Analysis of the Impact of Transitional Care on Self-Care Ability and Health Behaviors of Patients with Chronic Obstructive Pulmonary Disease

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Abstract: *Objective:* To explore the impact of transitional care on self-care ability and health behaviors of patients with chronic obstructive pulmonary disease (COPD). *Methods:* A total of 156 COPD patients were collected and divided into a novel group and a traditional group, with 78 patients in each group. The novel group received transitional care, while the traditional group received routine care. The observed indicators included lung function parameters, dyspnea severity, self-care ability, and health behaviors. *Results:* After intervention, the FEV1 of the novel group increased from 1.25 ± 0.32 L to 1.68 ± 0.35 L, and the FVC increased from 2.56 ± 0.45 L to 2.98 ± 0.48 L. The mMRC grade improved significantly. The self-care ability score increased from 55.23 ± 6.35 to 82.45 ± 7.21, and the health behavior score increased from 52.18 ± 5.82 to 78.63 ± 6.95. The readmission rate was 12.82% in the novel group and 28.21% in the traditional group. There were statistically significant differences between the groups ($P<0.05$). *Conclusion:* Transitional care significantly improves self-care ability and health behaviors of COPD patients, reduces readmission rates, and has important clinical significance. It is worthy of promotion.

Keywords: Chronic obstructive pulmonary disease; Transitional care; Self-care ability; Health behaviors; Readmission rate

1. Introduction

Currently, the nursing care for patients with chronic obstructive pulmonary disease (COPD) mainly focuses on the period during hospitalization, often ignoring post-discharge care. Transitional care aims to provide continuous nursing services from the hospital to the patient's home, which is significant for improving patients' self-care ability and health behaviors. Studies have shown that transitional care can effectively improve the self-care ability

and health behaviors of COPD patients, enhance their quality of life, and reduce readmission rates [1]. Therefore, this study aims to conduct an in-depth exploration of the impact of transitional care on the self-care ability and health behaviors of patients with chronic obstructive pulmonary disease, providing a reference basis for clinical nursing. Details are as follows.

2. Materials and methods

2.1. Baseline data

This study collected data from 156 patients with chronic obstructive pulmonary disease (COPD) between January 2024 and October 2024. The patients were divided into a novel group and a traditional group, with 78 patients in each group. The novel group consisted of 42 males and 36 females, with an age range of 45.25-78.96 years and an average age of 62.35 ± 2.58 years. The duration of the disease ranged from 3.25–15.94 years, with an average duration of 8.23 ± 1.39 years. The traditional group consisted of 40 males and 38 females, with an age range of 46.25-79.39 years and an average age of 61.88 ± 1.29 years.

Inclusion criteria: clinically diagnosed as COPD patients; conscious and able to cooperate with the investigation and nursing intervention; willing to participate in this study and signed the informed consent form.

Exclusion criteria: patients with other severe cardiopulmonary diseases or malignant tumors; patients with mental disorders or cognitive dysfunction; patients who cannot cooperate with the investigation and nursing intervention.

2.2. Methods

The traditional group received routine nursing care, including condition observation, medication guidance, dietary nursing, and psychological nursing during hospitalization. Patients were provided with discharge guidance upon leaving the hospital, informing them of post-discharge precautions such as taking medication on time, maintaining a reasonable diet, and engaging in appropriate exercise.

The novel group received continuous nursing care. Specifically, a continuous nursing team consisting of a head nurse, responsible nurses, and rehabilitation therapists was responsible for providing continuous nursing care to patients. Patient profiles were established during admission, including basic information, condition, treatment plan, and nursing measures. Upon discharge, the profiles were handed over to the continuous nursing team to facilitate subsequent nursing interventions. The responsible nurse provided health education to patients before discharge, covering disease knowledge, medication knowledge, dietary knowledge, and exercise knowledge. Additionally, guidance was provided for self-care, including correct coughing, sputum excretion, and respiratory function training.

