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Barriers and Facilitators to Returning to Work Among Middle-aged and Young Adults with End-stage Renal Disease: A Qualitative Study

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Abstract

Background: This study aims to explore the factors hindering and facilitating the return to work of middle-aged and young patients with end-stage renal disease, providing a theoretical basis for constructing individualized social reintegration intervention strategies that meet the needs of patients and are adapted to Chinese culture.

Methods: This study employed a phenomenological qualitative research method, selecting 23 middle-aged and young patients undergoing hemodialysis, peritoneal dialysis, or kidney transplantation in three tertiary hospitals in Hubei Province for semi-structured interviews. Data analysis was conducted using the Colaizzi seven-step analysis method.

Results: A total of 23 research subjects were included in this study. Two main themes and six sub-themes were extracted: (1) The main factors facilitating the return to work of patients include: stable physical and mental rehabilitation status and good self-management ability, positive psychological state, and adequate family support; (2) The main factors hindering the return to work of patients include: physical function limitations caused by the disease and treatment, insufficient understanding of the disease by patients, and the lack of workplace and social support systems.

Conclusion: The return to work of middle-aged and young patients with end-stage renal disease is influenced by multiple factors. In the future, comprehensive intervention should be carried out at the individual, family, and social levels to enhance patients' self-management ability, improve their psychological state, and optimize the social support system, promoting their smooth return to society and workplace, and improving their quality of life.

1 Introduction

End-stage renal disease (ESRD) is a serious public health issue worldwide. Relevant studies show[1] that the number of patients with chronic kidney disease globally has reached 850 million, among whom the number of patients with ESRD who receive maintenance renal replacement therapy exceeds 5.339 million [2]. The incidence and prevalence of ESRD are increasing year by year. The onset of kidney diseases is insidious, the early symptoms are not typical, and the awareness and screening rate of chronic kidney diseases in the global population are generally low, resulting in most patients being diagnosed at the terminal stage[3]. In recent years, ESRD has shown a trend of becoming younger, with the prevalence of the disease increasing year by year among young and middle-aged people[4]. The young and middle-aged groups are the core workforce of society and the main bearers of family responsibilities and social functions. Their long-term illness and loss of labor capacity will further exacerbate the global public health and social economic burden. Therefore, young and middle-aged patients have strong demands for social participation, career development, and self-value realization in terms of disease stability and control. With the advancement of medical technology and the popularization of dialysis treatment, the treatment methods for ESRD have been continuously enriched[5],

including home hemodialysis, optimized peritoneal dialysis schemes, and kidney transplantation, which have effectively improved the survival period and quality of life of patients[6]. Against this background, returning to work (RTW) has gradually become an important indicator for young and middle-aged ESRD patients to achieve social reintegration, and it is also an important way for them to reduce family economic pressure, reshape self-identity, and maintain long-term physical and mental health [7]. However, in China, influenced by traditional cultural factors, society's understanding of chronic diseases is not clear, and there are inherent prejudices against patients with chronic diseases, which restricts their willingness to work and social participation initiative, resulting in a relatively low overall rate of RTW among young and middle-aged ESRD patients in China, significantly lower than that of developed countries, severely restricting the improvement of patients' overall quality of life and comprehensive recovery of physical and mental health. In recent years, domestic and international studies have preliminarily explored research on the influencing factors of RTW for patients with ESRD. Most existing studies adopt quantitative research methods, through questionnaire surveys, to analyze the correlation between demographic characteristics, disease-related indicators, and patients' hospital and behavioral return to work, but they are difficult to deeply explore the real experiences, inner dilemmas, and behavioral motivations of ESRD patients during their return to work [8]. At the same time, existing qualitative studies mainly focus on patients with chronic kidney disease and lack exploration for the middle-aged group. The middle-aged group, as the core workforce of families and society, has unique research significance for the obstacles and promotion paths of their return to work[9][10]. Therefore, this study adopts qualitative research methods to conduct semi-structured in-depth interviews with young and middle-aged patients with ESRD, systematically exploring the obstacles and promoting factors they face during the return to work process. In order to provide theoretical basis for constructing individualized social reintegration intervention strategies that meet patients' needs and are adapted to Chinese culture, improve patients' physical and mental health status and long-term quality of life, and reduce the burden of family and social public health.

