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Original Article

The effects of comprehensive nursing intervention on the nutritional status and negative emotions of patients with Parkinson's disease

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Abstract: Objective: To explore the effects of comprehensive nursing interventions on the nutritional status and negative emotions of patients with Parkinson's disease. Methods: The patients' SGA, SAS, SDS, Barthel index, PDSS, MoCA, modified Ashworth score, and PDQ-39 values were evaluated before and after the nursing. Results: The RG was improved more significantly than the CG ($P<0.05$). The Barthel index and the PDSS and MoCA scores of the patients in the RG group were significantly higher ($P<0.05$), but the modified Ashworth and PDQ-39 scores were significantly lower ($P<0.05$). And the patients' degree of nursing satisfaction in the RG groups was significantly higher than that of the patients in the CG ($P<0.05$). Conclusion: Comprehensive nursing intervention has beneficial effects on patients' self-care abilities, sleep disorders, cognitive functions, and quality of life and is worthy of clinical promotion.

Keywords: Comprehensive nursing intervention, patients with Parkinson's disease, nutritional status, negative emotions

Introduction

Parkinson's disease (PD) is a common neurodegenerative disease with a high incidence rate among the elderly [1]. A chronic progressive disease characterized by dyskinesia and cognitive disorders, PD not only has a serious impact on patients' quality of life, it also imposes a heavy burden on families and society [2]. Previous studies [3] have shown that PD patients' main cause of death is the physical and immune system decline caused by the loss of movement at the end-stage of the disease, resulting in secondary infections and cachexia. The cause of PD is not clear at present, and the clinical treatment mainly aims to relieve patients' symptoms and improve their quality of life, and there is no effective treatment method at present [4]. However, nursing interventions, an effective supplement to clinical medication, also play an important role in PD patients [5].

Comprehensive nursing interventions are a relatively new nursing mode that adheres to the patient-centered nursing concept and carries out nursing interventions on patients from the physiological and psychological aspects. At present, its application in various diseases has achieved good results [6]. Previous studies [7] have also explored the application of comprehensive nursing interventions in PD, but they mainly focused on the improvement of patients' motor functions and quality of life, and relatively less on the impact of the patients' nutritional statuses and negative emotions. Since PD occurs mostly in the elderly, and because their resistance is lower, malnutrition is more common [8]. According to relevant studies [9], the malnutrition incidence rate among PD patients can be as high as 50%. Another study [10] pointed out that when PD patients undergo functional degeneration, they will also have negative emotions such as depression and anxiety, and the occurrence of

negative emotions will also have certain effects on their recovery.

Therefore, we conducted a comprehensive study on the effects of comprehensive nursing interventions on the nutritional statuses, negative emotions, and other aspects of PD patients in order to provide more sufficient data for the selection of a nursing mode for PD patients.

Materials and methods

The patients' information

A total of 115 PD patients admitted to our hospital from March 2016 to January 2019 were prospectively analyzed, including 65 male patients and 50 female patients. The average age of all the patients was 61.35± 4.28 years. Among them, 57 patients were treated using the conventional nursing mode and were included in the control group, and 58 patients were treated with the comprehensive nursing mode and were included in the research group (RG).

The inclusion and exclusion criteria

Inclusion criteria: Patients who met the Parkinson's disease diagnostic criteria [11] and who were between 55 and 70 years old were included.

Exclusion criteria: Patients with malignant tumors, patients with severe liver and kidney dysfunction, patients with mental disorders, and patients who did not cooperate with the study were excluded. All the patients and their families agreed to participate in the experiment and signed an informed consent. This study was approved by the Ethics Committee of Yichang Central People's Hospital.

The treatment and intervention methods

All the patients underwent nursing after their admission, and the patients in the control group (CG) underwent conventional nursing, mainly including conventional disease education for patients, guiding patients to take their drugs and guiding the patients' diets, helping the patients carry out the relevant physical or limb movements and exercises, keeping the ward clean and sanitary, educating the patients' families about the disease, and guiding the families in supervising the patients' medication use and their daily lives.