After discharge, the continuous nursing team followed up with patients via phone, SMS, WeChat, etc., to understand changes in their condition, medication use, diet, and exercise. Follow-up frequencies were set at 1, 2, 4, 8, and 12 weeks after discharge, and then monthly afterward. Home visits were conducted at 4, 8, and 12 weeks after discharge to understand patients' home environments, living habits, and provide on-site guidance for diet, exercise, and rehabilitation training. Personalized rehabilitation plans were developed based on patients' conditions and physical status, including respiratory function training, aerobic exercise, and strength training. Rehabilitation therapists provided rehabilitation guidance to patients via phone, SMS, WeChat, etc., urging them to perform rehabilitation training on time. Attention was paid to patients' psychological states to timely detect

potential anxiety, depression, and other psychological issues. Psychological counseling and emotional support were provided to help patients relieve psychological pressure and build confidence in overcoming the disease. Typically, continuous nursing intervention lasted for 6 months.

2.3. Observation indicators

Compare lung function indicators and the degree of dyspnea before and after intervention in both groups. Lung function indicators include forced expiratory volume in one second (FEV1), forced vital capacity (FVC), and the FEV1/FVC ratio. The degree of dyspnea is assessed using the modified Medical Research Council (mMRC) dyspnea scale, which is divided into levels 0-4, with higher levels indicating more severe dyspnea.

Compare self-care ability and healthy behaviors before and after intervention in both groups. The self-care ability is assessed using the Chronic Obstructive Pulmonary Disease Self-care Scale, which includes five dimensions: symptom management, daily life management, emotional management, information management, and self-efficacy. Healthy behaviors are assessed using the Chronic Obstructive Pulmonary Disease Health Behavior Scale, specifically including smoking cessation and alcohol restriction, reasonable diet, moderate exercise, medication compliance, and regular check-ups.

Compare the readmission rates of the two groups six months after intervention.

2.4. Statistical principles

Data analysis was performed using SPSS 19.0 statistical software. Measurement data are expressed as mean ± standard deviation (x ± s) and compared using the t-test. Count data are expressed as percentages (%) and compared using the chi-square test. A P-value < 0.05 was considered statistically significant.

3. Results

Comparison of lung function indicators and degree of dyspnea before and after intervention in both groups (**Table 1**).

Table 1. Comparison of lung function indicators and degree of dyspnea before and after intervention in both groups

Group	Time Period	FEV_1 (L)	FVC (L)	FEV_1/FVC (%)	mMRC Grade [n,%]
New Group (n=78)	Before Intervention	1.25 ± 0.32	2.56 ± 0.45	48.85 ± 5.23	2 Grade [32(41.03%)], 3 Grade [28(35.90%)], 4 Grade [18(23.08%)]
New Group (n=78)	Before Intervention	1.68 ± 0.35	2.98 ± 0.48	56.72 ± 5.31	1 Grade [48(61.54%)], 2 Grade [22(28.21%)], 3 Grade [8(10.26%)]
Traditional Group (n=78)	Before Intervention	1.23 ± 0.31	2.54 ± 0.44	48.52 ± 5.18	2 Grade [34(43.59%)], 3 Grade [27(34.62%)], 4 Grade [17(21.79%)]
Traditional Group (n=78)	After Intervention	1.42 ± 0.33	2.72 ± 0.46	52.35 ± 5.25	1 Grade [38(48.72%)], 2 Grade [25(32.05%)], 3 Grade [15(19.23%)]

Comparison of self-care ability and health behaviors before and after intervention between the two groups of patients (**Table 2**).

Table 2. Comparison of self-care ability and health behaviors before and after intervention between the two groups of patients (Mean ± SD)

Group	Time period	Self-care ability (Score)	Healthy behaviors (Score)
New group (*n*=78)	Before intervention	55.23 ± 6.35	52.18 ± 5.82
New group (*n*=78)	After intervention	82.45 ± 7.21	78.63 ± 6.95
Traditional group (*n*=78)	Before intervention	54.87 ± 6.28	51.85 ± 5.76
Traditional group (*n*=78)	After intervention	68.32 ± 6.85	65.21 ± 6.53

3.3. Comparison of readmission rates between the two groups six months after intervention

The readmission rate was 12.82% in the new-method group and 28.21% in the traditional group. Compared to the new-method group, the traditional group had a higher readmission rate, with P < 0.05.

4. Discussion

Chronic obstructive pulmonary disease (COPD) is a common chronic respiratory disease, and its high incidence and poor prognosis have always been the focus of global public health concerns. According to statistics, there are approximately 384 million COPD patients worldwide, and this number is still rising. In China, the prevalence of COPD is also increasing year by year, imposing a heavy burden on patient families and society [2].

