptual model of shared decision-making in dialysis modalities.

stakeholders. Compared with the traditional SDM approach, which primarily focuses on information sharing, this concept emphasizes partnerships and collaboration between patients, families, and healthcare providers. For effective SDM, sufficient awareness of dialysis modalities and the disease, along with adequate time and resources, must be ensured in advance. Ultimately, SDM can be understood as a process that leads to patient-family centered care, improved quality of life, reduced decisional conflict, maintenance of safety in dialysis, and achievement of a harmonious life with the family.

Regarding the definition of SDM in dialysis modalities over time, SDM was initially focused on maintaining the patient's later life (Allen et al. 2015; Harwood and Clark 2014) and emphasized communication by providing information (Stephenson and Bradshaw 2018; Verberne et al. 2019). However, it has recently evolved into a concept that strengthens partnerships between patients, healthcare professionals, and family caregivers (Deodhar et al. 2021; Ho et al. 2021; van Dulmen et al. 2022). This may be related to the paradigm shift in healthcare practice from the traditional physician-centric approach to patient-centered care, which emphasizes the importance of focusing on patient needs, preferences, and experiences (Edgman-Levitan and Schoenbaum 2021). Additionally, our findings showed that patients with CKD, who are mostly older adults, require ongoing care from their families, and that the chosen treatment option has a significant impact on the lives of their family members, as it lasts for the rest of the patient's life. Our key concept of SDM in choosing dialysis modalities is similar to that in pediatrics, which requires the active involvement of family members in SDM (Eaton et al. 2022). However, SDM in pediatrics may be dominated by a family-centered approach. SDM involving patients with CKD should focus more on collaborative partnerships between patients, their family members, and healthcare professionals. In addition, compared with previous studies on the attributes of SDM in patients with severe mental illness, which emphasized broad communication within an equal relationship (Aoki 2020), this study identified more complex and detailed attributes, including communication. These attributes may provide a deeper understanding of SDM in patients with CKD.

When it comes to the antecedents, our findings showed four factors related to the implementation of SDM, including engagement in decision-making, perception of different dialysis modalities, awareness, and understanding of the disease, and sufficient time and resources. The antecedents in this study were commonly cognitive, behavioral, and physical environments. Existing evidence reveals that the emotional and psychosocial states of individuals with CKD when considering starting dialysis affect their choices (Frazier et al. 2022). Additionally, the role of healthcare professionals, including optimal training and knowledge of patient and family conditions, can be significant in implementing SDM (Finderup et al. 2021). Older individuals with kidney failure are likely to have poor health literacy, which may preclude their access to certain resources (Frazier et al. 2022). Dahm et al. (2023) pointed out that for older adults with CKD, communication problems include ineffective communication and patients' dependence on family members. Additionally, healthcare professionals' lack of appropriate communication training and knowledge of SDM have been identified as barriers to

performing SDM (Amir et al. 2021). Therefore, developing strategies to improve awareness of SDM among patients, families, and healthcare professionals and to communicate actively and effectively is necessary. Furthermore, healthcare professionals should be more concerned about patients' preferences and opinions and educated on the importance of SDM in renal care. More studies are needed to identify the barriers to and facilitators of SDM in managing patients with CKD.

Regarding SDM related to the consequences of dialysis modalities, the five consequences were patient-family centered care, quality of life, decisional conflict, maintenance of safety during dialysis, and harmonious family life. Based on our results, developing SDM interventions for more beneficial outcomes, such as reduced individual and national financial burdens, dialysis failure, readmission, and mortality, is necessary. However, recent studies on SDM interventions for CKD have focused on educational interventions targeting healthcare professionals rather than patients (Kim et al. 2022; Meijers et al. 2023). Effective SDM interventions for patients requiring dialysis can help healthcare professionals, including nurses, nephrologists, primary care providers, and pharmacists develop tailored interventions or strategic care plans for patients and their family caregivers. Thus, our conceptual model can contribute to the development of SDM interventions for selecting dialysis modalities for patients with CKD.

