ORIGINAL RESEARCH

Effects of Continuous Nursing Intervention Combined with Breathing Training Guidance on Improving the Rehabilitation Effect and Self-care Ability of Elderly Patients with COPD

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ABSTRACT

Objective • To analyze the effect of continuous nursing intervention and breathing training guidance on improving the rehabilitation effect and self-care ability of elderly patients with chronic obstructive pulmonary disease.

Methods • A total of 88 first-episode subjects were recruited in this study, all of whom were elderly Chronic Obstructive Pulmonary Disease (COPD) patients diagnosed and treated in our hospital between August 2019 and December 2021. All of them met the complete inclusion criteria. After registration, the patients were randomly divided into the combination and conventional groups, and 44 patients were included in each group. Patients in the conventional group were provided with conventional nursing care, and patients in the combination group were provided with continuous nursing intervention combined with breathing training guidance. The clinical data of all patients were collected, and the indicators, including lung function, quality of life, self-care ability, subjective well-being index, and self-care ability of patients, were compared.

Results • The levels of Forced Expiratory Volume in one second (FEV1) and Forced Vital Capacity (FVC) in the combination group were significantly higher than those in the routine group after the intervention. The quality of life scores in the combination group were significantly higher than those in the routine group after intervention. The MBI index in the combination group was significantly higher than in the routine group. The Memorial University of Newfoundland happiness scale (MUNSH) score of the intervention group was significantly higher than that of the routine group. The combination group's self-care ability assessment scale (ESCA) score was significantly higher than that of the routine group.

Conclusion • The intervention method of continuous nursing intervention combined with breathing training guidance for elderly patients with COPD has a significant effect on improving the rehabilitation effect of patients; that is, after the intervention, it can effectively improve the pulmonary function indicators of patients, improve the quality of life and self-care ability of patients, reducing the lack of subjective well-being of patients caused by negative emotions, while effectively improving the self-care ability of patients, has positive clinical significance for the prognosis of patients. (*Altern Ther Health Med.* 2024;30(12):242-248).

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INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a common clinical respiratory disease which can lead to pulmonary heart disease or respiratory failure in severe cases. The specific cause of COPD is unknown, but it is generally believed to be related to chronic bronchitis and obstructive emphysema. Smog, chemical inhalation, air pollution, and respiratory infections are the main external factors, while genetic factors, increased respiratory reactivity, and other respiratory diseases are the main internal factors.

Some clinical studies have reported a direct relationship between COPD and long-term smoking, and patients usually have major symptoms such as chronic cough, sputum, and chest tightness. When a patient with COPD has an acute attack, the symptoms of chest tightness, shortness of breath, cough, and phlegm increase, and the patient will feel significantly tired. In severe cases, respiratory failure and other diseases may even occur. COPD is most common among the elderly and is characterized by cough, sputum production, dyspnea, and shortness of breath, which can have a significant impact on patients' daily lives. In recent years, my country's population aging has intensified, and the number of elderly people has gradually increased. In addition,

environmental changes may also cause many elderly people to suffer from chronic obstructive pulmonary disease. If not treated in time, patients will suffer from serious diseases such as heart failure and other cardiovascular and cerebrovascular diseases, which will change the normal life of patients.