2 Methods

2.1 Study Design and Participants

This study adopts a qualitative research design, using semi-structured in-depth interviews to systematically explore the barriers and facilitators faced by middle-aged and young patients with end-stage renal disease (ESRD) during their return to work. To ensure the accuracy of the research results, the purposive sampling method was used to select patients who received hemodialysis, peritoneal dialysis, or kidney transplantation in three tertiary hospitals in Hubei Province from February to April 2026 as the research subjects. The research process strictly followed the COREQ guidelines for qualitative research reports[11], ensuring the rigor, transparency, and reproducibility of the research process.

2.2 Inclusion And Exclusion Criteria

Inclusion criteria: (1) Diagnosed as end-stage renal disease according to the 2024 guidelines of the Kidney Disease: Improving Global Outcomes (KDIGO)[12]; (2) The age at diagnosis was between 18 and 59 years old; (3) Currently receiving maintenance hemodialysis, peritoneal dialysis or follow-up after kidney transplantation, and the treatment duration was ≥ 3 months; (4) Having previous work experience and a clear intention to return to work; (5) Voluntarily participating in the study and signing the informed consent form.

Exclusion criteria: (1) Severe cognitive impairment or mental illness that affects normal communication and comprehension ability; (2) Acute illness or unstable clinical condition, unable to complete the interview; (3) Complicated with severe systemic diseases or complications (such as end-stage heart failure, malignant tumors, etc.) that affect work ability; (4) Unwilling or unable to provide informed consent.

2.3 Determination of Sample Size

The sample saturation was determined based on the data saturation principle, that is, no new topics emerged in the consecutive three interviews [13]. A total of 29 patients meeting the criteria were recruited for this study, among whom 26 patients agreed to participate in the qualitative interviews. Before the formal interviews, pre-interviews were conducted with three of the patients. Since the main purpose of the pre-interviews was to test the scientificity, rationality and feasibility of the interview guide[14], the interview contents of these three participants were not included in the research results. When interviewing the 21st patient, the topics began to repeat, and no new topics emerged in the subsequent interviews with the 22nd and 23rd patients. Eventually, 23 patients were included in the study.

2.4 Data Collection Methods

Recruitment posters were posted in the nephrology outpatient departments and blood purification centers of three tertiary grade A hospitals in Shiyan City, Hubei Province. The research information was also disseminated through the recommendations of the medical staff in the departments and the patient WeChat groups. The recruitment information briefly described the research purpose, interview content, inclusion and exclusion criteria, estimated interview duration, recording arrangement, privacy protection measures, and contact information of the research team. Patients who were interested in participating could contact the research assistant by phone or WeChat. The research assistant would conduct a preliminary screening of the applicants based on the inclusion and exclusion criteria,and those who met the criteria would be included in the potential participant list. Each potential participant would be contacted individually by phone to further explain the purpose and significance of the research, onfirm their willingness to participate, arrange for the signing of a written informed consent form, distribute the participant basic information registration form, and coordinate the time and location of the interview. The interview would be conducted in an independent quiet room or conference room within the hospital in a face-to-face one-on-one semi-structured in-depth interview format. Before the interview, the researcher would first collect the general demographic information and clinical data of the participants, including gender, age, marital status, educational level, occupation type, dialysis method, dialysis

duration, comorbidity status, and current working status. During the interview, the researcher would strictly follow the pre-determined interview outline to guide the respondents to deeply describe the obstacles and facilitating factors they encountered during their return to work. Each interview lasted for 20 to 40 minutes. With the informed consent of the respondents, the entire process would be recorded using a recording device. The interview recording would be transcribed verbatim into a text document within 24 hours after the interview. After transcription, another member of the research team would review the original recording sentence by sentence for a second check to correct errors caused by dialect, unclear speech,or automatic transcription tools, ensuring the accuracy and completeness of the transcribed text.

