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ORIGINAL RESEARCH

The Decision-Making Experience of Self-Management Behaviors in Home Peritoneal Dialysis for Patients with Diabetic Nephropathy: A Qualitative Study Using the Theory of Planned Behavior

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Purpose: Self-management among diabetic kidney disease(DKD) patients receiving home peritoneal dialysis(PD) remains a significant challenge, warranting further exploration. In this study, the Theory of Planned Behavior (TPB) was used to clarify patients' decision-making processes and understand the reasons for adhering to and changing behaviors.

Methods: Semi-structured interviews were conducted with 16 DKD patients who were undergoing follow-up and receiving home PD. The TPB was applied to formulate the interview themes and provide information for the Interpretative Phenomenological Analysis (IPA) method used.

Results: A total of 3 themes and 7 sub-themes were summarized, namely attitude towards behavior, where physical and mental perception affects the decision-making attitude (the positive feedback of improved physical function strengthens the decision-making attitude; the two-way influence of emotions catalyzes the decision-making attitude); subjective norm, where social factors drive the decision-making belief (the behavioral outcomes of peers transform the decision-making belief; the continuity of medical and nursing services consolidates the decision-making belief; the motivation of social feedback stimulates the decision-making belief); perceived behavioral control, where self-perception influences the decision-making intention (positive self-efficacy motivates the decision-making intention; the limitation of external resources restricts the decision-making intention).

Conclusion: For the management of home PD in patients with DKD, efforts can be made to improve patients' decision-making in self-management of home PD by strengthening the positive feedback of psychological experiences in behavioral decision-making, exploring digital peer support platforms and social support networks for such patients to improve the mechanism of patients' active participation in decision-making within social support networks, and improving the community support system from multiple dimensions such as incorporating relevant policies into assessment criteria, coordinating funds through multiple channels, enhancing the capabilities of community medical and nursing teams, and encouraging doctor-patient shared decision-making, thereby exploring and constructing a community assistance model for the management of home PD in patients with DKD.

Keywords: diabetic kidney disease, home peritoneal dialysis, Self-management, theory of planned behavior, qualitative research

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Introduction

Diabetic kidney disease (DKD) is a type of chronic kidney disease(CKD) caused by various types of diabetes. It is characterized by persistent elevation of urinary albumin and/or progressive decline of the glomerular filtration rate (GFR), lasting for no less than 3 months, and other types of kidney diseases are excluded.[1] In recent years, the proportion of DKD in CKD in China has exceeded that of glomerulonephritis, and the proportion of hospitalized patients with DKD has also been higher than that of patients without DKD year by year.[2] Based on this, DKD is considered to be the most common cause of end-stage renal disease (ESRD) and renal replacement therapy (RRT).[3,4]

A prospective study on DKD with a duration of 3 years compared the long-term prognosis of patients with CKD. The results showed that patients with DKD had a higher risk of progressing to a 50% decline in GFR and a higher proportion of the endpoint of RRT.[5] This suggests that patients with DKD may progress to ESRD more rapidly and need to initiate RRT earlier. In clinical practice, RRT includes kidney transplant (FT), peritoneal dialysis (PD), and hemodialysis (HD).[6] Due to reasons such as the shortage of kidney donors and high costs,[7,8] the rate of kidney transplantation is relatively low. At present, HD and PD are still the main treatment methods. PD uses the abdominal cavity as the exchange space. Through the diffusion, convection, and ultrafiltration functions of the peritoneum in the abdominal cavity, it can remove excess water, electrolytes, metabolites, and toxins in the body, so as to achieve the purpose of blood purification and replacing part of the kidney function.[9] PD treatment has the advantages of protecting residual renal function, being convenient and economical, and being operable at home, and has become the preferred treatment method for more and more patients with ESRD.[10] There are more than 272,000 patients undergoing PD in 130 countries around the world, accounting for 11% of the global dialysis population. Among them, the number of PD patients in China accounts for 20% of the total global dialysis population.[11]