At present, the mortality rate of COPD is the fourth highest in the world, and the respiratory system of patients will be seriously affected after the disease. Therefore, when patients have initial symptoms, they should go to the hospital for treatment as soon as possible. Early detection and treatment can effectively suppress the disease and prevent lung function decline. Clinically, the treatment of elderly patients with COPD is mainly symptomatic treatment to relieve the adverse symptoms of patients. However, since COPD is a chronic disease, it is easy to relapse after treatment. Therefore, while carrying out corresponding scientific treatment for elderly patients with COPD, nursing intervention is also needed to help patients recover their lung function and improve their quality of life. Respiratory training is a widely used therapy today. Some scholars have proposed that combined with related rehabilitation nursing interventions, it can achieve good therapeutic effects, effectively improve the lung function of patients, and significantly improve the quality of life. Continuity of care is a new type of nursing intervention model based on holistic nursing theory and humanistic care theory, which is an extension of inpatient care, which promotes the recovery of patients and reduces the need for rehospitalization due to disease deterioration. It adopts a series of actions designed to ensure that patients receive different levels of collaborative and continuous care in the same and different health care places, so that medical care services are no longer limited to the entire process of patient admission and treatment, and the high-quality care program continues to the follow-up treatment of patients after discharge has a positive effect on improving the survival and quality of life of patients. While existing research emphasizes the importance of rehabilitation nursing and respiratory training in COPD management, a crucial gap remains in understanding how continuous nursing intervention, coupled with breathing training guidance, affects the rehabilitation and self-care abilities of elderly COPD patients. This study aims to fill this knowledge void by systematically assessing the impact of these interventions on pulmonary function, quality of life, and self-care capacities.

Given the chronic nature of COPD and its tendency to recur, it is essential to unravel the specific benefits of this combined approach. The research strives to provide valuable insights to shape future healthcare strategies, ultimately aiming to improve the overall prognosis and well-being of elderly COPD patients.

MATERIALS AND METHODS

Research subjects

This study was approved by our hospital's ethics committee. Elderly patients with chronic obstructive pulmonary disease who were diagnosed and treated in our hospital between August 2019 and December 2021 were recruited as the first subjects. After screening, patients who met the complete inclusion criteria after a total of 88 cases. After registration, the patients were randomly divided into the combination and conventional groups, and 44 patients were included in each group. All patients followed the principle of random allocation without deliberately distinguishing gender and age. This study was conducted in accordance with the declaration of Helsinki. All patients and their family members were aware of the research and signed the consent form.

Randomization was conducted using a computer-generated random sequence. The random allocation was performed after the patients met the inclusion criteria. The allocation was concealed, ensuring that neither the researchers nor the participants were aware of the group assignment in advance. Patients were randomly divided into two groups: the combination group and the routine group. The random allocation was conducted without intentional gender and age distinctions, enhancing the likelihood of comparable groups.

Inclusion criteria

Inclusion criteria. Patients were all in line with the relevant clinical diagnostic criteria, diagnosed with COPD by a comprehensive assessment of COPD; all were over 60 years old, with complete clinical data, no gender restrictions, stable condition, and the duration was longer than 30 days.

Exclusion criteria. Patients with other chronic airway diseases, malignant tumors, heart failure, abnormal liver and kidney function, and who were unconscious and unable to communicate normally.

Drop-out standard. Patients who withdrew or gave up the study midway, lost follow-up during the follow-up period, did not complete the study, etc.

Intervention method

Routine group. Patients in the routine group were intervened with conventional nursing care, including health education to help patients understand the disease, psychological counseling to stabilize the patient's emotions, face the disease with a positive attitude, guide the patient to cooperate with the treatment, and observe the patient's vital signs, conduct basic examinations, routinely give medication and dietary guidance, and so on.

Combination group. Patients in the combination group were intervened with continuous nursing intervention combined with breathing training guidance. The continuous nursing intervention was as follows: 1) establish a dedicated nursing team. Before members join the team, it is necessary to provide continuous nursing training, including concepts, implementation methods, content, and requirements. Members who pass the examination are enrolled in the group to start nursing, formulate nursing intervention measures based on the previous data of the department and related literature, regularly analyze the relevant knowledge of elderly COPD patients, discuss the nursing plan of the disease, and explore the treatment of the disease.

