

Value Assessment of Multidisciplinary Collaborative Transitional Care Service for Patients with Chronic Obstructive Pulmonary Disease

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Date: 2025-02-25T00:00:00+00:00

Abstract

Objective To investigate the effect of implementing multidisciplinary collaborative continuous nursing care for chronic obstructive pulmonary disease (COPD). **Methods** A total of 230 COPD patients admitted between January 2023 and December 2024 were selected for the study and randomly divided into two groups using a random number table method: control group (115 cases, conventional follow-up services) and observation group (115 cases, multidisciplinary collaborative continuous nursing care). **Results** After 3 months of nursing care, lung function in the observation group was higher than that in the control group ($P < 0.05$), disease control scores and negative emotion scores were lower than those in the control group ($P < 0.05$), and satisfaction was greater than that in the control group ($P < 0.05$). **Conclusion** Implementing multidisciplinary collaborative continuous nursing care for COPD can improve lung function, is beneficial for disease control, reduction of negative emotions, and improvement of satisfaction, and has significant application value.

Full Text

Preamble

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Value Evaluation of Multidisciplinary Collaborative Continuing Care Services for Patients with Chronic Obstructive Pulmonary Disease

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Abstract

Objective: To investigate the effectiveness of implementing multidisciplinary collaborative continuing care services for patients with chronic obstructive pulmonary disease (COPD).

Methods: A total of 230 COPD patients admitted from January 2023 to December 2024 were enrolled and randomly divided into two groups using a random number table: a control group (115 patients receiving routine follow-up services) and an observation group (115 patients receiving multidisciplinary collaborative continuing care services).

Results: After three months of intervention, the observation group demonstrated significantly better lung function compared to the control group ($P < 0.05$), lower scores for disease control and adverse emotions ($P < 0.05$), and higher satisfaction rates ($P < 0.05$).

Conclusion: Implementing multidisciplinary collaborative continuing care services for COPD patients can improve lung function, enhance disease control, reduce adverse emotions, and increase satisfaction, demonstrating significant clinical application value.

Keywords: chronic obstructive pulmonary disease; routine follow-up services; continuing care services under multidisciplinary collaboration

Chronic obstructive pulmonary disease (COPD) is a typical chronic respiratory condition characterized by progressive airflow limitation that severely impacts daily life. While hospitalized, COPD patients typically receive standardized, scientific, and rational treatment that helps control the disease, improve symptoms and signs, delay disease progression, and enhance respiratory status. However, COPD is a chronic disease that is difficult to cure completely, and most patients are discharged home after symptom relief and effective disease control.

Unfortunately, most patients lack accurate understanding of COPD and fail to establish healthy lifestyle habits during hospitalization. During home recovery, numerous unhealthy behaviors persist, such as smoking, alcohol consumption, high-fat diets, and frequent exposure to areas with poor air quality. Inadequate self-protection often leads to acute exacerbations or recurrent episodes of COPD, resulting in readmission and increased medical burden. Research indicates that providing continuous, scientific nursing care during the home period can facilitate healthy behaviors, improve disease control outcomes, and enhance both short-term and long-term prognosis. Multidisciplinary collaborative continuing care services have been increasingly applied in the rehabilitation of various chronic diseases. Through collaborative efforts across multiple disciplines, potential problems during home treatment are analyzed and effective solutions are developed to guide patients in maintaining healthy lifestyles and managing common issues at home, thereby improving quality of life and disease rehabilitation outcomes.

1. Materials and Methods

1.1 General Information We selected 230 COPD patients admitted from January 2023 to December 2024 and randomly divided them into two groups using a random number table: a control group (115 patients) and an observation group (115 patients). The control group comprised 91 males and 24 females, aged 54-96 years (mean 75.41 ± 2.73 years), with disease duration of 1-20 years (mean 10.85 ± 2.67 years), BMI of 18.34-28.44 kg/m² (mean 23.39 ± 1.22 kg/m²), lung function grade I in 55 cases and grade II in 60 cases, and dyspnea grade I in 65 cases and grade II in 50 cases. The observation group comprised 95 males and 20 females, aged 52-97 years (mean 75.02 ± 2.60 years), with disease duration of 1-19 years (mean 10.36 ± 2.51 years), BMI of 18.12-28.10 kg/m² (mean 23.11 ± 1.07 kg/m²), lung function grade I in 52 cases and grade II in 63 cases, and dyspnea grade I in 70 cases and grade II in 45 cases. Comparison of baseline information between the two groups showed no significant differences, confirming comparability ($P > 0.05$).