PD is mainly carried out at home, which requires a high level of self-management from patients.[12] The self-management of patients undergoing home PD refers to a series of self-care behaviors where patients, by applying disease care-related knowledge and skills, proactively and reasonably carry out fluid intake control, balanced adjustment of dietary structure, and standardized implementation of dialysate exchange operations, while dynamically monitoring their condition through keeping PD diaries and promptly identifying and dealing with complications.[13] Good self-management of home PD is crucial for achieving dialysis adequacy. It helps improve patients' volume status, effectively control blood glucose, regulate negative emotions, enhance quality of life, reduce the risk of complications, and prolong survival.[14–17] However, some studies have found that the self-management behaviors of DKD patients undergoing home PD are not ideal,[18] and at the same time, in the context of home PD, the behavioral factors affecting these practices are still poorly understood. The generation or transformation of patients' self-management behaviors is affected by their own behavior decisions,[19] and the underlying reasons urgently need to be explored. Existing studies mostly analyze how to implement self-management behaviors in DKD patients undergoing home PD from a quantitative research perspective,[18,20] while there is a lack of qualitative research on the impact of various factors on the decision-making of self-management behaviors in these patients within specific contexts.

The theory of planned behavior (TPB) is a theory that explains the general decision-making process of individual rational behaviors. It explains behavior intentions and behaviors from three aspects: attitude toward the behavior, subjective norm, and perceived behavioral control.[21] Among these, behavioral attitude is manifested as a positive or negative attitude toward a certain behavior; subjective norm refers to the social pressure an individual may perceive regarding whether to perform a specific behavior; and perceived behavioral control is the perception of the difficulty or ease of performing a specific behavior. This theory can clarify the decision-making process of patients' behaviors, help understand the reasons for adhering to and changing behaviors, and enhance the explanatory power of influencing factors. In particular, in the context of home PD, subjective norms and perceived behavioral control are crucial for patients' continuous management. The TPB has good predictive and explanatory power for behaviors,[22,23] and has been widely applied in qualitative studies related to behavioral decision-making in chronic disease self-management. For example, Widyakusuma et al[24] used TPB to understand the perceptions of elderly hypertensive patients with polypharmacy regarding medication adherence. Sanabria et al[25] applied TPB to explore the determinants of physical activity in HIV self-management interventions. These studies have all confirmed its explanatory power for complex behavioral decisions in chronic diseases. However, there is currently no qualitative research that combines TPB to explore the self-management behavioral decision-making of patients with DKD undergoing home PD.

In view of this, this study uses a qualitative research method and takes the TPB theory as the framework to deeply explore the decision-making experience that affects the self-management behaviors of patients with DKD undergoing home PD, so as to help understand the possible reasons behind the self-management decisions, and provide a basis for formulating targeted clinical measures and helping patients with DKD implement self-management behaviors during home PD.

Materials and Methods

Design

This study used the qualitative descriptive approach, which provides the most intimate and straightforward account of participants' experiences and perceptions.[26] The Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines were adhered to in this study[27] (Appendix 1).

Setting and Participants

This study was conducted in the First Department of Nephrology and the Second Department of Nephrology of a Grade A tertiary hospital in Xianyang City, Shaanxi Province, China, from April 1 to May 1, 2025. During the study period, the hospital admitted a large number of DKD patients receiving home PD, providing a sufficient sample size for this study. In order to participate in this study, participants must meet the following criteria: (1) They are follow-up patients who meet the diagnostic criteria for DKD[28] and are undergoing home PD; (2) They are 18 years old or above; (3) They have good cognitive and communication abilities; (4) They participate voluntarily. We excluded patients who have recently experienced severe diabetic complications, those who have recently used drugs that can damage renal function, individuals with cognitive impairments, mental abnormalities, disabilities such as blindness and deafness, patients with severe cardiac and liver function disorders, and those who do not perform PD by themselves.

In this study, we adopted the purposive sampling method.[29] In order to collect as much information as possible and have a better understanding of the true thoughts of patients with DKD who are undergoing home PD, we implemented the maximum difference strategy sampling based on the patients' demographic information (such as age, gender, occupation, marital status, and educational level) as well as disease-related information (such as payment method, duration of diabetes, time of PD, and dialysis dosage). Clinical nursing specialists and doctors from the Department of Nephrology and the Department of Endocrinology reviewed the clinical records of inpatients and screened out potential participants who met the inclusion criteria.