In order to better control the patient's condition, improve the quality of life of elderly patients, and conduct regular team professional knowledge and skill training. 2) to better carry out the work in the nursing process, keep follow-up records, and provide preventive measures and nursing guidelines to patients and their families; require team members to provide services to patients in strict accordance with the relevant nursing measures formulated by the department, and provide services through telephone, WeChat regular follow-up visits to patients; timely communication with patients about their condition, and continuous health education by distributing various easy-to-understand brochures; understanding patients' recovery and daily self-management, and correcting their misunderstandings and behaviors in a timely manner. 3) routinely give patients medication guidance, diet, and activity guidance, etc., including guiding patients to correctly inhale oxygen, usually before eating correctly and before going to bed, instructing patients on the daily dose and time of drug use, and at the same time letting patients understand the efficacy of the drug. Side effects, so that they can use drugs correctly; at the same time, understand the disease control, medication, and drug compliance of patients after discharge, monitor patients' compliance with medical treatment, provide personalized guidance, and consolidate the health knowledge acquired by patients in the hospital; for patients with serious conditions conduct monthly home visits one by one to instruct patients and their families how to use oxygen therapy equipment at home and exercise lung function at home. 4) adjust the intervention content in time to understand the changing health status and needs of patients, as well as the disease management of patients at home; distribute disease-related health knowledge and video data for patients and their families to read and learn at any time so that patients can continue to improve through self-learning self-management ability and self-care ability; answer questions for patients and their families at any time, solve problems related to the diseases they encounter at home, ensure that patients breathe smoothly, reduce chest tightness and shortness of breath; throughout the process, the focus is on the patient's self-management and caregiver education and guidance.

This nursing is combined with breathing training, and the breathing training guidance is as follows: Diaphragmatic breathing once a day, each time lasting 8-10 minutes, this training requires the patient to maintain a semi-recumbent position, put both hands under the xiphoid process, and tell the patient to inhale through the nose , swelling of the abdomen on inhalation, indentation of the abdomen on exhalation through the mouth; and pursed-lip breathing lasting 3-5 minutes each, which requires the patient to be helped to sit upright with one hand on the abdomen and the other put your hands on your chest, slightly purse your lips, breathe, then gently close your lips, breathe slowly through your nose, lift your hands on your chest with your inhalation, then gently retract your lips, and exhale slowly to whistling posture, the hand on the abdomen is raised with the exhalation, the ratio of inhalation time to exhalation time is 12, and the breathing rate is maintained at 8-10 times/min; finally, there is breathing gymnastics lasting 10-15 minutes , that is, one-lift breathing (stand with your hands on your navel, straighten your hands when you breathe, until your palms turn to your chin, and straighten your palms down when you exhale until you reach your abdomen) and chest-pressing breathing (put your hands on your waist, inhale when exhaling, the abdomen contracts and the chest expands; when exhaling, the abdomen relaxes and the chest is pushed back).[11]

Research indicators

Pulmonary function. The pulmonary function indicators of the two groups of patients, including the forced expiratory volume in one second (FEV1) and forced vital capacity (FVC), were detected before and after the intervention using a spirometer and were recorded and compared.

Quality of life. The quality of life was compared with the quality of life of the two groups of patients after the intervention using the comprehensive quality of life assessment questionnaire (GQOLI-74), which is divided into four dimensions: Psychological function, social function, physical health, and material life, and the total score of each dimension is 100 points, the score is proportional to the quality of life of the patient.

Self-care ability. The self-care ability of the two groups was compared using the modified Barthel index (mBI) before the intervention, 1 month, 3 months, and half a year after the intervention. The scale includes 10 aspects, with a full score of 100 points. The higher the ability.

Happiness. The Memorial University of Newfoundland happiness scale (MUNSH) was used to compare the subjective well-being of the two groups of patients before and after the intervention. The theoretical structure of the MUNSH scale is the emotional balance theory, which consists of 24 items. Each item is about a one-sentence description of emotion or experience, usually applicable to the elderly over the age of 56. The score is directly proportional to the patient's subjective well-being.

Self-care ability. The self-care ability assessment scale (ESCA) was used to conduct a unified assessment after the intervention, which included 4 categories, namely, self-concept, with a full score of 32 points; self-care responsibility, with a full score of 24 points; health knowledge level, with a full score of 68 points; self-care skills, the full score is 48 points; the score is directly proportional to the self-care ability.

