

## EFFECT OF COMPREHENSIVE COGNITIVE INTENSIVE NURSING MODEL ON QUALITY OF LIFE AND COMPLICATIONS OF PATIENTS WITH CHRONIC RENAL FAILURE UNDERGOING MHD

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### ABSTRACT

**Objective:** To explore the effect of comprehensive cognitive intensive nursing model on the quality of life and complications of patients with chronic renal failure undergoing maintenance he-modialysis (MHD).

**Methods:** Patients with chronic renal failure undergoing MHD in our hospital were administered with humanized nursing interventions from September 2019. The routine nursing of nephrology department (control group) and the intervention of comprehensive cognitive intensive nursing model (observation group) were used respectively, and 110 patients were selected from each group. The World Health Organization (WHO) Quality of Life Score, Pittsburgh Sleep Quality Score and the occurrence of complications were compared between the two groups before and after the 1-year intervention.

**Results:** The social, environmental, physical and psychological scores of the observation group after intervention were significantly higher than those of the control group and before the intervention ( $P < 0.05$ ); the Pittsburgh sleep quality scores of patients in the observation group after the intervention were significantly lower than those of the control group and before the intervention ( $P < 0.05$ ); The incidence of complications in the observation group was significantly lower than that in the control group ( $P < 0.05$ ).

**Conclusion:** The application of comprehensive cognitive intensive care model in patients with chronic renal failure undergoing MHD can effectively improve the quality of life, improve sleep status, and contribute to the prevention of complications.

**Keywords:** Cognition, Nursing, MHD, Chronic Renal Failure, Quality of Life, Complications.

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### Introduction

Chronic renal failure is the common manifestation of end-stage renal disease. Hemodialysis, the main treatment for CRF, can efficiently remove toxic solutes and metabolic wastes through semi-permeable dialysis membrane, as well as achieve good renal function re-placement<sup>(1,2)</sup>. Due to recurrent illness and continuous dialysis treatment, patients with chronic renal failure often have severe psychological burden and financial pressure. In addition, patients with chronic renal failure have a higher proportion of insomnia, which may affect the effect of hemodialysis treatment and the quality of life<sup>(3,4)</sup>.

How to effectively improve the nursing quality of patients with chronic renal failure receiving MHD treatment in order to maximize the clinical prognosis has attracted more and more attention of the medical community. Our hospital implemented humanized nursing intervention for patients with chronic renal failure undergoing MHD since September, 2019, and compared the WHO quality of life score, Pittsburgh sleep quality score and complications one year before and after implementation, as well as explored the influence of comprehensive cognitive intensive nursing mode on the quality of life and complications of patients with chronic renal failure treated with MHD. Specific reports were as follows.

## Materials and methods

### *Clinical data*

Patients with chronic renal failure undergoing MHD in our hospital were administered with humanized nursing interventions from September 2019. The routine nursing of nephrology department (control group) and the intervention of comprehensive cognitive intensive nursing model (observation group) were used respectively, with 110 cases in each group. In the control group, there were 58 males and 52 females, with an average age of (57.21±6.85) years old and an average dialysis time of (2.47±0.75) years. According to the education level, 51 cases were junior high school or below, 35 cases were high school or technical secondary school, and 24 cases were junior college or above. In the observation group, there were 61 males and 49 females, with an average age of (58.07±6.99) years old and an average dialysis time of (2.39±0.68) years. According to the education level, 53 cases were junior high school or below, 37 cases were high school or technical secondary school, and 20 cases were junior college or above. There was no significant difference in general data between the two groups ( $P>0.05$ ). The study protocol was approved by the ethics committee of our hospital, and the patient's guardian signed an informed consent.

### *Inclusion and exclusion criteria*

*Inclusion criteria:* Meet the diagnostic criteria of chronic renal failure<sup>(5)</sup>; Meet the indications for MHD treatment<sup>(5)</sup>; The duration of dialysis lasted for more than 6 months; Age 18-65 years old; Complete clinical data.

*Exclusion criteria:* Mental system diseases; Cognitive dysfunction; Malignant tumor; Inability to perform basic self-care functions; Acute infection after dialysis.