Data Collection

This study adopted a face-to-face semi-structured interview method. After comprehensively reviewing relevant literature based on the TPB,[30,31] we initially formulated a pre-interview outline. The pre-interview outline was designed around the three main elements of the TPB, namely behavioral attitude, subjective norm, and perceived behavioral control. The first author conducted pre-interviews with two patients who met the inclusion criteria. After discussing the issues identified in the pre-interviews, the draft was revised by experts based on their professional knowledge and clinical experience through discussions held in the physician's office of the First Department of Nephrology, involving 2 physicians (with doctoral degrees and associate chief physician or higher titles) and 1 head nurse (with a bachelor's degree and charge nurse or higher title) from the First Department of Nephrology. In case of disagreements, 2 physicians (with doctoral degrees and associate chief physician or higher titles) and 1 head nurse (with a bachelor's degree and charge nurse or higher title) from the Second Department of Nephrology would conduct further deliberations to reach a consensus. The final interview outline includes the following main questions: (1) What do you think are the components of self-management behavior for home PD? (2) During the process of self-management of home PD, which behaviors have brought you positive experiences, and which ones have brought you negative experiences? (3) What benefits do you think self-management of home PD has brought to you? (4) During the process of self-management of home PD, what difficult decisions have you encountered, and how did you resolve them? (5) What impacts do you think healthcare workers have on your decision-making regarding self-management behavior of home PD? (6) What impacts do you think

your family members have on your decision-making regarding self-management behavior of home PD? (7) What kind of guidance and assistance (from family, healthcare workers, society, etc) do you still need to improve your self-management behavior of home PD?

All the participants were interviewed face-to-face by the first author in the ward of the department. Firstly, the first author explained to the participants the purpose of this study, the principle of confidentiality, and the necessity of audio recording throughout the interview process. The participants signed an informed consent form that contained demographic information and disease-related information. After a brief exchange of greetings, the first author gradually initiated a conversation with the participants according to the interview outline. The important details and non-verbal communication during the interviews were recorded in the field notes. After 14 interviews, the newly collected data overlapped with the previously obtained data, and no new themes or codes emerged, which indicated that the data had reached saturation.[32] To ensure that no new themes would emerge, we conducted 2 additional interviews. Therefore, a total of 16 interviews were carried out during the data collection phase.

Data Analysis

Within 24 hours after the interview, transcribe the interview recordings into text. Two researchers who did not participate in the interview process will sort out the basic information of the interviewees and the text materials of the interview recordings, and supplement and mark the non-verbal information of the patients. The transcribed materials will be promptly fed back to the interviewees for verification to ensure the accuracy of the materials. We used MAXQDA2022 for analysis and adopted Interpretative Phenomenological Analysis (IPA) to summarize the experiences and reasons behind the decision-making of self-management behaviors among patients with DKD undergoing home PD from the three aspects of the TPB, namely behavioral attitude, subjective norm, and perceived behavioral control. The specific analysis steps are as follows:[33] Read the text repeatedly; make preliminary annotations and comments; extract meaning units; find the correlations between meaning units; analyze the next interview; classify and form the final themes.

Ethical Considerations

This study was approved by the Ethics Committee of the Affiliated Hospital of Shaanxi University of Chinese Medicine on April 30, 2025 (Approval No.: SZFYIEC-PJ-2025, No. [52]). Before the interview, all participants signed the informed consent form after fully understanding the purpose and procedures of the study. All participants joined the study voluntarily and had the right to withdraw at any time. The principle of confidentiality was strictly adhered to throughout the entire research process.

Rigor

In this study, two researchers conducted independent coding, and the Kappa coefficient was used to evaluate coding consistency. The results showed that the Kappa value for theme classification was 0.847, indicating good inter-coder reliability. For coding discrepancies, the researchers first re-examined the original interview texts and conducted discussions based on the TPB theoretical framework. If consensus could not be reached, experts in the fields of nephrology, endocrinology, and qualitative research methodology were invited to participate in the analysis, and classification criteria were clarified based on theoretical constructs and the intended meaning of patients' expressions. Eventually, all discrepancies were resolved through two rounds of discussions, and the coding consistency met the research requirements.