Data analysis

GraphPad Prism 8 software was used to process images, and Spss22.0 software was used to process data. Count data [n (%)] and measurement data ($\bar{x} \pm s$) were subjected to chi-square $\chi 2$ and t test; $P < .05$ was considered statistically significant.

RESULT

Clinical information

Among the 44 patients in the combination group, there were 25 males and 19 females, BMI was 20.5-25.0kg/m^2,

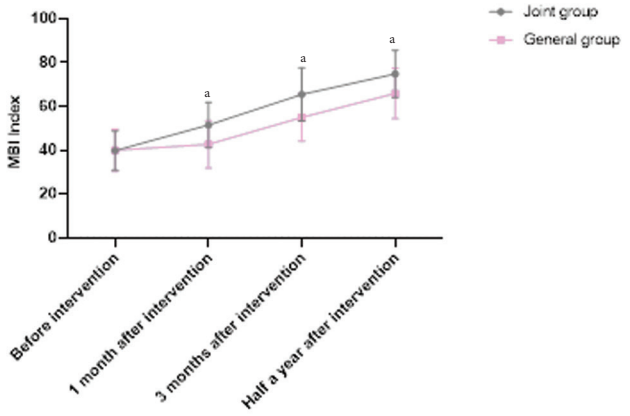
Table 1. Comparison of clinical data of two groups of patients ($\bar{x} \pm s$, %)

		Combination group	Regular group	χ^2/t	*P* value
Number of cases	-	44	44	-	-
Gender	Male	25	26	0.047	.829
	Female	19	18	-	-
BMI	Scope	20.5-25.0	20.4-25.2	-	-
	Average	23.87±0.96	23.98±0.74	0.602	.549
Age	Scope	61-78	62-79	-	-
	Average	68.84±6.73	69.05±6.68	0.147	.883
Course of disease	Scope	1-6	1-6	-	-
	Average	4.17±0.52	4.13±0.61	0.331	.741
Years of education	Scope	7-21	7-21	-	-
	Average	14.28±2. 24	14. 77±2.31	1.010	.315
Basic illness	Hypertension	20	19	0.046	.830
	Coronary heart disease	11	10	0.063	.803
	Stroke	5	6	0.104	.747

Table 2. Pulmonary function indicators before and after intervention in the two groups ($\bar{x} \pm s$)

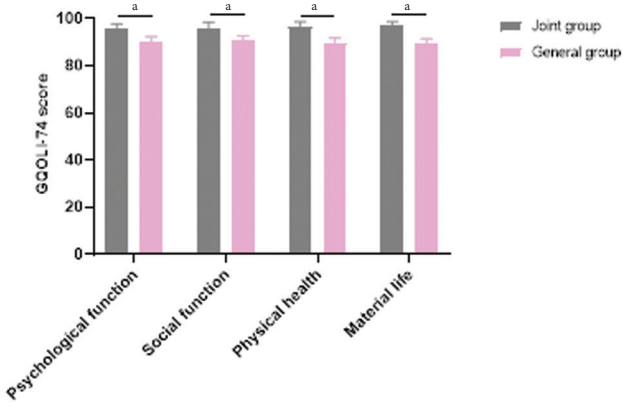
		Combination group	Regular group	*t*	*P* value
Number of cases	-	44	44	-	-
Before intervention	FEV1 (l)	1.15±0.23	1.16±0.21	0.213	.832
-	FVC (l)	1.71±0.51	1.70±0.48	0.095	.925
After intervention	FEV1 (l)	1.51±0.22	1.20±0.25	6.175	<.001
-	FVC (l)	2.46±0.48	1.98±0.51	4.546	<.001

Figure 1. mBI index of two groups of patients at different times



[a]indicates that there is a difference between the two groups ($P < .05$).