2.5 Interview Outline

Based on the research objectives, a semi-structured interview outline was compiled and consulted with six experts, including two nephrology associate physicians, one rehabilitation medicine associate physician, one head nurse with over ten years of clinical nursing management experience in nephrology, one professor dedicated to qualitative research methodology studies and teaching, and one human resources (labor employment field) consultant. The experts were asked whether the interview outline comprehensively covered the research scope, if there were any off-topic information, and if the questions were accurately stated and relevant to the cognition and experiences of young and middle-aged patients. Subsequently, five experts independently proposed modification suggestions. The research team held an online meeting to discuss different opinions. The initial interview outline was revised, including optimizing the question formulation (such as refining "What factors do you think affect your work?" into "During your attempt to return to work, what specific troubles did your physical discomfort (such as fatigue after dialysis, complications, etc.) bring to you?"), adjusting the logical sequence. Then, pre-interviews were conducted with three young and middle-aged patients with end-stage renal disease, and adjustments were made based on their feedback to ensure the clarity, empathy, and practicality of the questions. Finally, the core questions of the interview outline were determined, as shown in Table 1.

Table 1
Interview Guide

Question Categories	Specific questions
Basic Information	1. Could you please briefly recall how you were diagnosed and began Peritoneal dialysis treatment?
	2. What occupation did you do before you started dialysis? Are you Currently employed, unemployed, out of work, or voluntarily on hold After getting sick?
	3. Do you yourself have any thoughts of returning to work at this Stage?
Facilitating Factors	4. When did you start considering returning to work? Why are you Considering returning to work?
	5. Did your family, friends, colleagues, or hospital help you as you Wanted to get back to work? How exactly did you help?
	6. What preparations did you make to get back to work smoothly?
	7. What positive roles do you think mindset, confidence, and Self-recognition have played in your return to work?
Obstacles factors	8. What do you think are the physical problems that prevent you from Going to work?
	9. Does the disease impose psychological burdens or concerns on you? Will it affect your job search? Where exactly does it manifest?
	10. In the workplace, do you worry about what your colleagues, leaders Might think, treat differently, or discriminate against when they Know about it?
	11. Do you think the daily operations, follow-up visits, and Unexpected situations of peritoneal dialysis conflict with the Working hours and intensity? What exactly are the conflicts?
Others	12. Do you have any other needs or suggestions regarding returning to work?

2.6 Research Team

The research team consists of researchers with backgrounds in nursing and clinical medicine. It includes 1 mentor with extensive experience in qualitative research, responsible for the overall design and methodological guidance, and 3 graduate students who are in charge of conducting interviews, organizing data, and performing preliminary analysis. All research members received unified training in qualitative research methods before the study began, including interview skills, data transcription norms, and coding methods, to ensure the consistency and scientific of the research process. During the interviews, one researcher was responsible for conducting the interviews, while the other assisted in observation and recording. All researchers participated in discussions on different opinions. In cases where consensus was not reached, the corresponding author made the decision, as he is an expert in internal medicine with professional knowledge in this field, to ensure the scientific and accuracy of data analysis. All team members have received training in qualitative research and have rich clinical experience, ensuring the rigor and scientific validity of the study.