Results

This study included 16 patients with DKD undergoing home PD, among whom there were 8 males and 8 females (see Table 1). To protect the privacy of the participants, they were coded as N1 to N16. The ages of these participants ranged from 34 to 72 years old. The interview duration was between 15 and 45 minutes. This study identified three themes: behavioral attitude (physical and mental perception affects the decision-making attitude), subjective norm (social factors drive the decision-making belief), and perceived behavioral control (self-perception influences the decision-making intention). These themes and

Table 1 Participant Demographics and Disease-Related Information

No	Age (Years)	Gender	Educational Level	Marital Status	Profession	Payment Method of Medical Expenses	The duration of Diabetes Mellitus (Years)	The time of Peritoneal Dialysis (Years)	Dialysis Dose (bags)
N1	64	Male	④	Married	Retiree	A	5	3	5
N2	66	Female	①	Married	Farmer	C	23	5	2
N3	47	Female	②	Married	Private entrepreneur	B	15	2	4
N4	67	Male	②	Married	Jobless	C	20	6	4
N5	34	Female	⑤	Married	Teacher	A	3	1	5
N6	68	Female	②	Married	Retiree	A	15	2	3
N7	40	Male	②	Divorced	Worker	B	5	4	4
N8	44	Female	③	Married	Jobless	A	3	1	3
N9	65	Male	④	Married	Retiree	A	14	3	4
N10	39	Female	⑤	Married	Company employee	A	8	5	5
N11	59	Male	④	Married	Teacher	A	13	2	3
N12	68	Female	①	Widow	Farmer	C	16	2	4
N13	72	Male	②	Married	Retiree	A	28	7	5
N14	41	Male	⑤	Married	Company employee	A	6	3	4
N15	42	Female	⑥	Single	Company employee	A	11	3	5
N16	61	Male	③	Married	Retiree	A	20	1	4

Notes: ① Illiteracy; ② Primary school education; ③ Junior high school education; ④ Senior school education; ⑤ Associate degree; ⑥ Bachelor's degree. A, Employee medical insurance; B, Residents' medical insurance; C, New Rural Cooperative Medical Scheme.

their sub-themes together constitute the influencing factors of the decision-making experience of self-management behaviors for patients with DKD undergoing home PD.

Behavioral Attitude—Physical and Mental Perception Influences the Decision-Making Attitude

The Improvement of Somatic Functions Provides Positive Feedback, Which Reinforces the Decision-Making Attitude

The improvement in physical function obtained by patients with DKD through regular PD significantly enhances their confidence in home self - management. (N3: I never fail to change my dialysis fluid on time every day, not even for a single day. When the dehydration goes well, I clearly feel much lighter in my hands and feet the next morning. The ankles that were once swollen like steamed buns have now shrunk a circle. It's such a relief! Bending my knees when walking is not as strenuous anymore, and I even dare to take bigger steps when going down the stairs. At times like this, I tell people that you must not be the least bit careless with the task of changing dialysis fluid; if you slack off, you'll only end up suffering yourself in the end). A virtuous cycle is formed between systematic self-management practices and the improvement of physiological conditions. (N9: I carry a notebook with me all day long now, jotting down every little detail: how many sips of water I have had, how many times I have urinated, and even how much water I used to cook porridge. I could never control my urge to drink before. I'd want to drink whenever I saw water. But now, after following the doctor's advice to control my fluid intake, my blood pressure has stabilized a lot, my chest feels much more comfortable, and episodes of chest tightness and palpitations have become much less frequent). This perceivable physiological benefit continuously strengthens patients' behavioral compliance. (N4: Last week, I held my re-examination report in hand and went to see the doctor. I found that my creatinine level had dropped to over 450. The doctor said this was all thanks to my regularly changing the dialysis fluid on time and operating in a standardized way, and he even praised me for being diligent and maintaining things well. That's why I now pay more attention to my diet, fluid changes and everything else than before). This embodied health experience is transformed into the driving force for subjective management, prompting patients to integrate complex operations such as diet control, catheter care, and volume management into their sustainable daily life practices.