### *Nursing methods*

The control group was administered with the routine nursing of nephrology department, and the specific measures included: Actively controlled the heart failure and infection symptoms during treatment, and provided effective drug intervention for chronic underlying diseases; maintained internal environment water, electrolyte and acid-base balance during hemodialysis; Ensured a good hospitalization environment, kept the ward clean and tidy, well ventilated; Performed regular cleaning and disinfection, requiring patients to pay

attention to rest and avoid fatigue; After admission, understood the patient's awareness of the disease, introduced relevant measures for disease diagnosis and treatment, emphasized the importance of low-salt, low-fat and low-phosphorus diet; Strengthened inspections during hemodialysis, and regularly observed changes in vital signs and bleeding at the puncture site; Measured vital signs in time after hemodialysis; Meanwhile, accurately calculated the intake of body fluid, control the intake of phosphorus and increase the intake of calcium. The observation group was administered with additional comprehensive cognitive enhancement nursing model intervention on the aforementioned basis, and the specific measures included: Understood the patient's awareness of the severity of their own disease and prognosis through the one-to-one communication between the responsible nurse and the patient, and improved the patient's cognitive level through patient explanations, corrections and supplements. Established patients' confidence in overcoming the disease, and made patients more actively cooperate with treatment and nursing; After admission, issued the health education manual of nephrology department to the patients, and required them to read the contents in detail and gave targeted explanation. For the content to be operated, it was necessary for the responsible nurse to demonstrate to the patient face to face for ensuring that the patient was proficient; Strengthened communication with patients' family members, emphasized the importance of family members' support for patients, encouraged patients to communicate with their families, and made them feel the warmth from their families; Patiently instructed the patients to correctly master the calculation method of liquid intake and output. The formula for calculating daily drinking water was as follows: Urine volume in the previous day +500 ml; Instructed the patients to pay attention to the intake and absorption of phosphorus and calcium to avoid the occurrence of renal osteopathy; Instructed the patients to complete self-relaxation by playing self-relaxation audio during the rest of dialysis, once every 2 days, lasted for 3 months; Conducted one-on-one directed interviews by the responsible nurses for patients with poor mastery. Conducted stimulation control nursing for patients with poor sleep quality, instructed the patients to fall asleep until they were sleepy. If the patient could not fall asleep, instructed them to relax and fall asleep when sleepy. Instructed the patients to get up at a fixed time every day to form a healthy cycle of sleep habits, try not to sleep

or rest less during the day. The intervention time of the two groups lasted for 3 months.

**Observation indicators**

WHO quality of life short form was used to evaluate the quality of life, in-cluding social relations, environment, physiology and psychology. the higher the score, the better the quality of life<sup>(6)</sup>; Pittsburgh Sleep Quality Index (PSI) was used for the evaluation of sleep quality, with 23 items in 7 dimensions, and each dimension scored 0~3 points. The higher the score, the worse the sleep quality ; The incidence of dialysis related complica-tions including hypotension, hyperten-sion, infection and arrhythmia were rec-orded within 3 months after treatment.

**Statistical analysis**

The SPSS20.0 statistical software was used for data analysis and pro-cessing. The measurement data was compared by t test, and the data was ex-pressed as (x±s); the count data was compared by χ<sup>2</sup> test or Fisher's exact probability method, and the data was expressed as %; P<0.05 indicated that the difference was statistically significant.

**Results**

**Comparison of the WHO Quality of Life Brief Scale (WHOQOL-BREF) scores between the two groups before and after intervention**

The social, environmental, physical and psychological scores of the obser-vation group after intervention were sig-nificantly higher than those of the control group and before intervention (P<0.05), as summarized in Table 1.

Group	Case	Social		Environmental		Physical		Psychological	
		Pre-inter-vention	Post-intervention	Pre-inter-vention	Post-intervention	Pre-inter-vention	Post-intervention	Pre-inter-vention	Post-intervention
Control group	110	48.56±6.05	51.39±8.55*	48.64±6.16	52.98±8.04*	44.28±5.81	48.25±6.34*	48.07±6.82	51.48±8.65*
Observation group	110	47.41±5.43	55.82±10.21**	48.99±6.42	60.15±10.32*	43.75±5.50	52.77±8.19**	47.52±6.66	55.91±10.33*

**Table 1:** Comparison of WHOQOL-BREF scores between the two groups before and after intervention (Scores). Δ Compared with those before treatment, P < 0.05; \* Compared with the control group, P<0.05.