The patients in the study group implemented comprehensive nursing interventions in addition to the nursing provided to the CG. The specific nursing methods were as follows: (1) First, psychological interventions: The nurses were patient and communicated with the patients and their families, and they established a mutual trust relationship with the patients, and they actively gained insight into the patients' emotions. They learned to listen to the patients, and they evaluated the psychological situation of the patients from time to time, and immediately adjusted the psychological nursing plan according to the patients' psychological states, giving the patients sufficient encouragement and comfort, helping the patients to establish the goal of overcoming the disease, encouraging the patients to live actively and communicate with others actively, and leading and communicating right away when the patients experience negative emotions. (2) Nutritional interventions: A nutrition plan was formulated according to the patients' conditions, and an appropriate diet was selected according to the patients' stages of the illness. A high-calorie and high-fat diet was adopted for breakfast and lunch, and high-quality protein should was served at dinner, and vegetables and fruit was supplemented appropriately. The patients' meals were adjusted according to the patients' conditions and their adverse reactions and intestinal functions during treatment, so as to ensure that the patients have sufficient nutrition to maintain a healthy weight. (3) Other aspects of nursing: The guidance on rehabilitation training and medication for patients was included. For the patients with an early onset of disease, it was necessary to encourage and guide them to actively participate in outdoor sports. For patients with advanced disease, it was necessary to guide them to carry out more balance training, the train the patients' limb functions, and to help the patients exercise muscle and joint functions. After the rehabilitation training every day, the patients' limb muscles were massaged and relaxed to prevent joint necrosis and muscle strength decline. In terms of medication, we delivered their drugs on time and supervised the patients medication use. We also helped the patients and their families remember the type, dosage and timing of the drugs to avoid the wrong drugs or missing a dose. The nursing cycle was 3 months. After 3

Table 1. General data table

Factor	RG n=57	CG n=58	X^2	P
Gender			0.088	0.768
Male	33 (57.89)	32 (55.17)		
Female	24 (42.11)	26 (44.83)		
Age (years)			0.096	0.756
≥61	36 (63.16)	35 (60.34)		
<61	21 (36.84)	23 (39.66)		
BMI			0.215	0.643
≥22	29 (50.88)	27 (46.55)		
<22	28 (49.12)	31 (53.45)		
Severity of illness			0.091	0.955
Mild	27 (47.37)	26 (44.83)		
Moderate	22 (38.60)	23 (39.66)		
Severe	8 (14.04)	9 (15.52)		
Basic diseases			0.087	0.957
Diabetes	13 (22.81)	14 (24.13)		
Hypertension	12 (21.05)	11 (18.97)		
Other basic diseases	32 (56.14)	33 (56.90)		
Degree of education			0.213	0.645
Below junior high school	29 (50.88)	32 (55.17)		
Junior high school and above	28 (49.12)	26 (44.83)		
Nutritional status			0.077	0.962
Good nutrition	27 (47.37)	28 (48.28)		
Mild to moderate malnutrition	13 (22.81)	14 (24.14)		
Severe malnutrition	17 (29.82)	16 (27.59)		

months, the nursing effects on the patients in the two groups were evaluated.

The nutritional statuses, negative emotions, cognitive functions, muscle tension, quality of life, and the degree of nursing satisfaction evaluation methods

(1) The nutritional statuses of patients in the two groups after the nursing was evaluated using the subjective global assessment (SGA) [12]. (2) The Self-rating Anxiety Scale (SAS) and the Self-rating Depression Scale (SDS) [13] were used to evaluate the negative emotions of the patients in the two groups before and after the nursing. (3) The self-care abilities of the patients in the two groups before and after nursing were evaluated using the Barthel index [14], with a total possible score of 100 points. The higher the score, the stronger the self-care ability. (4) The sleep quality of the patients in the two groups before and after the nursing was evaluated using the Parkinson' Disease Sleep Scale (PDSS) [15]. (5) The cognitive functions of the patients in the two groups before and after the nursing were evaluated by Montreal Cognitive Function Scale (MoCA) [16], with a total possible score of 30 points. The higher the score, the better the cognitive function. (6) The muscle tension of the patients in the two groups before and after nursing was evaluated using the modified Ashworth score [17]. A score of 0 indicates no movement disorder and a score of 4 indicates severe movement disorder. (7) The quality of life of the patients in the two groups before and after nursing was evaluated using the 39-item Parkinson's Disease Questionnaire (PDQ-39) [18], with a total possible score of 40 points. The lower the score is, the higher the quality of life is. (8) The degree of nursing satisfaction of the patients in the two groups was evaluated using a self-made nursing satisfaction questionnaire.

Statistical analysis methods

The statistical analysis of the collected data was carried out using SPSS 20.0, and the required figures were drawn using GraphPad 7, in which the normal distribution data were expressed as the mean ± standard deviation (Mean ± SD), the comparisons between groups were tested using independent-samples T tests, and the counting data were tested using chi-square tests, and the comparisons before and after the nursing was tested using paired t tests. When $P<0.05$, a difference was considered significant.