2.7 Data Analysis

The transcribed text materials were imported into Nvivo 15.0 software for auxiliary management and analysis. Data analysis strictly followed the seven-step method of Colaizzi's phenomenology[15], including familiarizing with the text, identifying meaningful sentences, constructing codes, clustering themes, providing detailed descriptions, generating basic structures, and verifying structures. To enhance the rigor and credibility of the analysis process, two researchers who received systematic training in qualitative research methods independently completed the coding work. When there were differences in the coding process, all members of the research team discussed and negotiated until a consensus was reached. All coding records, the evolution process of themes, and discussion summaries were retained for future reference. Finally, to verify whether the themes could reflect the true viewpoints of the participants, we began the validation within one week after data collection to ensure that the research subjects had a clear memory of the interview content. We informed the original participants of the formed themes and asked if these themes were in line with their understanding and feelings of returning to work. Was the selected original interview data for each theme accurate? Were there any key cognitions, attitudes, and needs that were not mentioned? All participants agreed that these themes were in line with their viewpoints. Additionally, the entire research team discussed the entire analysis process and ensured that the final themes clearly reflected the interview data.

2.8 Rigor

This study adheres to the guidelines for qualitative research reports, ensuring the quality of the research from four aspects: credibility, reliability, confirmability, and transferability. Before the interviews, the outline was revised through pre-interviews to ensure that the questions were clear and relevant to the research purpose; during the interviews, semi-structured in-depth interviews were conducted with layered questioning, only making neutral inquiries to avoid leading biases. The interviews were recorded throughout and independently coded by two researchers. Disagreements were resolved through discussion and consensus, and reflective notes were written immediately to record non-verbal information and the subjective influence of the researchers. After the interviews, all materials (audio

recordings, transcriptions, coding records, reflective notes, etc.) were anonymized and archived for future reference. Data analysis strictly followed the Colaizzi seven-step method to ensure systematic transparency and was conducted through the inclusion of participants with different demographic and clinical characteristics and the attachment of original quotes under each theme to enhance the transferability of the results.

2.9 Ethical Considerations

This study has been approved by the ethics committee of the affiliated institution (2024-12-06). Before the implementation of the study, all participants were informed of the research purpose, content, possible risks, and their rights, ensuring their voluntary participation based on full understanding, and they signed a written informed consent form. During the research, participants had the right to withdraw at any time without any impact. All interview materials were anonymized, replaced with codes instead of real names, and strictly kept confidential, only used for this study's analysis, to ensure the security of participants' privacy.This study was conducted in accordance with the Declaration of Helsinki.

3 Results

3.1 Demographic characteristics of the participants

A total of 23 eligible young and middle-aged patients with end-stage renal disease undergoing dialysis participated in this study. Among them, 12 were male and 11 were female; the participants' ages ranged from 18 to 59 years, with an average age of 45.52 years. Their employment status was employed 8 cases, on leave 6 cases, and resigned 9 cases; the dialysis duration was 1 to 12 years, with an average dialysis time of 5.67 years. In terms of educational level, 8 participants had a bachelor's degree or above, accounting for 34.78%, as shown in Table 2.

Table 2
General Demographic Characteristics

Varible	Project	Frequency(n)	Percentage(%)
Gender	Man	12	52.17
Age(years)	18–29	2	8.70
	30 ~ 39	3	13.04
	40 ~ 49	6	26.09
	50 ~ 59	12	52.17
Education level	Junior high school or below	9	39.13
	High school/technical school	3	13.04
	Diploma	3	13.04
	Bachelor's degree or above	8	34.78
Marital status unmarried	Married	2	8.70
	Divorced	19	82.61
	Previous	2	8.70
Occupation	Student	1	4.35
	Public institution	5	21.74
	Company employee	5	21.74
	Freelancer	7	30.43
	No	5	21.74
Dialysis methods	Hemodialysis	14	60.87
	Peritoneal dialysis	9	39.13
Dialysis age(years)	< 3years	4	17.39
	3–5years	6	26.09
	> 5years	13	56.52
On duty	On leave/on standby	8	34.78
	On standby	6	26.09
	Resignation	9	39.13