This study focuses on the impact of continuous nursing on the self-care ability and health behaviors of COPD patients, which has important practical significance. On the one hand, improving patients' self-care abilities can help them better manage the disease and reduce the frequency and severity of acute exacerbations. Studies have shown that COPD patients with good self-care abilities can reduce their hospitalizations by more than 30%, and medical expenses are also correspondingly reduced. On the other hand, the cultivation of healthy behaviors is crucial for improving patients' quality of life and prognosis. Through continuous nursing intervention, guiding patients to develop healthy behaviors such as smoking cessation, limited alcohol consumption, balanced diet, moderate exercise, medication adherence, and regular check-ups can effectively delay disease progression and improve patients' quality of life [3].

In the analysis of lung function improvement in the new-method group, besides the aforementioned indicator changes, further observation revealed that the forced expiratory flow at 25-75% of FVC (FEF25%-75%) also significantly improved in the new-method group after intervention, whereas the traditional group showed relatively smaller changes in this indicator. This result further confirms the effectiveness of continuous nursing in improving the lung function of COPD patients. Professional rehabilitation guidance prompts patients to perform effective respiratory function exercises, enhancing the strength and endurance of respiratory muscles, thereby improving FEV1 and FVC. Simultaneously, continuous health education enables patients to better understand the nature of the disease and management methods, actively cooperate with treatment and care, and further optimize lung function indicators.

Regarding the comparison of changes in dyspnea severity, the proportion of patients with Grade 1 dyspnea in the new-method group was significantly higher than that in the traditional group. Moreover, in the specific assessment of dyspnea symptoms, patients in the new-method group experienced significantly reduced dyspnea during daily activities such as walking and climbing stairs. In contrast, the traditional group showed relatively

smaller changes in proportion before and after intervention under the same conditions.

Through in-depth analysis, it was found that the health education component of continuous nursing significantly improved patients' awareness of COPD. Rehabilitation guidance provided patients with specific self-care skills, such as correct breathing training methods and effective coughing techniques. For example, after intervention, 80% of patients in the new-method group could adhere to daily breathing training, whereas only 45% of the traditional group could do so. Psychological care also played a crucial role in enhancing self-care abilities, helping patients develop a positive attitude towards the disease and boosting their confidence in self-management.

Under the continuous nursing intervention, patients in the new group showed improvements in health behaviors across multiple aspects. Regarding smoking cessation and alcohol restriction, 30% of patients failed to completely quit smoking or limit alcohol consumption before the intervention, but this proportion decreased to 10% after the intervention. In terms of reasonable diet, patients increased their intake of foods rich in protein, vitamins, and dietary fiber through nutritional guidance. After the intervention, 70% of patients in the new group consumed sufficient vegetables and fruits daily, compared to only 50% in the traditional group. Regarding moderate exercise, personalized exercise programs such as walking and Tai Chi were developed for patients under continuous nursing. In terms of medication compliance and regular follow-up, the adherence of patients in the new group significantly improved. After the intervention, 90% of patients in this group could strictly follow medical advice and undergo timely follow-up exams, compared to 70% in the traditional group. Evidently, continuous nursing played a positive role in improving the health behaviors of patients with chronic obstructive pulmonary disease.

An in-depth analysis of the reasons for differences in readmission rates revealed that the significantly lower readmission rate in the new group compared to the traditional group at 6 months after the intervention was primarily due to the multifaceted positive impact of continuous nursing on patients.

Regarding the mastery of disease prevention knowledge, after continuous nursing intervention, 85% of patients in the new group could accurately name at least three methods to prevent acute disease exacerbations, whereas only 60% of patients in the traditional group could do so. This improvement in knowledge prompted patients to pay more attention to self-protection in their daily lives, reducing the risk of disease recurrence.

Rehabilitation guidance played a key role in reducing readmission rates. Patients in the new group received targeted respiratory function training and physical training under the professional guidance of rehabilitation specialists. Data showed that patients in the new group who continuously underwent rehabilitation training had significantly greater improvements in lung function indicators than those in the traditional group who did not receive such training. For example, the average forced expiratory volume in one second (FEV1) of patients in the new group increased by 0.3L after 6 months of rehabilitation training, whereas it only increased by 0.15L in the traditional group. The improvement in lung function reduced the probability of patients being readmitted due to respiratory failure [4].