Diagnostic Criteria: Patients met the COPD diagnostic and discharge criteria outlined in the *Guidelines for Peri-Discharge Management and Follow-Up of Acute Exacerbation of Chronic Obstructive Pulmonary Disease (2024 Edition)* [7].

Inclusion Criteria: (1) Age > 50 years; (2) Able to cooperate with com-

munication, follow-up visits, and evaluations during the follow-up period; (3) Normal communication and expression abilities; (4) Stable COPD condition; (5) Informed consent for participation.

Exclusion Criteria: (1) Malignant tumors; (2) Psychiatric disorders; (3) Cognitive dysfunction; (4) Congenital cardiopulmonary abnormalities; (5) Visual or auditory dysfunction.

1.2 Interventions Control Group -Routine Follow-Up Services: On the day before or day of discharge, health education was provided focusing on the disease and tailored to each patient. Patients were informed about the importance of self-care, regular follow-up visits, healthy exercise, and medication adherence at home. Personalized education was conducted according to patients' age to ensure adequate understanding and mastery of the educational content, thereby improving knowledge acquisition and self-care abilities to enhance COPD rehabilitation outcomes. Additionally, patients were educated about potential COPD complications during home recovery, including common symptoms and effective prevention strategies, to increase awareness and encourage proactive complication prevention. Patients were required to conduct regular self-assessments, record changes in symptoms and signs, monitor disease progression, and actively prevent deterioration. Scheduled telephone follow-ups were conducted to inform patients of accurate follow-up timing while monitoring physical changes at home, identifying abnormalities, and guiding patients to seek immediate medical attention when necessary.

Observation Group -Multidisciplinary Collaborative Continuing Care Services: (1) **Team Establishment:** The head nurse served as team leader of the continuing care group, with respiratory charge nurses, dietitians, psychologists, rehabilitation therapists, and other professionals as team members. The team collectively reviewed COPD knowledge, particularly common symptoms and signs, treatment protocols, complications, and potential problems during home recovery, creating a comprehensive list with home-related issues highlighted. Team members developed problem-specific solutions based on their professional expertise and relevant literature. The team studied and discussed the concepts, principles, and considerations of multidisciplinary collaborative continuing care, analyzing key aspects of continuing care within their respective specialties. Based on identified home-related problems and solutions, a standardized and comprehensive care process and plan was developed to facilitate coordinated service delivery. To ensure effectiveness, the care protocol was compiled into printed or electronic manuals with colorful illustrations for distribution to patients and families, who were required to study the materials to acquire relevant knowledge and nursing skills for improved home-based quality of life.

(2) **档案 Creation:** With patient consent, detailed personal rehabilitation records were created, documenting admission reasons, inpatient treatment outcomes, proposed home rehabilitation plans, and continuing care imple-

mentation pathways. All communication results and follow-up examination outcomes were recorded. Healthcare providers were required to review patient records before service delivery to identify key care priorities and address problems effectively.

- (3) **WeChat Services:** Patients and families were required to join a WeChat group and follow a designated public account. Healthcare providers' online availability was communicated, and the range of services provided through WeChat was introduced. Medical staff regularly uploaded COPD home rehabilitation knowledge and skills, including various precautions and daily behavioral guidelines, supplemented by typical case examples illustrating the consequences of neglecting versus adhering to home care, thereby increasing patient and family awareness and motivation. Patients were encouraged to check in daily on WeChat, reporting medication adherence, diet, exercise, and sleep patterns to establish healthy habits and maintain comprehensive treatment compliance.
- (4) **Rehabilitation Training:** Based on COPD severity assessment and functional status, a home rehabilitation training plan was developed before discharge, considering patient tolerance and compliance. The plan was introduced to patients and families through illustrated manuals and videos, with typical cases presented to enhance training adherence. Charge nurses contacted patients every two weeks after discharge to establish harmonious relationships and monitor disease progression and training implementation, with all information recorded in patient files. Patients or families were required to record and upload training videos to the WeChat group for evaluation by rehabilitation therapists, who identified errors and communicated promptly with patients and families to address problems. To enhance cardiopulmonary function, patients were required to perform daily breathing exercises combining pursed-lip and diaphragmatic breathing with activities such as chest expansion, neck rotation, and bending. Based on patient preferences, comprehensive aerobic exercise programs were developed, including walking, slow walking, running, Tai Chi, Wu Qin Xi, and cycling. Patients exercised twice daily for 30–40 minutes each session to gradually improve muscle strength and cardiopulmonary function, with duration and intensity progressively increased based on actual conditions. Patients were instructed to exercise appropriately and stop immediately if discomfort occurred.
- (5) **Dietary Care:** Dietary structure and habits during home recovery directly affect COPD rehabilitation outcomes. Before discharge, dietitians developed personalized meal plans based on nutritional assessment results, BMI, and dietary preferences. Patients and families were guided through the meal plans, emphasizing the positive impact of dietary compliance on nutritional status and prognosis, while learning calorie conversion formulas and familiarizing themselves with seasonal vegetables and meats. Dietary restrictions were emphasized, requiring accurate and healthy meal prepara-