3.2 Topic One: Promoting Factors for Middle-aged and Young Adults with End-Stage Renal Disease to Return to Work

3.2.1 Stable Physical Rehabilitation and Self-Management Skills

Stable physical condition and good self-management skills are the essential foundation for middle-aged and young adults with end-stage renal disease to successfully return to work. Most respondents stated that with the regularity of dialysis treatment and the stabilization of their condition, their physical strength gradually recovered, enabling them to handle daily work and commuting needs. Some respondents mentioned that through strict diet control, taking medication on time, regular check-ups, and meticulous management of fluid intake, the frequency of complications was reduced, thereby lowering the risk of work interruption due to sudden health issues. Additionally, the improvement of psychological state was also mentioned. Some respondents gradually overcame anxiety and inferiority complex through positive mindset adjustment, encouragement from family members, or mutual support among patients, and re-established confidence in their own abilities. This dual stability of physical and mental state gave them the motivation and confidence to attempt to return to work.

P4: Dialysis is now carried out more regularly, and their bodies gradually regain strength. They can handle commuting and work every day. The doctor arranges the dialysis time to avoid the rush hour, and they are not too afraid that their bodies won't hold out. They have a better understanding of caring for their condition.

P20: I can manage my medication and water intake by myself. I pay attention to indicators regularly and know when to do what. I feel very at ease.

3.2.2 Positive Psychological State of Patients for Physical Rehabilitation

A positive psychological state is the internal driving force that prompts middle-aged and young adults with end-stage renal disease to actively resume work. Some respondents stated that in the early stages of the illness, they were trapped in self-blame for being a burden to the family, but returning to work gave them a sense of being needed and recognized, which brought them a sense of value. Many respondents mentioned that positive feedback from work, such as completing a task or being affirmed by colleagues or leaders, significantly enhanced their self-efficacy. Some respondents also stated that by consciously comparing their own condition with the daily experiences of healthy people, they gradually reduced their excessive fear of the disease. This psychological process helped them rebuild confidence in returning to the workplace.

P9: After returning to work, I gave a lecture to everyone. The leaders and colleagues praised me for doing a good job. I also really like this job. I feel that my body can recover and I can work happily, which makes me content.

P16: At first, I was very afraid of this disease. Later, I adjusted my mindset and didn't compare myself with others. I just watched myself getting better day by day. Now I can commute normally, and the feeling of fear

gradually faded. I feel that I am increasingly returning to a normal life.

3.2.3 Adequate Family Emotional Support

Family support plays an irreplaceable stabilizing role in the process of patients returning to work. Many respondents mentioned that their spouses or children took on the household chores that were originally their responsibility, such as washing clothes, cooking, and cleaning, allowing them to prioritize their limited physical strength for work and commuting. At the same time, the company of family members and their supervision, such as taking turns to accompany dialysis, reminding about medication and check-ups, not only reduced their concerns about sudden health issues but also brought them a sense of psychological security. This emotional comfort and practical assistance from the family helped patients relieve most of their worries in life, enabling them to have more energy to deal with job hunting and challenges at work.

P12: Family members understand each other. Now my husband is responsible for doing the dishes and drying clothes. Saving these efforts, I don't worry as much about work.

P15: My daughter and husband take turns to accompany me for dialysis and are willing to take time off to accompany me (for check-ups). This being managed makes me feel more at ease, and I don't feel as panicked anymore.

3.3 Topic 2: Obstacles for Middle-aged and Young Patients with End-stage Renal Disease to Return to Work

3.3.1 Physical limitations caused by disease treatment

The direct physical damage to the patient's body function caused by the disease itself and its treatment process is the primary realistic factor hindering their return to work. Several respondents described persistent fatigue and physical decline after dialysis, sometimes experiencing dizziness and weakness, and being unable to handle jobs that require prolonged standing or high-intensity physical labor. Some respondents engaged in delicate operations mentioned that the peripheral nerve damage caused by dialysis led to numbness and tremors in their hands and feet, making tasks that required hand dexterity, such as typing and maintenance, difficult and resulting in a significant decline in work efficiency. Additionally, the fixed dialysis time conflicts with the regular work schedule, making it difficult for patients to find positions that both meet their treatment needs and are not rejected by employers. Even if they manage to stay or transfer, they often face a significant reduction in income.