Results

No significant differences in gender, age, or BMI in the two groups

There were no significant differences in terms of gender, age, or BMI in the patients between the two groups ($P>0.05$), which were comparable. More details were shown in **Table 1**.

Table 2. Comparison of the nutritional status of the patients in the two groups after the nursing

Nutritional status	RG n=57	CG n=58	X^2	P
Good nutrition	48 (84.21)	36 (62.07)	7.158	0.008
Mild to moderate malnutrition	7 (12.28)	16 (27.59)	4.209	0.040
Severe malnutrition	2 (3.51)	6 (10.34)	2.076	0.150
Malnutrition rate	9 (15.79)	22 (37.93)	7.158	0.008

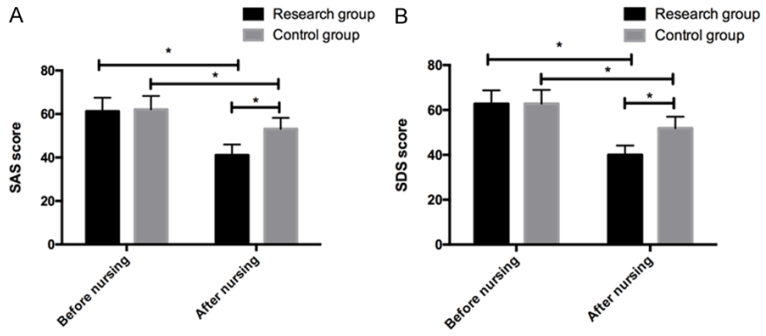

Figure 1. Negative emotion scores of the patients in the two groups before and after the nursing. A: The SAS scores of the patients in the two groups after the nursing were significantly lower compared with the scores before the nursing, and the SAS scores of the patients in the study group were significantly lower than the scores of the patients in the CG. B: The SDS scores of the patients in the two groups after the nursing were significantly lower compared with the scores before the nursing, and the SDS scores of the patients in the study group were significantly lower than the scores of the patients in the CG. * indicates that P<0.05.

The malnutrition rate of the patients in the study group was significantly lower than the rate in the CG after the nursing

After the nursing, the number of patients with good nutrition, mild to moderate malnutrition, and severe malnutrition in the study group were 48, 7, and 2 respectively, for a malnutrition rate of 15.79%, and the number of patients with good nutrition, mild to moderate malnutrition, and severe malnutrition in the CG were 36, 16, and 6 respectively, for a malnutrition rate of 37.93%. After the nursing, the malnutrition rate of the patients in the study group was significantly lower than the rate of the patients in the CG, with statistically significant differences (P<0.05), More details are shown in **Table 2**.

The SAS and SDS scores of the patients in the study group were significantly lower than the scores in the CG after the nursing

After the nursing, the SAS and SDS scores of the patients in the study group were significantly lower than the scores in the CG, and differences were statistically significant (P<0.05), as shown in **Figure 1**.

The Barthel index, PDSS, and MoCA scores of the patients in the study group were significantly higher, and the modified Ashworth and PDQ-39 scores were significantly lower than those of the CG after the nursing

The scores of the patients in the two groups after the nursing were significantly improved compared with those before the nursing. However, the Barthel index, PDSS, and MoCA scores of the patients in the study group were significantly higher than of the scores in the CG, and the modified Ashworth and PDQ-39 scores were significantly lower than they were in the CG, and the differences were statistically significant (P< 0.05), as shown in **Figure 2**.

The nursing satisfaction rate of the patients in the study group was significantly higher than the rate of the patients in the CG after the nursing

The numbers of patients in the study group who were very satisfied, satisfied, and dissatisfied with their nursing were 45, 10, and 2 respectively, for a nursing satisfaction rate of 96.49%. The numbers of patients in the CG who were very satisfied, satisfied, and dissatisfied with their nursing were 35, 10, and 13 respectively, for a nursing satisfaction rate of 77.59%. The nursing satisfaction rate of the patients in the study group was significantly higher than the rate of the patients in the CG, with statistically significant differences (P<0.05), as shown in **Table 3**.