The Two-Way Domination of Emotions Catalyzes the Decision-Making Attitude

DKD patients undergoing home PD exhibit a paradoxical driving effect in their alertness to complications. (N7: I get extremely nervous every time before changing the dialysis fluid. I disinfect the tube opening two or three times, my heart pounding and hands shaking, worried that bacteria might get in and cause something like peritonitis). The intense fear of the risk of infection prompts patients to strictly adhere to aseptic operation norms. (N5: I am extremely afraid of getting peritonitis. When using an iodophor cap for disinfection, I have to rub it for 15 seconds. I count the seconds while looking at the clock. I am scared of getting infected even if it's one second less). However, excessive anxiety can easily lead to emotional exhaustion. (N4: There was a time when I was like possessed. I kept a blood glucose meter in my pocket and pricked my finger every two hours, testing my blood sugar five or six times a day. If the reading was even slightly high, I'd get anxious—my mind would be in a fluster, I could not eat well, and I could not sleep at night. Sigh, after a while, I even stopped taking my insulin altogether). Some patients with long - term stable conditions relax their vigilance due to blunted risk perception. (N10: I have not had any complications in the past five years. Now, I feel it's okay to skip a dialysis session, and I have gradually become slack). It's worth noting that the embodied fear of volume overload has a continuous warning effect. (N11: Before, my ankles were so swollen that I could not even get my shoes on. Since then, I have taken to weighing myself every day—even taking off my pajamas first, afraid that any extra weight from them might throw off the scale).

These experiences, including improvements in physical function and dynamic changes in emotions, collectively shape patients' behavioral attitudes toward self-management in home PD. They reflect that patients' evaluation of this behavior directly influences their willingness to engage in continuous self-care practices, which is consistent with the construct of behavioral attitude in the TPB.

Subjective Norm—Social Factors Drive the Decision-Making Belief

The Outcome of Peers' Behavior Transforms the Decision-Making Belief

Peers can influence the expected outcomes of the self-management behaviors of DKD patients undergoing home PD, shape the social norms of patients, and thus change the decision-making process. The demonstration of peers reinforces the motivation for decision-making. Patients expect to achieve the same good results as their fellow patients through self-management. (N9: We have a WeChat group with fellow dialysis patients. I heard there's a man who has stuck with it for ten years without any complications—I really admire him. Now, every day when I test my blood sugar, I press down harder on my finger, leaving a deeper mark). Successful cases stimulate the internalization of goals through social comparison. (N13: I saw in our WeChat group that a fellow patient has been doing PD for ten years without any complications. He also shared his experience with us—he keeps an electronic spreadsheet as a dialysis diary. So I have started learning to use an app on my phone to record some of my own dialysis data). The normative pressure formed by the patient group significantly affects behavioral judgment. (N6: In the WeChat group for fellow patients, everyone shares low-potassium recipes. The more likes a recipe receives, the more seriously people take it. For instance, foods like spinach and bananas are said to be high in potassium, so I do not even dare to pick them up when I am out buying groceries). However, negative demonstrations may lead to the rationalization of risky behaviors. (N14: I heard that there was a fellow patient who secretly skipped two fluid exchanges per week and nothing happened. Once when I went on a trip, I also imitated him and stopped dialysis for three days).

The Continuity of Medical and Nursing Services Consolidates the Decision-Making Belief

The medical and nursing team is an important shaper of the normative beliefs regarding self-management of home PD for patients with DKD. Through means such as online consultations, nursing follow-ups, and home nursing guidance, the medical and nursing team has strengthened the patients' normative beliefs about home self-management and helped them maintain correct decision-making on self-management behaviors at home. (N16: Sometimes when I run into problems with the operation, I call or send WeChat messages to the doctors and nurses. Even after getting off work, the nurses will come to my home to check how my dialysis is going. I always want to perform well to make them feel reassured). At the same time, the authority and friendly attitude of the medical and nursing team have enhanced the patients' sense of belonging and motivation for compliance, prompting them to make correct decisions. (N7: Every time I come to the hospital for a review, the doctor who sees me is always very dedicated and responsible. They patiently tell me the daily

precautions, including which foods I can eat and which I cannot. At such times, I feel really steady and reassured, and I am not as nervous or anxious anymore).