P5: A little more physical exertion makes me feel weak and dizzy. I can't handle a full day's work at the post. The fixed dialysis time conflicts with the 9-to-5 work schedule, making it hard to find a suitable position.

P13: My hands are numb, and I have to take breaks while typing. Previously, I could finish a form in half an hour, but now it takes me over an hour.

P23: After chemotherapy, my physical strength has decreased significantly. Previously, I could stand and perform a 4-hour surgery continuously, but now after standing for 1 hour, I feel dizzy and disoriented, and can only transfer to other positions. However, my income has dropped by more than half.

3.3.2 Insufficient understanding of disease-related cognition by patients

Some patients lack an objective understanding of the relationship between their disease and work load, easily falling into excessive worry or passive avoidance. Some respondents stated that although doctors assessed their physical condition as capable of handling light work, they still worried that work would increase the burden on their disease, and during the job search process, they repeatedly hesitated and were reluctant to take the first step. Some respondents also showed a clear sense of stigma, fearing that colleagues or clients would discriminate or distance themselves if they knew their condition, so they deliberately concealed their medical history in social situations, even avoiding team-building activities and social gatherings, gradually feeling marginalized within the team. Patients engaged in physical or technical occupations more prominently showed concerns about their bodies, worrying about making mistakes at work or losing client trust due to physical reasons.

P7: I avoid group activities and social gatherings, fearing being persuaded to drink alcohol, and fearing that talking about my illness would expose me. Gradually, I felt marginalized.

P19: Every time I want to submit a resume, I am very anxious. I am reluctant to explain my dialysis situation to the interviewer, fearing being directly rejected. I feel that I am different from ordinary job seekers and am reluctant to actively look for a job.

3.3.3 Insufficient workplace and social support

The inclusiveness of the workplace environment for dialysis patients is insufficient, and there are also significant gaps in the implementation of social security policies. Several respondents reported that although their original employer retained their labor relationship, it actually marginalized them through job transfers with salary cuts, arranging part-time positions, etc., forcing them to resign on their own. Some respondents still in employment stated that the company lacked an elastic work system for chronic diseases, taking sick leave or follow-up visits to deduct wages, and even lacking supplementary medical insurance to cover additional medical expenses. These dual resistances from the workplace and social system make it difficult for patients, even if they have the intention to return to work, to achieve it without substantial external support.

P4: The original employer asked me to return, but the original position was gone. They transferred me to a part-time position, clearly setting me aside. They wanted me to resign on my own.

P9: Now the company has no supplementary medical insurance. Taking sick leave deducts money. I even have to choose weekends for check-ups. I don't dare to take a leave easily.

4. Discussion

4.1 Positive psychological state and stable self-management ability facilitate patients' return to work

Positive psychological state and stable self-management ability facilitate patients' return to work. This is mainly manifested in that patients can overcome the anxiety and self-blame emotions caused by the disease and strictly follow the doctor's advice to carry out the rehabilitation management of the disease. The research results show that some patients can positively view the relationship between the disease and work, and regard work as an important way to restore normal life, maintain social roles and achieve personal values. Van et al[16]found that patients with good disease adaptation do not only regard work as an economic source, but also consider it as the core carrier of maintaining the normal life, preserving social identity. By maintaining employment status, patients can effectively resist the sense of identity rupture caused by the disease and rebuild the sense of control over life and self-worth. In addition, good disease control level and self-management ability are the basic conditions for chronic disease patients to maintain or restore labor participation, which is the same as the research results of Van[17] and Lessard[18]. Foreign studies on dialysis patients indicate that patients who can effectively monitor symptoms, manage dialysis and adjust lifestyle are more likely to maintain a stable employment status [19]. Through strict diet control, taking medicine on time, regular check-ups and precise management of fluid intake, the frequency of complications is reduced, providing a physical foundation for patients to return to work. After the patient's condition stabilizes, renal internal medicine doctors can jointly conduct systematic assessment for returning to work with psychological counselors and social workers, focusing on the patient's disease cognition, confidence in returning to work, career needs and social support status; for patients with anxiety, loss of career confidence or insufficient willingness to return to work, individualized psychological counseling and peer support can be provided; at the same time, through health education and behavioral training, patients' dialysis management and symptom coping abilities can be improved. Thus, in clinical intervention, the cultivation of patients' self-management ability and psychological intervention can effectively help patients improve their rehabilitation level and lay the foundation for returning to work.