Discussion

PD, a neurodegenerative disease of the nervous system, has a long disease course and blood drugs are taken for a long time. At present, the pathogenesis of PD has not been stud-

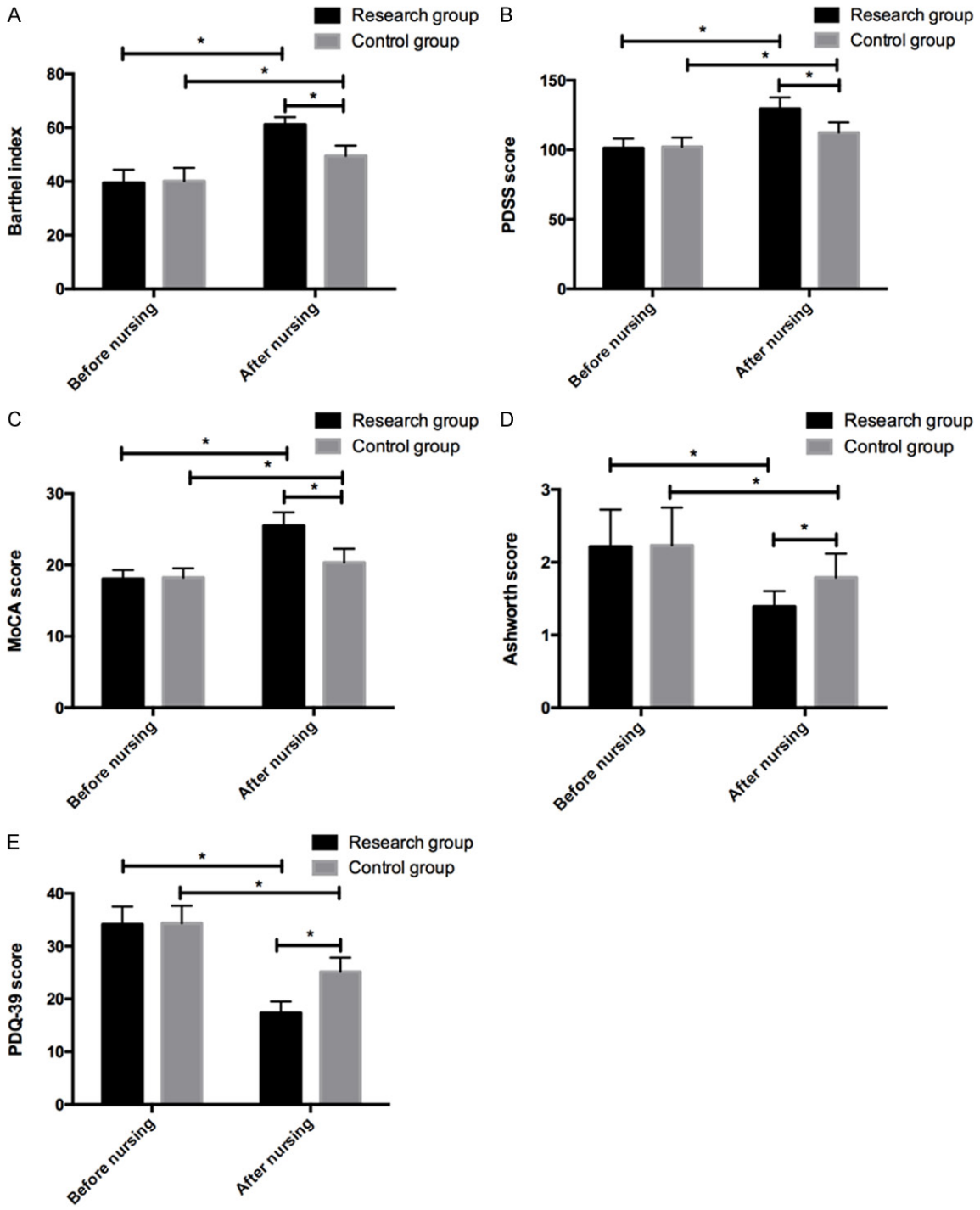

Figure 2. Comparison of the other relevant scores of the patients in the two groups. A: The Barthel indexes of the patients in the two groups after the nursing were significantly improved compared with their levels before the nursing, and the Barthel indexes of patients in the study group were significantly higher than the indexes of the patients in the CG. B: The PDSS scores of the patients in the two groups after the nursing were significantly improved compared with the scores before the nursing, and the PDSS scores of the patients in the study group were significantly higher than those in the CG. C: The MoCA scores of patients in the two groups were significantly improved after the nursing, and the MoCA scores of patients in the study group were significantly higher than the scores in the CG. D: The modified Ashworth scores of the patients in the two groups after the nursing were significantly lower compared with the scores before the nursing, and the modified Ashworth scores of the patients in the study group were significantly lower than the scores of the patients in the CG. E: The PDQ-39 scores of the patients in the two groups after the nursing were significantly lower compared with the scores before the nursing, and the PDQ-39 scores of patients in the study group were significantly lower than those in the CG. * indicates that $P<0.05$.

