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Evaluation of the Application Effect of Psychological Nursing Intervention on Maintenance Hemodialysis Patients with Uremia

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Abstract: *Objective:* To evaluate the application effect of psychological nursing intervention on maintenance hemodialysis (MHD) patients with uremia. *Methods:* Sixty cases of uremic patients admitted to the hospital between May 2023 and May 2024 were selected for MHD treatment and divided using the random number table method into 30 cases in each group. The observation group implemented psychological nursing intervention, while the reference group received conventional nursing intervention, after which the nursing effects were compared. *Results:* After nursing, the psychological state score of the observation group was lower than that of the reference group; the treatment compliance of the observation group was higher than that of the reference group; the self-care ability score of the observation group was higher than that of the reference group, and the quality-of-life score of the observation group was higher than that of the reference group ($P < 0.05$). *Conclusion:* Psychological nursing intervention for uremic MHD patients can improve their negative psychology, enhance treatment compliance, and comprehensively improve patients' self-care ability and quality of life.

Keywords: Psychological nursing; Maintenance hemodialysis; Uremia

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1. Introduction

Uremia is the end-stage manifestation of acute and chronic renal failure, which is often accompanied by renal dysfunction and an imbalance of water electrolytes and acid-base levels. In this condition, the patient's body retains a large amount of toxic substances, which can easily lead to other complications. Peritoneal dialysis (PD) and hemodialysis (HD) are commonly used to remove toxic substances and protect residual renal function [1,2]. Maintenance hemodialysis (MHD) is the basic treatment of the disease. However, its long treatment period will increase the psychological burden of patients, which will reduce their compliance with treatment and affect the efficacy of dialysis. For this reason, it is necessary to strengthen the psychological intervention for MHD patients with uremia and to improve their mentality with refined and humanistic nursing services, so as to improve the quality of care [3]. Under this premise, this study selected 60 uremic patients undergoing MHD

treatment to evaluate the implementation effect of psychological nursing intervention.

2. General information and methods

2.1. General information

Sixty cases of uremic patients admitted to the hospital between May 2023 and May 2024 were selected, and all of them were treated with MHD. The random number table method was used to divide them into two groups with 30 cases each. The observation group had 18 male patients and 12 female patients; aged 34–66 (52.19 ± 3.87) years old; the dialysis treatment period was 6–18 (11.68 ± 2.14) months; in terms of disease type, there were 14 cases of hypertensive nephropathy, 7 cases of diabetic nephropathy, 4 cases of chronic glomerulonephritis, 5 cases of other diseases. In the reference group, there were 19 male patients and 11 female patients; their ages ranged from 33 to 68 (52.38 ± 3.71) years old; the dialysis treatment period ranged from 5 to 18 (11.92 ± 2.30) months; and the types of diseases were 13 cases of hypertensive nephropathy, 8 cases of diabetic nephropathy, 5 cases of chronic glomerulonephritis, and 4 cases of other diseases. The general information of the two groups was comparable, $P > 0.05$.

Inclusion criteria: Comprehensive diagnosis of uremia by renal function tests and routine blood tests; meeting the indications for MHD treatment; presence of primary diseases of the renal system; relatively complete clinical data; normal mental status and communication skills.

Exclusion criteria: Presence of other organ diseases; presence of cardiovascular, cerebrovascular, or hematological system diseases; cognitive dysfunction; difficulty tolerating MHD treatment; withdrawal in the middle of this study.

2.2. Methods

The reference group received the conventional nursing intervention. Nurses monitored and recorded the patients' vital signs such as blood pressure or heart rate at regular intervals. They evaluated the patients' weight, dietary status, and daily intake and output, prepared the necessary medications and equipment for MHD, established venous access, and performed treatment procedures following sterile principles. During dialysis, ultrafiltration was used and vital signs were measured to observe the patient's response to treatment. In case of device malfunction or complications, immediate symptomatic treatment was required. After dialysis, the puncture point was compressed and the patient was informed of the relevant precautions. They continued to monitor multiple vital signs, keep the patient in a Trendelenburg position (head low, feet high), and ensure they had adequate rest. Additionally, they protected the punctured limb, enhanced hygiene care, and actively prevented various complications.