Figure 2. GQOLI-74 scores of the two groups of patients after the intervention



[a]indicates a difference between the same items in the two groups, which is statistically significant, $P < .05$.

mean (23.87±0.96), age was 61-78 years old, mean (68.84±6.73) years old, course of the disease was 1- 6 years, mean (4.17±0.52) years, years of education 7-21 years, mean (14.28±2.24) years, basic diseases: 20 cases of hypertension, 11 cases of coronary heart disease, 5 cases of stroke; routine among the 44 patients in the group, there were 26 males and 18 females, BMI was 20.4-25.2kg/m^2, mean (23.98±0.74), age 62-79 years, mean (69.05±6.68) years old, disease course 1-6 years, mean (4.13±0.61) years, years of education 7-21 years, mean (14.77±2.31) years, basic diseases: 19 cases of hypertension, 10 cases of coronary heart disease, 6 cases of stroke. There was no significant difference between the two groups of patients in the clinical data of each item, and they were comparable ($P > .05$). See table 1 for details:

Lung function

The FEV1 level (1.15±0.23) and FVC level (1.71±0.51) of the patients in the combination group before intervention, the FEV1 level (1.51±0.22) and the FVC level (2.46±0.48) after the intervention; 0.21), FVC level (1.70±0.48), FEV1 level after intervention (1.20±0.25), FVC level (1.98±0.51); there was no significant difference in lung function level between the two groups before intervention ($P > .05$), combined after intervention, the FEV1 and FVC levels of patients in the control group were significantly higher than those in the conventional group, $P < .05$. See Table 2 for details.

Quality of life

Quality of life scores of patients in the combination group after intervention: Psychological function (95.51±2.12), social function (95.89±2.56), physical health (96.61±1.89), material life (96.84±1.77), quality of life scores of patients in the routine group after intervention: Mental function (90.01±2.21), social function (90.54±2.12), physical health (89.17±2.53), material life (89.22±2.14), the quality of life scores of patients in the combination group after intervention were significantly higher than those in the routine group, $P < .05$. See Figure 2 for details:

Self-care ability

Changes of mBI index before and after intervention in patients in the combination group: Before intervention (39.84±8.96), 1 month after intervention (51.45±10.45), 3 months after intervention (65.41±12.14), half a year after intervention (74.83±10.86), changes of mBI index before and after intervention in patients in the routine group: Before intervention (39.98±9.56), 1 month after intervention (42.68±10.81), 3 months after intervention (54.95±10.86), half a year after intervention (65.91±11.48), there was no significant difference in self-care ability between the two groups before the intervention ($P > .05$), and the mBI index of the combination group after the intervention was significantly higher than that of the routine group, $P < .05$. See Figure 1 for details.

Happiness

The MUNSH score of the patients in the combination group before intervention (28.51±3.89), the MUNSH score after the intervention (40.45±2.79), the MUNSH score of the patients in the conventional group before the intervention (28.67±3.77), the MUNSH score after the intervention (33.12±2.57), the patients in the two groups were there was no significant difference in the happiness index before the intervention ($P > .05$), and the MUNSH score of the combination group after the intervention was significantly higher than that of the conventional group, $P < .05$. See Table 3 for details.

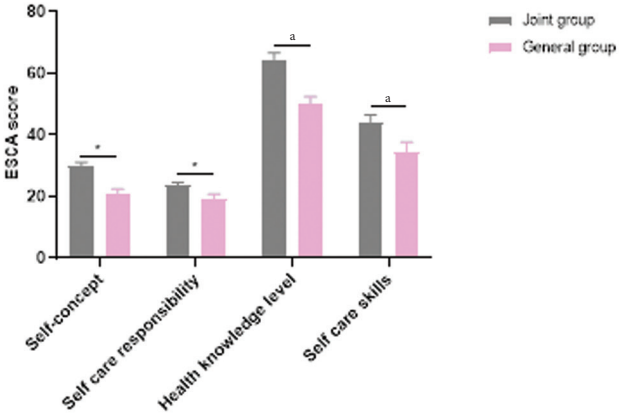
Table 3. MUNSH scores before and after intervention in the two groups ($\bar{x} \pm s$)