tion. Patients were advised to increase intake of fresh fruits and vegetables, particularly those rich in vitamin C, and avoid spicy and irritating foods that could worsen respiratory symptoms. Underweight patients were encouraged to increase consumption of high-protein foods such as milk, lean meat, and fish, adopting small frequent meals to gradually improve nutritional status. Overweight or obese patients were advised to use vegetable oils, reduce high-cholesterol and fried foods, eat until 70–80% full, maintain dietary diversity, and appropriately extend exercise duration when tolerated to gradually adjust weight.

- (6) **Psychological Care:** COPD is difficult to cure, patients are typically older, and concerns about medical costs and disease progression create significant psychological stress and emotional fluctuations. Psychologists assessed patient psychological status, identified causes of adverse emotions, and developed effective solutions. Regular one-on-one online or outpatient communication was conducted to guide emotional expression, release psychological pressure, and improve mental status. Patients were taught meditation therapy, mindfulness-based stress reduction, art therapy, journaling, and interest-based therapy through illustrated manuals and videos, and were encouraged to maintain daily emotion diaries to record mood changes, analyze problems independently, and practice self-regulation to enhance psychological well-being.

Both groups received continuous care for three months.

1.3 Outcome Measures **1.3.1 Lung Function:** Pulmonary function was assessed using a spirometer to measure maximal mid-expiratory flow (MMEF), forced expiratory volume in one second (FEV1), and forced vital capacity (FVC).

1.3.2 Disease Control: The Chronic Obstructive Pulmonary Disease Assessment Test (CAT) [8] was used to evaluate subjective symptoms (six items: emotion, chest tightness, energy, sputum, cough, and sleep; total score 6–30) and tolerance (two items: exercise endurance and daily activity impact; total score 2–10). Lower scores indicate better outcomes.

1.3.3 Adverse Emotions: The Hamilton Anxiety Scale (HAMA) [9] and Hamilton Depression Scale (HAMD) [10] were used to assess anxiety and depression. Scores > 7 indicate adverse emotions, with lower scores representing better outcomes.

1.3.4 Satisfaction: A self-designed COPD nursing satisfaction questionnaire was administered (Cronbach's α coefficient = 0.907, content validity index = 0.892; total score 0–20). Scores of 0–<10 indicated dissatisfaction, 10–<16 indicated basic satisfaction, and 16–20 indicated high satisfaction. Satisfaction rate = 1 – dissatisfaction rate.

1.4 Statistical Methods Data were analyzed using SPSS 26.0 software. Categorical data were expressed as percentages (%) and analyzed using the χ^2 test. Measurement data with normal distribution were expressed as mean $\pm$ standard deviation ($s \pm$) and analyzed using t-tests (or F-tests). $P < 0.05$ was considered statistically significant.

2. Results

2.1 Comparison of Lung Function Before intervention, no significant differences were observed in the three lung function parameters between the two groups ($P > 0.05$). After three months of care, both groups showed improved lung function, with the observation group demonstrating significantly higher values than the control group ($P < 0.05$). See .

Lung Function ($n = 115$ cases, $s \pm$)

Group	MMEF (L/s)	FEV1 (L)	FVC (L)
Observation	1.13 ± 0.21	$1.90 \pm 0.35a$	1.17 ± 0.21
Control	1.19 ± 0.26	$1.58 \pm 0.31a$	1.20 ± 0.26

Note: aP < 0.05 compared with pre-care values within the same group.

2.2 Comparison of Disease Control Before intervention, no significant differences were observed in the two disease control parameters between the two groups ($P > 0.05$). After three months of care, both groups showed decreased disease control scores, with the observation group scoring significantly lower than the control group ($P < 0.05$). See .

Disease Control ($n = 115$ cases, $s \pm$, points)

Group	Subjective Symptom Score	Tolerance Score
Observation	19.73 ± 3.24	$9.23 \pm 2.61a$
Control	19.16 ± 3.08	$14.07 \pm 2.95a$

Note: aP < 0.05 compared with pre-care values within the same group.

2.3 Comparison of Adverse Emotions Before intervention, no significant differences were observed in the two emotional parameters between the two groups ($P > 0.05$). After three months of care, both groups showed decreased adverse emotion scores, with the observation group scoring significantly lower than the control group ($P < 0.05$). See .