Importantly, this study developed a conceptual model for SDM in patients with CKD, which is an iterative process between seven attributes, four antecedents, and five consequences. Moreover, if effectiveness is built through good partnerships with patients, their family members, and healthcare professionals, it can lead to positive outcomes for patients and their families. First, each attribute has a positive influence on the others in an iterative process centered on patients, their families, and healthcare professionals. All attributes in our conceptual model were expressed as cyclical processes that appeared continuously in the SDM process to make good decisions. Previous studies on the SDM concept for patients with chronic diseases have generally focused on key attributes, such as communication to provide information to patients, teamwork with family caregivers or family members, and the role of healthcare professionals in SDM (Saito and Masaki 2023; Stiggelbout et al. 2015; Wubben et al. 2021). However, the seven attributes of SDM for patients with CKD in our study were goal-setting, trustful relationships, collaborative partnerships, effective communication, choosing the right treatment, informed decision-making, and voluntary participation. They are not sequential and unidirectional; nevertheless, they can relate to each other. For example, mutual goal-setting can lead to the building of trustful relationships, effective communication, and voluntary participation in treatment adherence. Conversely, effective communication and informed decision-making can result in collaborative partnerships and sustainable goal-setting. Among the attributes of SDM for dialysis modalities, selecting the right dialysis treatment option may differ from that used in previous studies on SDM. Selecting the right treatment requires thorough communication that accounts for the patient's age, physical health, and socioeconomic status. Age, in particular, plays a significant role in dialysis modality selection (Cho et al. 2022; Segall et al. 2017). While there is currently no global consensus on the optimal dialysis modality

for older adults, studies suggest that hemodialysis (HD) is generally preferred in most countries among elderly patients with chronic kidney disease (Elendu et al. 2023; Evans et al. 2022; Frazier et al. 2022). In this population, it is especially important to consider various physical and cognitive factors—such as vascular health, malnutrition, dependency, frailty, cognitive impairment, and reduced physical function—during the decision-making and communication process (Pereira et al. 2024; Brown et al. 2017).

Furthermore, cultural factors can influence the extent to which patients participate in the decision-making process. SDM is often contrasted with paternalistic decision-making. As a paternalistic approach to decision-making may be normative in some cultures, patients with these backgrounds may be less inclined to assert their preferences (Hawley and Morris 2017). To embed SDM in diverse healthcare settings, training in shared decision-making for healthcare professionals should not be limited to communication skills training. Rather, healthcare professionals' beliefs and values about their roles in the decision-making process should be considered. Moreover, as patients with CKD are prone to visit hospitals owing to irreversible disease progression, the SDM process must be maintained and modified iteratively with patients' medical conditions and family caregivers' concerns over time (Stephenson and Bradshaw 2018).

5.1 | Limitations

Despite the strengths of this study, it has some limitations. First, though this study reflects the latest trends at the current point in time by analyzing literature from the past 10 years, knowing the evolution of the concept or its connection to previous studies is difficult, as it does not analyze literature from when the concept was first published. Therefore, examining the long-term evolution of the concept through follow-up studies is necessary. Second, the researchers only reviewed studies published in English, posing a selection bias. In the future, research must incorporate diverse languages, cultures, and healthcare systems by utilizing reliable and validated translation tools powered by generative AI. Future studies should build a consensus and introduce different perspectives on the related viewpoints and theories of SDM in renal care. When implementing SDM for choosing the dialysis modality, it may be approached differently owing to differences in renal care based on culture and healthcare systems. Most studies in this review focused on the perspectives of healthcare professionals, reflecting a paucity of research at the system level. Thus, further research is needed to identify the perspectives of patients and their family caregivers regarding SDM for dialysis modalities in non-Western settings.

6 | Conclusion

SDM for patients with CKD is a process of building partnerships through sufficient communication centered on trusting relationships between patients, their families, and healthcare professionals. Our findings revealed disease-specific characteristics of SDM for patients with CKD, which can provide a basis for intervention studies to promote SDM.

Our conceptual model should be tested further to design disease-specific SDM interventions to predict better patient and clinical outcomes during SDM implementation in renal care. Future studies are required to understand the factors influencing the implementation or facilitation of SDM in renal care.

6.1 | Relevance of Clinical Practice

Our findings can be used as a basis for educating nurses to gain a deeper understanding of shared decision-making when choosing dialysis modalities. Our concept analysis can precipitate the development of guidelines or protocols for effective shared decision-making in renal care.

Author Contributions

Youn-Jung Son: conceptualization, methodology, visualization, writing – original draft, supervision, formal analysis, investigation, writing – review and editing, validation, data curation, project administration, resources. **Jeehee Han:** conceptualization, data curation, supervision, validation, visualization. **Eun Young Kim:** conceptualization, investigation, funding acquisition, writing – original draft, methodology, validation, visualization, writing – review and editing, supervision, data curation, formal analysis, project administration.

Ethics Statement

The institutional research board of Soonchunhyang University (IRB No.: 202308-SB-090-01) approved the study protocol.

Conflicts of Interest

The authors declare no conflicts of interest.

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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Supporting Information

Additional supporting information can be found online in the Supporting Information section.