	Combination group	Regular group	*t*	*P* value
Number of cases	44	44	-	-
Before intervention	28.51±3.89	28.67±3.77	0.196	.845
After intervention	40.45±2.79	33.12±2.57	12.818	<.001

Self-care ability

ESCA scores after intervention in the combination group: Self-concept (29.88 ± 1.25), sense of responsibility for self-care (23.84 ± 0.78), health knowledge level (64.44 ± 2.18), self-care skills (43.85 ± 2.74), esca scores after intervention in the routine group: Self-concept (21.12 ± 1.36), sense of responsibility for self-care (19.17 ± 1.66), health knowledge level (50.07 ± 2.37), self-care skills (34.29 ± 3.41), esca scores of patients in the combination group after intervention were significantly higher than those in the routine group, $P < .05$. See Figure 3 for details:

Figure 3. Esca scores of two groups of patients after intervention



[a]indicates that there is a difference between the same items in the two groups, which is statistically significant, $P < .05$.

DISCUSSION

Elderly COPD is a common disease characterized by persistent airflow limitation and airway respiratory symptoms. The airflow limitation caused by COPD is irreversible. It can cause dyspnea, decreased physical strength, and weight loss to patients, seriously affecting daily life, and if the patient has many diseases, it will also pose a threat to life. In addition, patients with chronic obstructive pulmonary disease will aggravate their condition when the weather changes, requiring long-term medication, and cannot be eradicated. The elderly have lower physical fitness and a weaker ability to prevent diseases, so they are prone to diseases. The main clinical treatment for elderly patients with COPD is symptomatic treatment, the purpose of which is to relieve the disease symptoms of elderly patients with COPD, improve the level of lung function, maintain smooth breathing, and reduce cough and sputum. Clinically, taking into account the long treatment period of COPD and the advanced age of elderly patients, rehabilitation nursing intervention is usually given to elderly patients in clinical practice to help patients with treatment through professional nursing, assist patients in clinical treatment, speed up recovery and improve treatment effect, effectively improve the lung function of patients.

Previous studies have shown that the standardized management of chronic disease elderly patients outside the hospital directly affects their own health, disease prognosis, and even survival. In addition, because the elderly have a relatively low perception of physical pain and low awareness of the disease when they develop the disease, therefore, it is difficult to judge the disease based on symptoms before professional diagnosis, which may also affect the doctor's judgment; therefore, good health education, disease knowledge explanation, and continuous care after discharge are very important. Many recent studies have concluded that breathing training can help patients recover lung function, and the clinical application effect is good. Therefore, this study focuses on analyzing the effect of continuous nursing intervention combined with breathing training guidance on improving the rehabilitation effect and self-care ability of elderly patients with COPD. The mBI index and MUNSH score were significantly higher than those of the conventional group. It is suggested that the intervention method of continuous nursing intervention combined with breathing training guidance significantly improves the rehabilitation effect of elderly patients with chronic obstructive pulmonary disease. The purpose of breathing training is to improve ventilation, improve the elasticity of the lungs and chest, maintain and increase the range of motion of the chest, enhance effective coughing, strengthen respiratory muscles, improve breathing coordination, relieve chest tension, and enhance the patient's physical fitness. However, chronic obstructive pulmonary disease in the elderly will not only damage the patient's lung function but also damage other organs in the body, deepening the damage to the patient's body. However, conventional rehabilitation nursing intervention is more generalized in nursing, with limited effects, and it is difficult to effectively improve patients' quality of life. Therefore, more comprehensive and systematic nursing intervention combined with breathing training is needed to help patients effectively improve their quality of life while undergoing treatment. Continuity of care means that patients still receive standardized rehabilitation care

measures after being discharged from the hospital. For patients with chronic diseases, this kind of care can effectively prevent disease recurrence and have a significant impact on strengthening patients' self-management and promoting disease cure. It is also reflected in the research results. The combined application of the two has obvious advantages. Continuous nursing intervention is conducive to improving the condition and quality of life of elderly patients, promoting the construction of patients' confidence in treatment, strengthening patients' understanding of the disease itself, and enabling patients to actively participate in treatment and nursing. Cognitive education, psychological intervention, drug guidance, etc. Improve the quality of patient care, and provide the necessary support for improving patients' lung function and quality of life. Through psychological intervention, patients can be promoted to establish a positive and optimistic attitude and effectively improve their quality of life; at the same time, assisted breathing training can effectively improve their lung function. Through breathing training, continuum of care interventions can be supported by more comprehensive and specific patient care interventions to improve patient symptoms and clinical outcomes.