The Motivation of Social Feedback Stimulates the Decision-Making Belief

The awareness of secondary responsibility of patients with DKD undergoing home PD motivates them to take the initiative to practice disease self-management behaviors. Patients deeply feel the power of responsibility bestowed by their family support network. (N8: My family is like my human alarm clock—they remind me it's time to change the dialysis fluid as soon as the hour comes. If I am feeling lazy, my son and daughter will drag me to do it. Their meticulous care makes me determined to manage my condition well; it gives me the motivation to keep going). This sense of family responsibility becomes the core driving force for maintaining their daily treatment compliance. At the same time, through the long-term treatment process, patients deepen their sense of gratitude towards the medical team and social care. This complex of giving back is transformed into a continuous driving force for self-management. (N5: I do dialysis on time every day. Whenever I run into any problems, I send a WeChat message to the doctors, and they always reply when they see it. The doctors and nurses really go out of their way for me. I feel bad that they work so hard. I also want to get my condition under control through diligent dialysis, so that I do not add to their burden and, in a way, do not waste our country's medical resources). Some patients also develop an awareness of responsibility to inherit the spirit of mutual assistance. (N9: I have a wish: to keep doing dialysis diligently and encourage more fellow patients through my own treatment experience. This has also become the motivation for me to keep a dialysis journal). This multi-level system of responsibility cognition promotes patients to transform home management behaviors such as PD operation, fluid control, and complication prevention into life practices with social value recognition.

These social influences from peers, medical staff, and family collectively form the subjective norms that guide patients' self-management decisions. They reflect how perceived social expectations, recognition, and pressures shape patients' beliefs about appropriate or expected behaviors in the self-management of home PD, which constitutes the core of the subjective norm construct in the TPB.

Perceived Behavioral Control—Self-Perception Influences the Decision-Making Intention

Positive Self-Efficacy Motivates the Decision-Making Intention

Some patients with DKD have a strong sense of self-efficacy. Through the evaluation of their own abilities, they strengthen their confidence in being able to effectively manage home PD on their own. (N15: I prepare my dialysis supplies strictly according to the procedure every day, never cutting corners. I have not slacked off even a little bit these past few months, and my dialysis has been going smoothly all along. I feel like I am completely in control of things). At the same time, patients enhance their self-efficacy by setting specific and achievable goals, and maintain their decision-making on self-management behaviors. (N4: I now treat fluid exchange as a daily task. I take a notebook to record it every day, just like clocking in. I feel really happy after getting it done).

The Limitation of External Resources Restricts the Decision-Making Intention

The decision-making on self-management behaviors of home PD for patients with DKD is vulnerable to the limitations of external resources such as home environmental facilities and medical resources. (N12: In the countryside, there are piles of odds and ends everywhere. There's no proper place to put those dialysis solution bags. Every time I need to find something, I have to rummage through chests and cupboards, always worried about getting them dirty). It is necessary for the community to be equipped with PD-related equipment and professional doctors, and to establish a convenient PD service network similar to the chain model abroad, so as to facilitate the dialysate change at any time. (N1: It would be great if our community had such equipment and doctors. I saw on my phone that in foreign countries, there are groups where people can get their fluid changed wherever they go. But it's not like that here. It's inconvenient. There are no national chain facilities, so when we go out, there's no guarantee of treatment anywhere). At the same time, the economic pressure brought by the long-term medication of patients and dialysis-related consumables significantly affects their decision-making on self-management behaviors. (N2: I do not have medical insurance, so I have to pay for all my medical expenses out of my own pocket. Now, apart from the electrolyte tests

that I absolutely cannot skip, I have stopped all other tests for complications. I really cannot afford them. The kids' dad does not care at all, and the family's money just is not enough). In addition, if patients cannot obtain the support and assistance of professionals in a timely manner, they will also feel a sense of helplessness. (N3: Last time I felt unwell at home, I could only send a WeChat message to my attending doctor. Since the doctor was at work and could not reply promptly, I got really anxious and did not know what to do).

These experiences, encompassing patients' self-efficacy and constraints from external resources, collectively reflect their perceived behavioral control over home PD self-management, which is consistent with the construct of perceived behavioral control in the TPB. It accurately captures the strength of patients' beliefs in their ability to successfully perform the necessary self-management behaviors after comprehensively considering their own capabilities and external obstacles.

Discussion

Principal Findings

This study adopted the method of the TPB to reveal the decision-making experiences of patients with DKD regarding their self-management behaviors during home PD, as well as the reasons influencing their self-management decision-making. The results showed that it is possible to improve their self-management behaviors during home PD by strengthening the positive feedback of the psychological experience of behavior decision-making, perfecting the mechanism for patients to actively participate in decision-making under the social support network, and exploring and constructing a community assistance model for the management of home PD for patients with DKD.