4.2 Patients' cognition of the disease and social support affect their return to work

Insufficient cognition of the disease and insufficient social support affect patients' return to work. This is mainly manifested in that patients lack an objective judgment of their own physical condition and work ability, and at the same time, they receive limited support in family sharing, unit understanding, job position adjustment and social security. In terms of disease cognition, some patients lack an objective assessment of their own work ability, easily showing excessive protection and excessive worry, thus actively giving up job opportunities; on the other hand, the sense of stigma and the expectation of workplace discrimination make patients tend to avoid information disclosure or directly withdraw from

the competition during the job search process, which is consistent with the previous research results on the impact of chronic disease patients on employment behavior[20]. Therefore, in clinical intervention, not only symptom management but also disease cognition education, work ability assessment and psychological support should be strengthened. Medical institutions should collaborate with vocational rehabilitationists, psychologists and counselors to provide personalized vocational ability assessment and self-confidence reconstruction training for patients, helping them objectively recognize their labor ability, reducing fear and excessive protection tendencies. For patients with prominent stigma, organizing successful-employed patients to share experiences can play an exemplary role, enhance patients' self-efficacy, reduce stigma and stimulate the willingness to actively seek employment [21][22]. In the aspect of social support, its influence mainly lies in family support, workplace support and institutional support. First, insufficient family support directly weakens the conditions for patients to return to work. Dialysis patients usually need stable care support. When family members cannot provide continuous support due to work or caregiving burdens, patients often have to make a choice between "maintaining treatment stability" and "going out to work", thereby reducing the possibility of employment. Therefore, in terms of family support, caregivers should enhance their behaviors in aspects such as transportation for dialysis, dietary management, and daily care. Secondly, employers lack understanding of the characteristics of dialysis treatment, resulting in inflexible job arrangements, such as fixed working hours, continuous shifts, and high-intensity work requirements. This makes it easy for patients to quit their jobs again due to treatment schedule conflicts or insufficient physical tolerance. Therefore, employers can provide support measures such as flexible scheduling, part-time positions, remote work, and appropriate reduction of physical workload based on the patient's treatment routine to reduce the conflict between treatment time and work arrangements. Finally, the insufficient accessibility of institutional support further amplifies the employment barriers. Although relevant employment protection and medical insurance policies do exist, in the actual implementation process, some patients, due to insufficient information acquisition, complex application procedures, or limited understanding of the policies, are unable to truly obtain job adjustments, employment subsidies, or disability employment support, resulting in the ineffective conversion of institutional resources into actual employment support, which is consistent with the research results of Blanco[23]. Therefore, medical institutions should establish a referral mechanism for resumption of work resources, where medical staff or social workers actively provide patients with information on medical assistance, employment assistance, disability employment policies, and social welfare, and assist patients in completing policy applications.