The observation group implemented psychological nursing intervention:

(1) Pre-dialysis nursing: Nursing staff increased ward rounds and conducted face-to-face inquiries about the patient's feelings. By engaging in verbal communication, observing facial expressions, and noting changes in complexion, they assessed the patient's psychological state. Utilizing a smile, sincere attitude, and friendly language helped bridge the gap between the nurse and the patient, reducing the patient's sense of unfamiliarity. Nurses guided patients to become familiar with the ward environment and thoroughly explained hospital rules, precautions, and other details to enhance treatment compliance; assessed the patient's understanding of MHD, with a focus on their nursing needs; provided detailed explanations of the MHD process, its operating principles, treatment goals, expected outcomes, and collaboration requirements to help prevent excessive anxiety; implemented targeted psychological care

based on the patient's mental state. For those experiencing anxiety and tension, nurses encouraged them to express their thoughts and analyze the causes of their negative feelings, providing timely responses. They also offered encouragement and recognition of positive thoughts and used verbal guidance and case references to improve their psychological state. Additionally, they guided patients in deep breathing exercises, such as abdominal breathing or pursed-lip breathing, to relax the body and mind. For patients experiencing depression and loss, the support of family members was leveraged, encouraging them to talk with the patient and share positive energy. Plus, they advised patients to keep a daily journal to record positive experiences and feelings or engage in activities like listening to music, reading, or playing chess, to improve their psychological well-being through the cultivation of interests.

(2) Dialysis nursing: Nurses optimized the comfort of the dialysis environment by appropriately adjusting the room's temperature and humidity, and inquired about the patient's feelings regarding the indoor environment, making targeted adjustments as needed. During dialysis, they periodically asked the patient about their treatment experience, and if any discomfort arose, addressed it immediately and implemented an emergency plan to ensure the safety of the dialysis procedure. Nursing staff were well-versed in dialysis techniques, remaining calm and accurate in responding to unexpected situations. By performing care operations naturally and steadily, they helped alleviate the patient's negative emotions and enhanced their sense of trust.

(3) Post-dialysis nursing: Nursing staff strengthened knowledge education by using health manuals, educational videos, and other formats to promote methods for weight control, dietary management plans, and infection prevention measures, enabling patients to maintain healthy behaviors. If the patient's physical condition permitted, participation in social activities and physical labor was encouraged to restore their ability to live independently. Nurses also organized a weekly art therapy session, providing A4 paper and pens, and guided patients to draw a picture featuring three elements: "person," "tree," and "house." Patients described their drawings, while nursing staff analyzed the characteristics of the images to interpret the patient's psychological state during that period. This was followed by individualized communication, encouraging patients to release negative emotions. For patients who became irritable after dialysis, nurses shared successful case studies and experiences to build their confidence in continuing dialysis treatment. For those experiencing anxiety and depression, nurses increased the frequency of communication, encouraged participation in social activities, and helped them cultivate personal interests, promoting self-regulation of their mental state.

2.3. Observation indicators

(1) Psychological state score: Anxiety self-assessment scale (20 items, standard score = 50 points), depression self-assessment scale (20 items, standard score = 53 points) were issued, and negative psychological state is positively scored.

(2) Treatment adherence: (a) Full compliance: Strictly following medical advice and actively cooperating with nursing operations; (b) Partial compliance: Partially following medical advice and cooperating with nursing operations; (c) Non-compliance: Not following medical advice and refusing to cooperate with nursing operations.

(3) Self-care ability score: Self-care ability scale was selected, including sense of responsibility for self-care (24 points), health knowledge (68 points), self-concept (32 points), and self-care skills (48 points), totaling 172 points and positively scored.

(4) Quality-of-life score: Quality-of-life scale was chosen, including social function, emotional function,

general health, and physical function, totaling 400 points and positively scored.

2.4. Statistical analysis

SPSS28.0 software was used to analyze the data. The measurement data were expressed using mean ± standard deviation (SD), compared and tested by *t*-tests; the count data were expressed using [*n* (%)], compared and tested by χ^2; and $P < 0.05$ was considered to be statistically significant.

3. Results

3.1. Comparison of psychological state scores between the two groups

Before nursing, there was no difference in the psychological state scores of the two groups ($P > 0.05$). After nursing, the psychological state score of the observation group was lower than that of the reference group ($P < 0.05$), as shown in **Table 1**.