Strengthen the Positive Feedback of the Psychological Experience of Behavioral Decision-Making

This theme corresponds to the behavioral attitude in the TPB, clarifying that patients' positive cognition arising from improved physical function and negative feelings triggered by negative emotions directly affect their decision-making regarding self-management behaviors. This study found that the improvement in physical condition brought about by regular PD serves as the driving force that motivates patients with DKD to adhere to the decision-making of self-management behaviors during home PD. This conclusion is similar to the research findings of Chuasuwan A and others.[34] The reason may be that patients with DKD have long endured metabolic disorders, edema, and uremic symptoms before dialysis. In contrast to the positive feedbacks such as the improvement of electrolyte balance and the reduction of volume load obtained after implementing regular PD, patients recognize the good outcomes brought about by self-management of home PD.[35] As a result, their behavioral beliefs are strengthened, a positive attitude towards self-management behavior decision-making is formed, the willingness to make decisions is further enhanced, and the decision-making of self-management behaviors is maintained. In addition, the study also shows that negative emotions can lead patients to have a negative attitude towards the decision-making of self-management behaviors. This may be due to patients' negative perception of behavioral outcomes, which gives rise to negative emotional experiences, shakes their behavioral beliefs, weakens their positive attitude towards decision-making,[36] and in severe cases, may even lead to treatment interruption or abandonment.[37] For instance, a study by John O et al[38] pointed out that home PD patients experienced a decline in treatment compliance due to anxiety and even gave up useful and effective treatment methods, thereby increasing the risk of complications. In view of this, it is recommended that future studies strengthen the dynamic assessment of the willingness of patients with DKD to make decisions regarding self-management behaviors during home PD, provide patients with timely feedback on positive health improvements, help them establish positive psychological experiences, continuously strengthen their positive attitude towards behavioral decision-making, and thus more effectively improve the level of self-management of home PD for patients.

Improve the Mechanism for Patients to Actively Participate in Decision-Making Under the Social Support Network

This theme corresponds to the construct of subjective norm in the TPB, reflecting how patients' perceived behavioral models of peer groups, professional guidance requirements from medical staff, and potential expectations from social support networks such as family and community influence their decision-making regarding self-management behaviors.

This study found that the exemplary role of peers' behaviors, the continuous management of medical and nursing services, and the positive experiences brought by social support are the sources of motivation for patients with DKD to firmly adhere to self-management behaviors during home PD. In other words, they are the promoting factors for the decision-making of self-management behaviors of home PD for patients with DKD. This conclusion is similar to the research findings of Chen YC and others.[39] The reason may be that the prescriptive norms generated by social support can be transformed into patients' personal subjective norms after cognitive processing, prompting them to make behavioral choices that conform to social expectations. In addition, the inappropriate behaviors of peers can also lead to improper behavioral decisions. It may be that the patients' normative beliefs are interfered by false information, resulting in inappropriate subjective norms, which in turn lead to wrong decision-making intentions and inappropriate behaviors. In view of this, future studies may consider exploring digital peer support platforms[40] to reduce the transmission of misinformation among peers, or developing AI-based monitoring systems to provide patients with scientific and appropriate guidelines for home PD. These measures can help establish correct normative beliefs to strengthen home PD management. Meanwhile, efforts can be made to build social support networks for patients with DKD, encouraging families, peers, communities, and other parties to participate in patients' home PD self-management. Exploring optimal decision support models in this process can enhance patients' motivation to comply, strengthen subjective norms, and ultimately optimize the effectiveness of their behavioral decisions.

Explore the Establishment of a Community Assistance Model for the Management of Home Peritoneal Dialysis for Patients with Diabetic Nephropathy

