

Analysis of the Effect of Continuous Nursing Care in Patients with COPD

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Abstract: *Objective:* to study the effect of continuous nursing intervention in patients with chronic obstructive pulmonary disease (COPD). *Methods:* In this paper, 56 COPD patients were selected and grouped by drawing lots, with 28 cases in each group. The study group underwent continuous nursing intervention, while the control group underwent conventional care, and the parameters of both groups of patients were compared. *Results:* Compared with the control group, the patients in the study group had a significantly higher forced expiratory volume in one second to forced vital capacity ratio (FEV₁/FVC), a significantly lower COPD Assessment Test (CAT) score, and Hamilton Depression (HAM-D) score, and a significantly higher 6-Minute Walk Test (6WMT) score after nursing care. Besides, their self-care ability score and SaO₂ were significantly higher, while their PaCO₂ and coagulation indexes were significantly lower ($P < 0.05$). *Conclusion:* Continuous nursing intervention is beneficial for COPD patients.

Keywords: Continuous nursing intervention; Chronic obstructive pulmonary disease

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1. Introduction

Chronic obstructive pulmonary disease (COPD) is a common and serious respiratory disease characterized by progressive airflow limitation, dyspnea, irreversible changes in airway structure, and chronic inflammation. COPD has a significant impact on the quality of life of patients, and its clinical management has been one of the challenges in the field of medicine^[1]. In recent years, continuous nursing intervention for COPD patients has been highlighted. This care model focuses not only on the treatment of acute exacerbations but also on long-term management and prevention, aiming to reduce the risk of disease progression and improve patients' quality of life. This study aims to deeply explore the application of continuous nursing intervention on COPD patients, in order to provide more scientific guidance for clinical practice.

2. General information and methods

2.1. General information

In this paper, 56 patients with COPD who were selected from January–December 2022, were grouped through randomized numerical table method, with 28 patients in each group. The study group consisted of 20 males and 8 females, aged 55–77 (mean: 65.29 ± 5.22 years). The control group consisted of 21 males and 7 females, aged 54–78 (mean: 65.25 ± 5.21 years). There were no significant differences in the baseline data between the groups with $P > 0.05$.

2.2. Methods

The control group underwent routine care and regularly performed light aerobic exercise, such as walking or jogging. They also maintained a balanced diet and their weight. In addition, they were advised to stop smoking and avoid secondhand smoke to maintain respiratory health. Regular medication and respiratory rehabilitation were also given by the physician.

The study group underwent continuous nursing intervention. (1) The first step involved establishing a continuity of care team, which consisted of a nurse manager, a physician, and a nurse-in-charge, and the team members were trained in COPD-related knowledge so that they were updated. (2) The nursing staff addressed the patients' doubts through effective communication and encouraged them to actively participate in the rehabilitation program. (3) During the discharge care stage, nursing staff guided the patients on self-management, and reminded the patients to abstain from smoking. They also taught the patients how to use an oxygen concentrator and a ventilator correctly. In addition, the nursing staff also explained the importance of avoiding crowded areas and irritating odors. Personalized rehabilitation training plans were also formulated for each patient to improve the physical abilities of patients.

2.3. Effectiveness study

The higher forced expiratory volume in one second to forced vital capacity ratio (FEV_1/FVC), COPD Assessment Test (CAT) score, Hamilton Depression HAM-D score, 6-Minute Walk Test (6WMT), and self-care ability score were compared between the two groups. The blood gas and coagulation indexes (SaO_2 , PaO_2 , $PaCO_2$) of both groups were compared

2.4. Data analysis

The data were analyzed using SPSS 25.0. The measurement data were expressed in the form of mean \pm standard deviation and compared using the t -test. The count data were expressed as percentages and were compared using the χ^2 -test. Statistical significance was indicated at $P < 0.05$.

3. Results

Compared with the control group, the patients in the study group had a significantly FEV_1/FVC , a significantly lower CAT score and HAM-D score, and a significantly higher 6-Minute Walk Test (6WMT) score after nursing care. Besides, their self-care ability score and SaO_2 were significantly higher, while their $PaCO_2$ and coagulation indexes were significantly lower ($P < 0.05$).

