Effects of Nutrition Nursing on Hemodialysis Patients with End-stage Renal Disease

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ABSTRACT Objective: To investigate the effects of nutritional nursing on hemodialysis patients with end-stage renal disease and to provide reference for clinical guidance. **Methods:** Sixty-eight hemodialysis patients with end-stage renal disease admitted from February 2013 to March 2016 were randomly divided into control group ($n = 34$) and observation group ($n = 34$). In the control group, the routine nursing intervention was carried out, while the observation group was applied with the nutrition-nursing intervention on the basis of routine nursing. Nutritional status, quality of life and satisfaction of nursing were observed. **Results:** The improvement of body mass index and malnutrition inflammation score in the observation group were (23.6 ± 3.4) kg/m^2 and (5.2 ± 0.3) points respectively, which were better than those in the control group (17.5 ± 2.3) kg/m^2, (8.7 ± 0.5) min, $P < 0.05$. The total score of quality of life in the observation group was (71.2 ± 4.5) points, which was higher than that in the control group ($P < 0.05$). The total satisfaction (94.12%) of the patients in the observation group was improved when compared with the control group ($P < 0.05$). **Conclusion:** According to the characteristics of end-stage renal disease hemodialysis patients, targeted nutrition-nursing intervention can effectively improve the nutritional status of patients, promote harmonious relationship between doctors and patients and improve the quality of life. It is worth to implement and promote the nutrition nursing in the clinical care.

Introduction

End-stage renal disease (ESRD) refers to the end stage of various chronic kidney diseases. Progressive decline in renal function and accumulation of toxins in the body can further cause uremia symptoms, poor nutrition and other complications. Current blood purification (hemodialysis and peritoneal dialysis) and kidney transplantation are the main treatment methods for end-stage renal disease. The purpose of treatment is to achieve longer survival and to improve the quality of life of patients. However, dialysis is a treatment with a life-long traumatic and it produces different degrees of damage to the body. Previous studies reported that dialysis patients with end-stage renal disease show a variety of complications that seriously affect the quality of life. Malnutrition is one of the common complications of dialysis [1]. This study recruited 68 hemodialysis patients with end-stage renal disease in our hospital. Clinical data were retrospectively analyzed to explore the enhanced nutrition-nursing care intervention to improve the quality of life of patients. This study also aims to provide a better guide of clinical nursing work.

1. Data and methods

1.1 General information

A total of 68 cases of end-stage hemodialysis patients were were 18 males and 16 females, aged from 31 to 76 years (mean, 52.7 ± 12.4 years). The dialysis period was from 1 to 5 years and the mean dialysis period was (2.7 ± 0.6) years. In the control group, there were 17 males and females, aged 32-74 years, mean (51.5 ± 12.7) years, dialysis period from 1 to 5 years, and mean dialysis period was (2.6 ± 0.5) years. All patients included in the study were in line with diagnostic criteria for end-stage renal disease [2] Exclusion criteria are other important organ failures or mental illness. Informed consent was obtained from patients. Age, sex, disease state and other general information showed no significant difference ($P < 0.05$).

1.2 Research methods

1.2.1 Control group

The routine nursing of the control group includes: basic nursing care, health education, psychological nursing intervention and complication nursing. The detailed steps of operation is as follows: (1) Basic care: Arrange wards for patients in a timely manner, record the patients' condition and monitor patients' vital signs. Comply with doctor's advice on the treatment of patients, maintain a quiet condition, keep the room clean, regular replacement of sanitary, regular disinfection and keep the room with fresh air. (2) Health education: According to the degree of awareness of disease, provide targeted education on knowledge of the disease through seminars

and brochures. Answer questions for patients with doubt, so that the patients have a better understanding of disease. Set a regular schedule for work and rest time of patients. Advice patients to carry out rational outdoor activities to improve mental state and spiritual consciousness [3]. (3) Psychological intervention: hemodialysis patients might appear with psychological disorders due to long-term hemodialysis and side effects. Dialysis often leads to depression, anxiety and even suicidal tendencies. Therefore, nurses need to communicate with patients and their families and pay attention to observe the changes in psychological state of patients. Nurses have to relieve adverse emotions of patients by describing some successful treated cases, so that the patients will establish confidence for treatment. Nurses should advice family members of patients to show more concern about the patient, so that the patients feel the warmth and support from the family. (4) Complications care: Provide preventive care to patients after dialysis. Apply effective compression for hemostasis to the patients after hemodialysis. Pay attention to bleeding at the puncture sites to stop bleeding after hemodialysis and prevent infection. Nursing staffs should guide the patient to turn over and to perform some activities on the bed to prevent the occurrence of pressure sores.

1.2.2 Observation group
The nutritional care intervention was applied on the observation group on the basis of routine care. The specific steps are as follows: nurses should provide guidance about diet and nutrition, including consumption of low protein, high calorie, low phosphorus and vitamin-rich food. The recommended protein intake is 0.6g/(kg*d), 50% of protein should be protein with high biological value such as eggs, lean meat, fish and milk. Appropriate supplementation of essential amino acids [0.1-0.2/(kg*d)] and (or) α-keto acid can be provided if necessary. Nurses should control the daily intake of phosphorus in patients at <0.8g/d. Besides, nurses should advice patients to eat more vitamin-rich fresh vegetables and fruits and consume water-soluble vitamins. Nurses should control the daily intake of salt in patients according to their condition. Patients with severe edema, high blood pressure or heart failure should be provided salt-free diet. Renal failure patients should quit smoking and alcohol drinking, to prevent further damage on the renal blood vessels, which might lead to early renal arteriosclerosis.