Table 3. Comparison of the nursing satisfaction

Nursing satisfaction	RG n=57	CG n=58	X^2	P
Very satisfied	45 (78.95)	35 (60.34)	4.699	0.030
Satisfied	10 (17.54)	10 (17.24)	0.002	0.966
Dissatisfied	2 (3.51)	13 (22.41)	9.059	0.003
Nursing satisfaction	55 (96.49)	45 (77.59)	9.059	0.003

ied in detail, and the clinical efficacy has certain limitations [19]. Previous studies [20] have shown that appropriate nursing interventions may be helpful in the treatment of PD patients. The application of comprehensive nursing interventions in PD patients has also been discussed in many studies, but most of them are about the improvement of the patients' motor functions or quality of life. The nutritional statuses and negative emotions of PD patients are also very important to the patients [21].

Since PD patients are mostly the elderly, their own absorption of nutrients is poor. Secondly, because PD patients have many symptoms such as tremors and muscle rigidity, the disease will lead to further consumption of heat in the patients' bodies, which will lead to a higher rate of malnutrition in the PD patients [22]. There is also research [23] showing that PD patients have difficulty in swallowing food, which leads to a decrease in food intake, thus leading to malnutrition due to the insufficient intake of nutrients. Therefore, in our comprehensive nursing program, the patients' diets have been strengthened, and the nutrition plan has been formulated on the premise of fully considering the patients' own conditions. Our research results also show that the malnutrition rate of the patients in the study group is significantly lower than the rate of the patients in the CG, which indicates that our comprehensive nursing interventions also have significant effects on the improvement of the nutritional status of PD patients. Previous studies [24] have found that the negative emotions of PD patients are also a risk factor for malnutrition. Moreover, the occurrence of negative emotions in PD patients will also lead to poor medication compliance in the patients, which will have adverse effects on the improvement of their sleep disorders and their enthusiasm for rehabilitation training [25]. In the application of comprehensive nursing interventions, we adopted a series of relaxation and consolation therapies aimed at the patients' psychological states, helping patients to get relief from their negative emotions. Previous studies [26] have shown that PD patients have a good sense of perception and rehabilitation training when they are in a good psychological state, which can significantly improve the patients' quality of life.

After that, we also evaluated the Barthel index, PDSS, MoCA, modified Ashworth, and PDQ-39 scores of the patients in the two groups. The results showed that the Barthel index, PDSS, MoCA, modified Ashworth, and PDQ-39 scores of the patients in the study group were improved more significantly than those of the CG after the nursing, which indicated that our comprehensive nursing interventions had a significant improvement on the self-care abilities, sleep disorders, cognitive functions, muscle tensions, and quality of life of the PD patients. Some studies [27] have shown that PD involves the cerebral cortex of patients due to the pathological changes it causes in their nervous systems, which will lead to a series of phenomena such as cognitive function and sleep disorders in addition to dyskinesia. In the comprehensive nursing intervention mode, we deepened the patients' perception abilities through psychological intervention and cognitive therapy, and relieved the patients' muscle tension and improved the patients' dyskinesia by guiding their rehabilitation training and muscle relaxation massage. There has been research [28] showing that positive psychological intervention for PD patients can not only effectively improve the negative emotions of patients, but it can also effectively improve their self-care ability and cognitive function. Another study [29] shows that when the nutritional status of PDE patients is improved, it can promote the improvement of a series of non-motor disorders such as sleep disorders and cognitive disorders. This is consistent with our research results.

To sum up, the application of comprehensive nursing interventions in PD patients can effectively improve their nutritional status and negative emotions, which has a beneficial impact on the improvement of patients' self-care abilities, sleep disorders, cognitive functions, and quality of life, so it is worthy of clinical promotion. However, there are still some deficiencies in this study. For example, we only compared the comprehensive nursing interven-

tion model with the conventional nursing model and did not compare it with other nursing models, because further research is still needed to confirm whether the comprehensive nursing model is the most suitable nursing model for PD patients. Secondly, due to the small sample size we have included, there may be some deviation in the research conclusion, and we will further increase the sample size to explore this in future studies.

Disclosure of conflict of interest

None.

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