Adverse Emotions ($n = 115$ cases, $s \pm$, points)

Group	HAMA Score	HAMD Score
Observation	16.72 ± 2.54	7.56 ± 1.03a
Control	16.15 ± 2.41	9.38 ± 1.25a

Note: aP < 0.05 compared with pre-care values within the same group.

2.4 Comparison of Satisfaction After three months of care, the observation group demonstrated significantly higher satisfaction rates than the control group (P < 0.05). See .

Satisfaction (n = 115 cases, n/%)

Group	Very Satisfied (n)	Basically Satisfied (n)	Dissatisfied (n)	Satisfaction Rate (%)
Observation	-	-	-	-
Control	-	-	-	-

COPD is a common disease among middle-aged and elderly individuals, with typical symptoms including wheezing, cough with sputum, shortness of breath, and dyspnea. The disease course is prolonged with frequent recurrences and is difficult to cure completely. Without timely treatment, disease progression can lead to severe complications such as respiratory failure and heart failure, posing direct threats to patient survival. Although numerous treatment options exist for COPD, most cannot achieve complete cure, requiring long-term management. To help patients maintain stable conditions and achieve optimal outcomes, scientific treatment and high-quality nursing care must continue after discharge. However, most patients demonstrate insufficient self-care abilities, inadequate family caregiving capacity, limited knowledge of post-discharge rehabilitation management, and inability to effectively restrain unhealthy behaviors, leading to disease recurrence. This not only affects physical comfort but also increases psychological stress, necessitating effective post-discharge nursing care.

Traditional routine follow-up services for COPD patients are primarily hospital-based, implemented mainly on the day before discharge, at discharge, or during outpatient follow-up visits, with education focusing on medication, diet, exercise, and disease management. While routine follow-up services have some effect, they cannot continuously constrain patients, fully mobilize subjective initiative, or ensure compliance, resulting in limited effectiveness. Multidisciplinary collaborative continuing care services can compensate for these deficiencies by addressing related problems from multiple perspectives and meeting patients' high-quality nursing needs after discharge. Continuing care represents a hospital-to-home nursing service that includes health education and comprehensive guidance provided primarily after discharge. Currently applied in post-discharge

management of various diseases, continuing care can restrain unhealthy behaviors and improve rehabilitation outcomes. However, COPD is not a simple disease; disease progression can lead to severe complications such as respiratory failure, pulmonary hypertension, and heart failure. COPD induces multiple uncomfortable symptoms affecting normal ventilation and gas exchange, resulting in poor physical comfort and severe adverse emotions in most patients. Combined with long-term treatment and financial pressures, many patients develop psychological problems that affect physiology, cognition, behavior, and spirit, ultimately leading to loss of treatment confidence and non-adherence. COPD is also a high-consumption disease, and with inadequate nutritional intake, some patients develop nutrition-related problems that, if unresolved, can accelerate disease progression and affect rehabilitation outcomes and prognosis. Therefore, traditional continuing care alone cannot meet patient needs; multidisciplinary collaboration is required to provide comprehensive services and improve post-discharge management effectiveness.

Multidisciplinary collaborative continuing care services can meet the needs of COPD patients through a team comprising respiratory nurses, psychologists, dietitians, and other professionals who provide diversified services with significant nursing effects. In this study, the observation group demonstrated superior lung function, disease control scores, adverse emotion scores, and satisfaction compared to the control group, indicating that multidisciplinary collaborative continuing care services are more effective than routine follow-up services. The reasons are as follows: compared with routine follow-up services, multidisciplinary collaborative continuing care involves coordinated efforts from multiple disciplines, enabling targeted solutions for disease control, nutritional status, adverse emotions, and rehabilitation training. This approach fully recognizes the positive role of patient and family initiative, actively engaging them in home-based rehabilitation and nursing, resulting in significant nursing effects, greater improvement in lung function, better disease control, and marked reduction in adverse emotions. Through continuous learning and improvement during the care process, patients enhanced their self-care abilities, better managed home rehabilitation challenges, and achieved better quality of life, leading to higher satisfaction.

In summary, implementing multidisciplinary collaborative continuing care services for COPD patients yields significant effects.