Table 1. Comparison of psychological state scores of the two groups (mean ± SD/points)

Groups	Anxiety		Depression	
	Before nursing	After nursing	Before nursing	After nursing
Observation group ($n = 30$)	50.69 ± 4.18	26.95 ± 2.31	47.27 ± 4.20	28.37 ± 3.19
Reference group ($n = 30$)	50.61 ± 4.27	33.16 ± 2.71	47.21 ± 4.11	32.14 ± 3.25
t	0.073	9.552	0.056	4.534
P	0.942	0.000	0.956	0.000

3.2. Comparison of treatment compliance between the two groups

Based on **Table 2**, the treatment compliance of the observation group was higher than that of the reference group ($P < 0.05$).

Table 2. Comparison of treatment compliance between the two groups [*n* (%)]

Groups	Full compliance	Partial compliance	Non-compliance	Total compliance
Observation group ($n = 30$)	20	9	1	29 (96.67)
Reference group ($n = 30$)	15	8	7	23 (76.67)
χ^2	-	-	-	5.192
P	-	-	-	0.023

3.3. Comparison of self-care ability scores between the two groups

Before nursing, there was no difference in the self-care ability scores between the two groups ($P > 0.05$). After nursing, the self-care ability score of the observation group was higher than that of the reference group ($P < 0.05$), as presented in **Table 3**.

Table 3. Comparison of self-care ability scores between the two groups (mean ± SD/points)

Groups	Before nursing	After nursing
Observation group (n = 30)	98.36 ± 7.18	149.37 ± 8.92
Reference group (n = 30)	98.17 ± 7.23	140.21 ± 8.33
t	0.102	4.111
P	0.919	0.000

3.4. Comparison of quality-of-life scores between the two groups

Before nursing, there was no difference in the quality-of-life scores between the two groups ($P > 0.05$). After nursing, the quality-of-life score of the observation group was higher than that of the reference group ($P < 0.05$), as shown in **Table 4**.

Table 4. Comparison of quality-of-life scores between the two groups (mean ± SD/points)

Groups	Before nursing	After nursing
Observation group (n = 30)	267.95 ± 19.55	346.91 ± 11.71
Reference group (n = 30)	266.37 ± 19.23	338.15 ± 10.46
t	0.316	3.056
P	0.753	0.003

4. Discussion

Uremic patients often experience severe symptoms, leading to a significant loss of working ability, and they require long-term MHD treatment, which results in substantial psychological pressure [4]. In addition, the high cost of MHD treatment will significantly increase the burden on patients, inducing anxiety or depression. Therefore, during MHD treatment, it is necessary to combine psychological nursing to alleviate patients' negative emotions, help them maintain an optimistic mindset, and ultimately enhance the effectiveness of dialysis [5].

Conventional nursing is the basic nursing method for uremic patients during MHD treatment, which can improve the standardization of nursing operations, continuously monitor patients' vital signs, and ensure smooth MHD treatment [6]. However, this nursing method does not focus on patients' psychological changes, and it is difficult to systematically improve their self-care abilities [7]. Psychological nursing is a comprehensive and detailed nursing program that emphasizes patients' psychological changes and care needs, using diverse psychological techniques to ease patients' emotions and improve their treatment compliance. This nursing method can dynamically assess patients' psychological state, provide individualized health guidance, and leverage the involvement of family members, thus stimulating their subjective initiative and improving their participation in nursing care [8,9].

The results showed that after nursing, the psychological state score of the observation group was lower than that of the reference group, and the treatment compliance, self-care ability score, and quality-of-life score were higher than that of the reference group ($P < 0.05$). The results were consistent with the study by Tang *et al.* [10]. This can be explained by the fact that psychological nursing provides orderly care throughout the dialysis process: pre-dialysis nursing emphasizes nurse-patient communication, knowledge education, and targeted psychological guidance, which can fully assess the psychological characteristics of patients, provide

individual care, and improve their treatment compliance [11]. Dialysis nursing emphasizes environmental management and monitoring of vital signs, which can improve the safety of dialysis and reduce dialysis-related complications. Post-dialysis nursing can provide health guidance to patients, continuously assess their psychological characteristics with art therapy, and carry out targeted communication, thus improving nursing effectiveness [12].

5. Conclusion

In conclusion, the intervention of psychological nursing for uremic patients undergoing MHD treatment showed good effects, which can improve their psychological state as well as enhance treatment compliance, self-care ability, and quality of life. Thus, it has a high nursing value.

Disclosure statement

The authors declare no conflict of interest.

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