1.3 Indicators observation
The nutritional status of the patients were observed, including malnutrition inflammation score and body mass index (BMI). (1) Malnutrition inflammation score standard [4]: score <8 is categorized into mild malnutrition; score 9 to 18 is categorized into moderate malnutrition; and score > 18 is categorized into severe malnutrition. Evaluation of a total of 10 entries, the higher the score means the worse the nutritional status. (2) BMI = weight (kg) ÷ height (m)^2. BMI index of 18.5 – 23.9 is normal; <18.5 is under-weight. (3) The MOS 36-Iterm Short-Form Health Survey (SF-36) was used to assess quality of life of patients, including physiology, emotion, role, social and cognitive function. The higher the score means the higher the quality of life [5]. (4) Self-designed questionnaires were used to assess satisfaction of nursing care in two groups of patients, including very satisfied, satisfied and unsatisfied nursing care.

1.4 Statistical analysis
All collected data were analyzed using SPSS18.0 software. The count data were expressed as (n, %) and analyzed using χ^2 test. The measurement data were expressed as mean ± standard deviation (X ± S). P <0.05 shows the difference was statistically significant.

2.Results
2.1 Nutritional status
The nutritional status of two groups of patients were assessed by analyzing their BMI and malnutrition inflammation score (Table 1). The BMI score of observation group was (23.6 ± 3.4) kg/m^2, which was significantly higher than the control group (17.5 ± 2.3) kg/m^2 (P <0.05). The malnutrition inflammation index of observation group was (5.2 ± 0.3) points, which was significantly lower than the control group (8.7 ± 0.5) points (P <0.05).

Table 1. Body mass index and malnutrition inflammation score

Group	Number of cases (n)	Body mass index (kg/m^2)	Malnutrition inflammation score (point)
Observation group	34	23.6 ±3.4	5.2 ±0.3
Control group	34	17.5 ±2.3	8.7 ±0.5

Note: The difference between the two groups of patients is significant, P <0.05.

2.2 Quality of Life
The SF-36 scale was used to evaluate and compare the quality of life of the two groups of patients (Table 2). After intervention of nursing care, the scores of the observation group (71.2 ± 4.5) in physiological, emotional, role, social and cognitive function were better than those in the control group (59.8 ± 4.7), P <0.05.

Table 2 Quality of life score of patients

Group	Physiological function	Emotional function	Role function	Social function	Cognitive function	Overall quality of life score
Observation group (n = 34)	68.9 ±5.3	70.1 ±5.4	71.3 ±4.7	69.4 ±5.3	69.8 ±5.2	71.2 ±4.5
Control group (n = 34)	56.8 ±5.1	55.3 ±6.2	61.5 ±5.2	59.6 ±5.4	60.4 ±5.1	59.8 ±4.7
P values						< 0.05

2.3 Satisfaction of nursing care
Table 3 shows the analysis of satisfaction of nursing care in two groups. In the observation group, 32 patients were satisfied with the nursing service (94.12%). In the control group, 28 patients expressed satisfaction with the care (82.35%). The total satisfaction of the observation group was much higher than that of the control group(P<0.05).

Table 3.Satisfaction of nursing care in patients

Group	Very satisfied	Satisfied	Unsatisfied	Total satisfaction
Observation group(n=34)	18(52.94%)	14 (41.18%)	2(5.88%)	32 (94.12%)
Control group (n=34)	11(32.55%)	17 (50.0%)	6 (17.65%)	28 (82.35%)
Pvalue				<0.05

3.Discussion

Hemodialysis is one of the main therapies in the treatment of end-stage renal disease. Hemodialysishas significant clinical therapeutic effect as it can delay the progression of nephropathy and prolong the survival time. However, hemodialysis will cause loss of a lot of protein, trace elements, vitamins and other nutrients [6]. Subsequently, it willlead to severe malnutrition in patients and harm to health of patients with end-stage renal disease. Hemodialysis also severely reduces quality of life andtherapeutic effect of patients. Related research data show that hemodialysis patients appear with malnutrition due to a variety of factors, including the low biological compatibility of dialysis membrane, low proteinintake, low calories, insufficient vitamins and a variety of elements to meet the needs of the body. Insufficient of dialysis is accompanied by acute and chronic infectiondue to lack of protein, calories, vitamins and other elements [7]. Hence,nutrition care in end-stage renal disease patients on the basis of routine nursing care plays an important role in treatment of patients.

During the long-term hemodialysis treatment, patients and their families may haveinsufficient awareness of the disease or hemodialysis treatment, and lack of self-care in normal diet [8]. Consequently, hemodialysis often leads to malnutrition in end-stage renal disease patients. Thus, health education and diet professional guidance for hemodialysis patients is very important. Previous study reported the intervention of nutritional nursing care on the end-stage renal disease hemodialysis patients [9].Health education and nutrition guidance were provided to explain malnutrition, nutritional requirements and the important to consume enough nutrients. On the other hand, the intervention ofdietary and nutritional care allows patients to receive adequate nutrition, improve the nutritional status of patients with malnutrition and effectively improve the quality of life of patients.

In this study, two groups of end-stage renal disease patients received different nursing care. When compared with the control group, BMI and malnutrition inflammation score of the observation group were significantly increased and reduced, respectively. The scores of observation group in physiological, emotion, role, social and cognitive function were significantly better than the control group, and the overall quality of life score was significantly higher than the control group. In the observation group, the satisfaction of nursing care was higher than that of the control group. Relevant research shows thatnutritional care on the hemodialysis patients with end-stage renal dialysis patient improves prognosis and quality of life of patient, which is consistent with findings of this study[10].

In conclusion, nutritional care intervention on the hemodialysis patients with end-stage renal disease helps to achieve good clinical care effect, improve the quality of life, reduce pain and prolong survival of patients. The clinical effect is worthy for extensive promotion.

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