References

- [1] Tang Jiaqin, Kang Yunqin, Chen Yaping, et al. Application of WeChat group-based continuing care combined with pulmonary function rehabilitation exercise in elderly patients with chronic obstructive pulmonary disease[J]. *Journal of Qilu Nursing*, 2024, 30(15): 62-65.
- [2] Wu Xiaoyan, Le Pengyun. Effect of empowerment theory-based continuing care on disease control self-care ability and lung function in patients with chronic

- obstructive pulmonary disease[J]. The Medical Forum, 2024, 28(15): 86-88, 118.
- [3] Zhao Juan, Tian Xiaoyan, Jiang Liqian. Application of medical consortium model-based empowerment education management in continuing intervention for COPD patients and its impact on self-efficacy[J]. International Journal of Nursing, 2024, 43(23): 4240-4244.
- [4] Shao Huidi, Luo Jieping. Application of level-based continuing care based on assessment of home oxygen therapy and rehabilitation training status in elderly COPD patients[J]. Clinical Education of General Practice, 2021, 19(11): 1051-1053.
- [5] Zhang Min, Zhou Huiya, Zhou Ying, et al. Application value analysis of three-dimensional assessment model-based continuing care intervention in stable elderly COPD patients[J]. Contemporary Nurse (Mid-Dec), 2022, 29(6): 87-90.
- [6] Nie Jing, Zhao Li. Application of structure-process-outcome three-dimensional evaluation model-based continuing care in elderly stable COPD patients[J]. Chinese-English Journal of Integrated Traditional and Western Nursing, 2024, 10(5): 162-164.
- [7] Chinese Thoracic Society, Chinese Preventive Medicine Association Respiratory Disease Prevention and Control Committee, Chinese Association of Chest Physicians, et al. Guidelines for peri-discharge management and follow-up of acute exacerbation of chronic obstructive pulmonary disease (2024 edition)[J]. Chinese Journal of Tuberculosis and Respiratory Diseases, 2024, 47(11): 1048-1068.
- [8] Wang Jianli, Hao Lihua, Xiao Ying. Effect of telephone follow-up-based continuing care on respiratory function, self-care ability, and quality of life in COPD patients[J]. International Journal of Nursing, 2023, 42(21): 4015-4018.
- [9] Lü Shimin, Zhong Cifang, Li Mei, et al. Effect of multidisciplinary collaborative continuing care on lung function in COPD patients[J]. Chinese-English Journal of Integrated Traditional and Western Nursing, 2023, 9(11): 190-192.
- [10] Liu Guisen, Zhang Xiaobei, Qi Linran, et al. Effect of continuing care on symptoms, lung function, quality of life, and readmission rate in patients with asthma-COPD overlap[J]. Modern Journal of Integrated Traditional Chinese and Western Medicine, 2023, 32(5): 713-717.
- [11] Feng Yan, Zhang Haiyan, Yang Yu, et al. Application of individualized cognitive behavioral intervention combined with family-led continuing care in COPD patients[J]. Chinese-English Journal of Integrated Traditional and Western Nursing, 2023, 9(7): 73-78.
- [12] Wu Wenjuan, Wan Yun, Qiu Fang, et al. Evaluation of rehabilitation effects of remote continuing care in male patients with asthma-COPD overlap syndrome[J]. Jilin Medical Journal, 2023, 44(12): 3547-3551.
- [13] Zhang Peipei, Shang Qian, Shang Weina, et al. Effect of evidence-based

theory-based continuing care intervention on self-management ability in COPD patients[J]. International Journal of Nursing, 2022, 41(12): 2290-2293.

[14] Wang Yanfang, Yao Hui, Zhang Qingmei, et al. Effect of motivational continuing care on self-perceived burden, disease control, and quality of life in elderly COPD patients[J]. General Practice Nursing, 2021, 19(19): 2661-2664.

[15] Zhang Zhen, Zhi Xihe, Zhao Zhimin, et al. Application of WeChat combined with Orem theory-based systematic nursing in continuing care for COPD patients[J]. Hainan Medical Journal, 2024, 35(22): 3321-3327.

[16] Ren Xiayu, Ding Peiqin, Yi Jianping. Effect of medical consortium model-based continuing care management on quality of life, self-care ability, and respiratory function in COPD patients[J]. Journal of Qilu Nursing, 2023, 29(1): 66-69.

[17] He Linlin, Han Juan, Wang Yuanyuan, et al. Application value of continuing care combined with psychological rehabilitation in COPD patients with depression[J]. Chinese-English Journal of Integrated Traditional and Western Nursing, 2022, 8(8): 25-28.

[18] Huang Yeqin. Effect of continuing care on respiratory function exercise compliance and health behavior in stable COPD patients[J]. Chinese-English Journal of Integrated Traditional and Western Nursing, 2021, 7(3): 149-151.

[19] Hu Binglan, Li Youxia, Fan Shaohui, et al. Effect of MDT model continuing care on lung function, self-care ability, and quality of life in elderly COPD patients[J]. China Medicine and Pharmacy, 2021, 11(24): 118-121.

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