This study also focused on its impact on patients' self-care ability, using the self-care ability assessment scale (esca) to conduct a unified assessment after the intervention, and the results showed that the esca scores of the patients in the combination group were significantly higher than those in the routine group after intervention. The implementation of continuous nursing needs to establish a nursing team that can more systematically understand the patient's condition, basic situation, psychological state, etc., formulate a comprehensive continuous nursing agreement, achieve personalized and integrated nursing goals, and carry out continuous nursing intervention for patients in a timely manner. It extends medical and nursing services to communities and families, which means that it not only extends to high-quality nursing measures during hospitalization, but also involves oxygen therapy, lifestyle intervention, guidance on drug use, health knowledge and functional exercise guidance, after discharge, if necessary, a telephone call will be made to understand and grasp the patient's recovery situation in a timely manner, guide the patient's diet and exercise, improve the patient's daily life ability, and improve the adverse effects that hinder the patient's life and health such as dyspnea, chest tightness, and shortness of breath; patients impart disease prevention and treatment knowledge to avoid forgetting the health knowledge acquired in the hospital when the discharge time is prolonged, and play a leading role in raising patients' disease awareness and correcting bad habits, helping patients develop positive disease knowledge, thereby improving patients' awareness of the disease. Disease treatment and nursing compliance, improving the awareness and motivation of patients and their families, and enabling patients to accurately grasp drug treatment methods, coupled with correct oxygen therapy and functional rehabilitation exercises, etc., can all improve patients' health. Self-care ability.[22] Studies by domestic scholars have shown that continuous care can improve the self-management ability of patients with chronic heart failure; continuous care can promote healthy disease-friendly behaviors in patients with hypertension, etc., saving social and family human resources, which are consistent with the results of this study. Continuity of care continuously strengthens patients' self-care behaviors, and the ability of medical staff to guide patients in a timely manner when problems arise improves the normality of management. After discharge, patients can not only continue to receive continuous medical care in a familiar home environment, but they can also change their attitudes and behaviors, establish independent lifestyles, and develop personal care skills with the presence and support of family members. In view of the above, the implementation of continuous nursing intervention combined with breathing training guidance for elderly patients with chronic obstructive pulmonary disease based on improving lung function has been highly praised by patients and their families, which has improved the cognition of patients and their families and raised the awareness of patients. And their families' ability to manage their illness and achieve their goals of care.

Limitation

In this study, limited by the time limit of the study, the follow-up period was only half a year, and the long-term prognosis of patients could not be studied this time; in addition, this study was affected by insufficient time length, small sample size, and patients' cultural customs and traditional beliefs due to the limitations of other factors, the effect of continuous nursing intervention combined with breathing training guidance on the long-term survival of elderly patients with chronic obstructive pulmonary disease needs to be further studied. In the future, we can draw the most valuable conclusions by expanding the sample size and combining multi-center and diverse samples for comprehensive analysis.

CONCLUSION

From the above, it can be considered that the intervention method of continuous nursing intervention combined with breathing training guidance for elderly COPD patients has a significant effect on improving the rehabilitation effect of patients, that is, after the intervention, it can effectively improve the pulmonary function indicators of patients and improve the quality of life of patients. Quality and self-care ability, reduce the lack of subjective well-being of patients caused by negative emotions, and at the same time, effectively improve the self-care ability of patients, which has positive clinical significance for the prognosis of patients and is worthy of promotion.

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