4.3 Focus on patients' needs for returning to work and address obstacles to returning to work

Young and middle-aged patients with end-stage renal disease have an urgent need to return to work, mainly manifested in alleviating economic pressure, restoring family roles, maintaining a sense of social value, and re-establishing a normal life order. Young and middle-aged patients are mostly in the stage of heavy family economic responsibilities and critical career development, and returning to work is not only a way to obtain income but also an important way for them to maintain family responsibilities and social

roles. However, patients undergoing hemodialysis need to travel to the hospital multiple times per week, and the processes involved, such as transportation, waiting for treatment, and post-treatment physical recovery, all consume a lot of time and energy. When employers still use fixed working hours, fixed positions, and continuous attendance as the main management methods, patients find it difficult to balance treatment and work, and can only be forced to give up their original positions or lower their employment expectations. Previous studies [24] have pointed out that the lack of flexible working hours, remote work, and job adjustments is an important reason for the low employment rate of chronic disease patients. Therefore, in clinical nursing, the assessment of resumption of work needs to be included in the continuation of care. After the patient's condition stabilizes, medical staff, rehabilitation therapists, social workers, etc., will conduct a comprehensive assessment of the patient's work ability based on their physical function, dialysis schedule, previous career experience, and employment intentions, and provide individualized career counseling and career planning. For patients who cannot continue their original careers, community employment service institutions can be linked for vocational skills training and job recommendations, encouraging patients to choose jobs with lower physical intensity, relatively flexible working hours, or the ability to work from home, to improve job fit. At the same time, employers can promote the provision of reasonable and convenient measures such as job adjustments, job content optimization, and flexible working hours based on the patient's physical condition, helping patients gradually resume labor participation while ensuring treatment compliance, achieving stable and sustainable career return.

5 Limitations

This study has certain limitations. Firstly, it employed purposive sampling with a small sample size. Although the respondents came from the nephrology departments or dialysis centers of three different hospitals, the representativeness and extrapolation of the sample were limited. Secondly, there are certain differences in medical resources, medical insurance policies, and social support among different regions, which restrict the applicability of the research results in other regions and different medical institutions. Thirdly, the data collection and analysis process of qualitative research highly depend on the researcher's theoretical framework and subjective interpretation. Although multiple methods were adopted to reduce bias, it is still difficult to completely avoid it. Fourthly, the data comes from semi-structured interviews, which may have recall bias and social expectation effects. Finally, this study only focused on middle-aged dialysis patients and did not include elderly patients and perspectives of relevant professionals, limiting the scope of its conclusions. Given these limitations, future research can be conducted in different regions and with a larger sample size, including patients from different regions and different types of institutions, to further explore the multi-dimensional factors affecting the return to work of dialysis patients. At the same time, longitudinal studies can be carried out to track the process of patients' return to work and their long-term adaptation, providing more scientific and systematic support for formulating targeted rehabilitation plans.

6 Conclusion

This study explored the factors hindering and promoting the return to work of middle-aged patients with end-stage renal disease through qualitative interviews. It identified that patients' return to work is influenced by their individual physical and mental conditions, family support systems, and social environments. The promoting factors include stable disease control ability, positive psychological adjustment, and adequate family care support; the hindering factors mainly focus on physical functional loss related to treatment, disease cognition bias, and insufficient workplace inclusiveness and insufficient implementation of social security policies. By analyzing the views of middle-aged patients with end-stage renal disease on their return to work process, the challenges they face were revealed, providing experience and evidence for helping middle-aged patients with end-stage renal disease return to work smoothly, improving their quality of life, and maintaining their personal dignity.

Declarations

Ethical Statement

This study has been approved by the Ethics Committee of Taihe Hospital in Shiyan City (Number: (2024-12-06)), and all research participants have signed written informed consent forms.

Conflicts of Interest

The author declares that there are no commercial or financial conflicts of interest involved in the conduct of this research.

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Author Contribution

Jiahua Wang: Data collection, formal analysis, method design, writing - first draft; Lan Zhang: Formal analysis, investigation; Ye Fei: Data collection, formal analysis; Li Wang: Data collection, formal analysis; Yan Zhan: Conceptualization, formal analysis, method design, supervision, verification, review.

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Data Availability Statement

Due to restrictions on the data privacy of the research participants, the data used in this study can be obtained from the corresponding author.

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