This theme corresponds to the construct of perceived behavioral control in the TPB, clarifying that the degree of abundance of community support resources perceived by patients directly affects their control beliefs regarding self-management behaviors in home PD, and thereby influences their intention to implement such behaviors. This study shows that during the period of home PD, patients with DKD generally have difficulty in obtaining substantial community support, which, to a certain extent, weakens their decision-making on self-management behaviors. This conclusion is similar to the research findings of Chen.[41] Analyzing the reasons, it may be that the field of community health services in China is still in the exploratory stage in terms of the health management of the population undergoing home PD, and a service continuation mechanism that matches the home self-management needs of the population undergoing PD has not yet been established. Due to the lack of necessary community support resources, patients' belief in their control over self-management behaviors gradually weakens, interfering with their decision-making on self-management behaviors during home PD. In view of this, future efforts may consider improving the community support system from multiple dimensions: at the policy level, integrating the health management of home PD patients into the service assessment indicators of primary medical and health institutions in conjunction with the existing policy framework of the community health service system, strengthening policy connection, and providing institutional guarantees for the implementation of the model; in terms of financial support, referring to the mechanisms of similar chronic disease management projects, solving the funding problems in promoting the community support model through methods such as special medical insurance subsidies and overall planning of community public health service funds. At the same time, organize community medical and nursing teams to participate in special training on home PD management to improve the community's support capacity for health management of home PD populations; encourage patients with DKD undergoing home PD to participate in the behavioral decision-making process together with community medical and nursing teams, so as to continuously improve the level of home health behaviors.

Strengths and Limitations

To the best of our knowledge, this is the first qualitative study that uses the TPB as an analytical framework to explore the experience of self-management behavior decision-making among patients with DKD undergoing PD at home. In addition, this study fully demonstrates methodological rigor by achieving data saturation, adopting dual independent coding, and following the COREQ reporting standards, thereby enhancing the credibility of the research findings.

However, this study also has certain limitations. Firstly, the small sample size is a major limitation, which to some extent restricts the general applicability of the research results. Secondly, this study only included 1 unmarried patient, 1 divorced patient, and 1 widowed patient. The imbalance in the distribution of marital status among the samples may affect the transferability of the research results. Finally, the constraints of the single-center design and cultural background on the generalizability of the research results cannot be ignored. The qualitative data of this study were only collected from one hospital in northern China. Since patients with DKD undergoing home PD from different socioeconomic and cultural backgrounds may have different experiences and perceptions, caution should be exercised when generalizing the results of this study to populations in different regions and cultural groups. Future studies will conduct large-sample, multi-center research and comprehensively apply quantitative and qualitative research methods to further verify the general applicability of the research results and enhance their effectiveness.

Conclusion

Based on the TPB, this study selected 16 patients with DKD for semi-structured interviews, aiming to explore their decision-making experiences regarding self-management behaviors in home PD. The study found that patients' behavioral decisions are influenced by multiple factors, and it provided new qualitative insights into the factors affecting self-management decisions in the context of home dialysis. This innovative aspect has, to a certain extent, filled the gap in existing research in this field. Future clinical work can make efforts from multiple dimensions and improve the quality of patients' decision-making in home PD self-management through a series of specific measures: First, efforts should be made to improve psychological reinforcement strategies, create a supportive decision-making environment, and actively explore feasible community-level intervention measures that are compatible with local medical infrastructure, so as to lay a solid foundation for patients' self-management decision-making. On this premise, a structured doctor-patient communication protocol should be formulated, specifying that a three-step method of "assessment-feedback-confirmation" should be adopted during each outpatient follow-up. Specifically, the implementation of patients' self-management should first be evaluated through scales, then feedback on practical problems should be given in combination with log records, and finally the key points of the next intervention should be jointly confirmed and recorded in the electronic medical record, so as to ensure the standardization and effectiveness of doctor-patient communication. At the same time, a systematic education intervention system should be established: when patients start home PD, specialist nurses should carry out one-on-one operation training according to standardized manuals, focusing on explaining the fluid exchange process and infection prevention and control; subsequent retraining should be conducted with video demonstrations, and graphic manuals containing solutions to common problems should be distributed simultaneously. In addition, knowledge consolidation tests should be carried out through WeChat mini-programs every month to improve patients' self-management ability through systematic education. The coordinated implementation of the above multiple measures will help patients improve their decision-making level in home PD self-management.

Data Sharing Statement

All data related to the results are included in the manuscript. The interview transcripts are not publicly available because of individual privacy concerns.

Ethics Approval and Consent to Participate

The study was approved by the Ethics Committee of Affiliated Hospital of Shaanxi University of Chinese Medicine (SZFYIEC-PJ-2025, No. [52]). All participants signed a written informed consent after being fully informed of the study purpose and procedure prior to the interview. All procedures involving human participants in this study were conducted in accordance with the Declaration of Helsinki.

Consent for Publication

All participants involved in the study signed an informed consent form for the publication of their anonymized responses and direct quotes.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors report no conflicts of interest in this work.

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