Table 1. Comparison of FEV₁/FVC, CAT score, 6WMD, HAMD score, and self-care competence score between the two groups

| Group | FEV ₁ /FVC (%) | CAT rating (points) | 6WMD (m) | HAMD rating (points) | Self-care ability score (points) |
|------------------------|---------------------------|---------------------|----------------|----------------------|----------------------------------|
| Study group (n = 28) | 68.46 ± 13.48 | 5.56 ± 2.24 | 517.38 ± 60.22 | 5.33 ± 1.61 | 116.36 ± 13.28 |
| Control group (n = 28) | 60.41 ± 12.26 | 10.41 ± 2.57 | 423.47 ± 63.48 | 8.66 ± 2.05 | 103.71 ± 12.88 |
| <i>t</i> | 2.3377 | 7.5279 | 5.6792 | 6.7599 | 3.6182 |
| <i>P</i> | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |

Table 2. Comparison of blood gas indices of the two groups

| Groups | SaO ₂ (%) | PaO ₂ (mmHg) | PaCO ₂ (mmHg) |
|------------------------|----------------------|-------------------------|--------------------------|
| Study group (n = 28) | 91.75 ± 8.41 | 34.42 ± 5.77 | 86.62 ± 11.51 |
| Control group (n = 28) | 82.54 ± 9.44 | 45.66 ± 5.51 | 79.17 ± 11.33 |
| <i>t</i> | 3.8547 | 7.4548 | 2.4408 |
| <i>P</i> | < 0.05 | < 0.05 | < 0.05 |

Table 3. Comparison of coagulation indices between the two groups

| Group | Fibrinogen (g/L) | D-Dimer (mg/L) |
|------------------------|------------------|----------------|
| Study group (n = 28) | 253.82 ± 40.33 | 0.62 ± 0.22 |
| Control group (n = 28) | 301.82 ± 43.95 | 1.33 ± 0.27 |
| <i>t</i> | 4.2580 | 10.7872 |
| <i>P</i> | < 0.05 | < 0.05 |

4. Discussion

COPD is a general term for chronic progressive lung diseases [2-4], and the introduction of continuous nursing care interventions is an important means of improving the management and treatment of COPD patients. Firstly, continuous nursing care interventions allow nurses to monitor the patient closely, thus changes in the conditions can be discovered in time [5-8], thus reducing the risk of acute exacerbation. Secondly, continuous nursing intervention emphasizes patients' self-management and education, and by providing patients with relevant health information, lifestyle advice, and guidance on medication [9-12], patients can better cope with the disease. In addition, continuous nursing intervention includes social and psychological support, which helps in relieving the patients' distress [13-15].

In this study, the FEV₁/FVC ratio of the study group was significantly higher after nursing care. This indicates that the patients' pulmonary function improved after the nursing intervention. The FEV₁/FVC ratio is an indicator of the degree of airflow limitation, and an increase in this ratio indicates better respiratory function. Besides, the CAT score was significantly lower in the study group. CAT is a tool for assessing the quality of life of patients with COPD, and lower CAT scores indicate an improvement in symptoms and quality of life. The 6WMT score of the study group was significantly higher than the control group after nursing. This suggests that the patients' exercise tolerance improved after the continuity of care intervention. Furthermore, the HAM-D score was significantly lower in the study group. HAM-D assesses the severity of depression. A decrease in the

HAM-D score indicates an improvement in depressive symptoms. The study group had a significantly higher self-care ability score compared to the control group. This suggests that patients were more capable of taking care of themselves and managing their diseases after receiving continuous nursing intervention. The SaO₂ and PaO₂ of the study group were both significantly higher, which indicated that oxygenation levels were improved; the PaCO₂ was significantly lower, which implied that CO₂ excretion was enhanced, which helps in maintaining the blood pH. Lastly, the coagulation indicators of the study group were all significantly lower, reflecting the positive impact of the nursing intervention on the patient's blood coagulation function, which in turn reduces the risk of thrombosis.

5. Conclusion

Continuous nursing care intervention is beneficial to COPD patients. It improves their FEV₁/FVC, CAT score, 6WMT, HAM-D score, self-care ability, and blood gas indexes and coagulation indexes. Therefore, this mode of care should be popularized.

Disclosure statement

The authors declare no conflict of interest.

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