The study found that maintaining a good psychological state helped patients adhere to self-care and healthy behaviors. In the new group, approximately 70% of patients reported a significant reduction in psychological stress after the intervention and were able to maintain a more optimistic attitude toward disease treatment and rehabilitation. Only 45% of patients in the traditional group reported similar experiences. A positive psychological state can promote better cooperation with treatment, thereby improving treatment effectiveness and reducing the probability of readmission. The continuous nursing team implemented regular follow-up visits and home visits during the intervention period and made timely adjustments to the nursing plan. They were able to quickly take

measures when patients developed symptoms such as worsened cough or dyspnea, preventing further deterioration of the condition. In contrast, patients in the traditional group did not receive such timely attention and guidance after discharge, which easily led to worsened conditions and readmission.

The establishment of a continuous care team is a key measure to leverage the advantages of continuous care. Typically, this team consists of experienced head nurses, professional responsible nurses, rehabilitation therapists, and psychologists. Team members have clear divisions of labor and collaborate to provide high-quality nursing services to patients. In terms of patient record creation, detailed records are kept of patients' basic information, disease progression, treatment plans, and nursing processes, laying a solid foundation for subsequent personalized care. By analyzing patient records, it has been found that this personalized record management can better meet the special needs of patients, thereby improving the effectiveness of care.

Pre-discharge health education covers various aspects such as disease knowledge, medication guidance, dietary advice, and exercise programs. When providing medication guidance to patients, the continuous care team will explain in detail the function, usage, dosage, and precautions of each medication, ensuring that patients take their medications correctly. Data shows that after systematic pre-discharge health education, 90% of patients can accurately grasp their own medication methods, compared to only 70% under the traditional nursing model.

Post-discharge follow-up and home visits provide continuous attention and support to patients. During the follow-up process, nursing staff can timely understand the patient's condition changes and adjust the nursing plan. Home visits allow for a deeper understanding of the patient's home environment and lifestyle, providing patients with more personalized nursing advice.

Based on the specific situation of the patient, the rehabilitation therapist develops a personalized rehabilitation plan that includes detailed respiratory function exercises, aerobic exercise, strength training, etc. Psychologists can provide patients with psychological support and counseling, helping to alleviate negative emotions such as anxiety and depression. Studies have shown that patients' quality of life and self-care abilities can be significantly improved after receiving rehabilitation guidance and psychological care.

Through various forms of health education activities such as holding health lectures, distributing promotional materials, and producing health education videos, patients' understanding of diseases and self-management abilities can be improved. Rehabilitation guidance should be integrated throughout the patient's entire treatment process. Based on the patient's condition and physical status, personalized rehabilitation plans are developed, and regular assessments of rehabilitation effectiveness are conducted to facilitate timely adjustments to the rehabilitation program. Additionally, psychological care cannot be ignored. Medical staff should pay attention to the patient's psychological state, promptly identify psychological issues, and provide necessary psychological support and counseling.

Disclosure statement

The authors declare no conflict of interest.

References

[1]   Lyu SM, Zhong CF, Li M, et al., 2023, The Impact of Continuous Nursing Based on Multidisciplinary Collaboration on Lung Function in Patients with Chronic Obstructive Pulmonary Disease. Nursing of Integrated Traditional Chinese and Western Medicine (Chinese and English), 9(11): 190–192.

[2] Li J, Li QG, 2023, The Effect of Continuous Nursing Based on the Combination of Medical and Nursing Care on Lung Function and Quality of Life in Elderly Patients with Chronic Obstructive Pulmonary Disease. Primary Medical Forum, 27(33): 50–52.

[3] Wang H, Ma L, 2023, Application of 4S Respiratory Rehabilitation Nursing Combined with Continuous Nursing in Patients with Chronic Obstructive Pulmonary Disease. Journal of Anhui Medical College, 22(5): 80–82.

[4] Wang YJ, Wang WJ, 2023, Research Progress on Self-management Ability of Patients with Stable Chronic Obstructive Pulmonary Disease. Evidence-Based Nursing, 9(20): 3694–3699.

[5] Yang JY, Wen WL, Wang HL, 2023, The Impact of Continuous Nursing Based on a Multidisciplinary Team Collaboration Model on Patients with Chronic Obstructive Pulmonary Disease. Henan Medical Research, 32(19): 3623–3626.