**Comparison of Pittsburgh sleep quality scores between the two groups before and after intervention**

The Pittsburgh sleep quality scores of patients in the observation group after intervention were significantly lower than those in the control group and before intervention (P<0.05), as summarized in Table 2.

Group	Case	Pre-intervention	Post-intervention
Control group	110	24.40±6.65	16.94±4.39 <sup>Δ</sup>
Observation group	110	24.87±6.41	12.56±3.24**

**Table 2:** Comparison of Pittsburgh sleep quality scores between the two groups before and after intervention (Scores).

**Comparison of complications between the two groups**

The incidence of complications in the ob-servation group was significantly lower than that in the control group (P<0.05), as summarized in Table 3.

Group	Case	Hypotension	Hypertension	Infection	Arrhythmia	Incidence of complications (%)
Control group	110	3	8	3	2	14.55
Observation group	110	2	3	1	0	5.45*

**Table 3:** Comparison of complications between the two groups [n,%].

\*Compared with the control group, P<0.05

**Discussion**

Along with the rapidly aging popu-lation in China, the incidence of chronic renal failure and the number of patients are increasing year by year<sup>(7,8)</sup>; Patients with chronic renal failure have no urine or reduced urine volume due to the sharp decline of renal function, and a large number of toxins and metabolites in the body cannot be excreted in time, which needs to be treated by MHD to save lives<sup>(9)</sup>; MHD treatment can significantly affect CRF patients due to the disease itself and long-term dialysis treatment, however, it often leads to extremely poor mental status and multiple complications that seriously affect the quality of life and work, which is not conducive to the im-provement of long-term prognosis<sup>(10)</sup>. It has been demonstrated that the quality of nursing is closely related to the disease outcome and clinical prognosis of he-modialysis patients<sup>(11)</sup>.

The cognitive behavior intervention theory was first proposed by foreign scholars, which mainly helps patients understand their disease state and consciousness state in depth, as well as adopts various methods to actively solve existing problems<sup>(12)</sup>; Cognitive behavior intervention, considering the patient's own thoughts, feelings, actions and physical health as a unified whole, Cog-nitive behavior intervention can under-stand the visitors and their needs to the greatest extent by exploring the patients' thoughts, feelings and concerns; In addi-tion, cognitive behavior intervention is good at guiding patients to discover in-correct cognition, behavior and emotional state, and ultimately achieving the goal of alleviating patients' pain and clinical symptoms<sup>(13,14)</sup>. Previous studies have clearly

shown that patients with insomnia have a tendency to exaggerate in the process of complaining of symptoms, while cognitive behavior intervention is beneficial to change wrong cognition and bad behavior, objectively improve the improvement effect of insomnia symptoms, and contribute to affect the patients themselves subjectively<sup>(15)</sup>.

In this study, comprehensive cognitive intensive nursing model was adopted. First of all, the patients' cognitive level of the disease was understood through the responsible nurses strengthening communication with patients and their families, and the wrong cognition of the disease was corrected through the follow-up health education, so as to gradually establish the correct treatment belief and improve the treatment and nursing compliance; Secondly, self-care ability intervention and family support intervention were performed to make patients feel the warmth from medical staff and families, and participate in nursing work more actively, so as to obtain better nursing intervention effect. Besides, self-relaxation intervention and stimulation control nursing intervention were also conducive to promoting sympathetic and parasympathetic nervousness, and maintaining it in a stable and balanced state, which is of great significance for diverting patients' attention to alleviating clinical diseases and insomnia<sup>(16)</sup>.

In this study, the social, environmental, physical, and psychological scores of the observation group after intervention were significantly higher than those of the control group and before the intervention ( $P < 0.05$ ); the Pittsburgh sleep quality scores of patients in the observation group after the intervention were significantly lower than those of the control group and before the intervention ( $P < 0.05$ ); The incidence of complications in the observation group was significantly lower than that in the control group ( $P < 0.05$ ), which indicated that the comprehensive cognitive intensive nursing model could effectively improve the quality of life and sleep status of patients with chronic renal failure undergoing MHD, as well as contribute to the prevention of complications.

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