

Analysis of the Effect of Respiratory Rehabilitation Nursing on the Quality of Life of Patients with Chronic Obstructive Pulmonary Disease

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Abstract: *Objective:* To understand the impact of respiratory rehabilitation nursing on the quality of life of patients with chronic obstructive pulmonary disease (COPD), and to provide a theoretical basis for better clinical implementation of this nursing measure. *Methods:* 68 COPD patients admitted from September 2022 to July 2023 were selected to determine the type of COPD (mild, moderate, severe) based on clinical manifestations and laboratory test results, and were divided into a study group (42 cases) and a control group (26 cases), with the control group adopting the conventional treatment plan, and the patients in the study group receiving individualized respiratory rehabilitation nursing care. The patients' respiratory function and quality of life after treatment are observed. *Results:* The total score of the study group (65.71 ± 12.02) was significantly higher than that of the control group (52.73 ± 11.54), and the difference was statistically significant ($P < 0.05$); in terms of pulmonary function, the results of pulmonary function tests of the two groups of patients were in the normal range after treatment, and the study group was slightly better than that of the control group, and the difference was statistically significant ($P < 0.05$); the score of the study group in terms of exercise endurance was significantly higher than that of the control group, and the difference was statistically significant ($P < 0.05$). *Conclusion:* Respiratory rehabilitation nursing can effectively improve the quality of life of COPD patients, and is worthy of popularization and application.

Keywords: Respiratory rehabilitation nursing; Chronic obstructive pulmonary disease; Quality of life

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1. Introduction

Chronic obstructive pulmonary disease (COPD) is a chronic lung disease characterized by airflow limitation, including pulmonary ventilation dysfunction, respiratory muscle fatigue, etc. At present, there are about 500 million people suffering from the disease in the world, and the number of patients in our country exceeds 300 million. As the trend of social aging gradually strengthens, the number of COPD patients continues to climb, seriously threatening the lives and health of patients. Studies show that the average life expectancy of COPD

patients is 10 to 15 years shorter than that of non-COPD patients ^[1]. Therefore, for COPD patients, how to prolong their survival time and improve their quality of life has become an urgent problem at present. Respiratory rehabilitation nursing refers to the adoption of a variety of nursing measures to improve the functional status of the patient's body according to the characteristics of different patients' conditions and individual differences, thus achieving the purpose of promoting the patient's recovery ^[2]. Respiratory rehabilitation nursing is based on the development of the traditional nursing basis, the nursing model fully considers the physiological and psychological characteristics of COPD patients, and combines the patient's personal situation to develop individualized nursing interventions, effectively reducing the patient mortality rate ^[3]. The American Journal of Clinical Nursing survey data show that respiratory rehabilitation care can reduce the number of inpatient hospital days by 69.7%, and the satisfaction of healthcare workers is as high as 82%. At this stage, more and more scholars have begun to pay attention to the impact of respiratory rehabilitation nursing care on the quality of survival of COPD patients, but the relevant research reports are still relatively limited. Respiratory rehabilitation care, as a comprehensive intervention, aims to improve patients' lung function through a series of rehabilitation training and lifestyle adjustments, thus improving their quality of life. In this study, 68 COPD patients admitted to our hospital from September 2022 to July 2023 were selected as research subjects and respiratory rehabilitation nursing intervention was provided in parallel with conventional treatment to investigate its effect on patients' quality of life.

2. General information and methods

2.1. General information

68 COPD patients admitted from September 2022 to July 2023 were selected, all of whom met the diagnostic criteria for chronic obstructive pulmonary disease ^[4]. All patients were diagnosed by chest CT examination and pulmonary function tests after admission, and the type of COPD (mild, moderate, severe) was determined according to clinical manifestations and laboratory test results, and they were divided into the study group (42 cases) and the control group (26 cases), and the differences between the two groups in terms of gender, age, and duration of the disease were not statistically significant ($P > 0.05$), as shown in **Table 1**.

Inclusion criteria: patients must have been diagnosed by a doctor with chronic obstructive pulmonary disease (COPD); patients must be willing to accept and are receiving respiratory rehabilitation nursing treatment, including respiratory muscle exercise, airway clearance techniques, aerobic exercise training, etc.; patients need to have a high degree of treatment compliance and be able to follow the doctor's therapeutic recommendations and rehabilitation nursing program; the patients' quality of life assessment data must be complete in order to accurate analysis and comparison.

Exclusion criteria: patients with other serious diseases (such as heart disease, malignant tumor, etc.) in addition to COPD; patients who cannot receive respiratory rehabilitation nursing care treatment due to various reasons (such as physical condition limitation, psychological resistance, etc.); quality of life assessment data are incomplete or missing; patients with mental diseases (e.g., dementia, schizophrenia, etc.).

2.2. Methods

The control group adopted a conventional treatment plan, including medication, psychological intervention, oxygen therapy, etc.; the patients in the study group received individualized respiratory rehabilitation nursing, with the following specific measures: (1) instructing the patients to carry out correct respiratory training; (2) improving the quality of sleep of the patients; (3) encouraging the patients to participate in aerobic exercise; (4) providing the patients with guidance on a reasonable diet; (5) assisting the patients to strengthen the sense of self-management and maintain a good state of mind; (6) regularly following up the patients to understand the

changes in their condition in time, and to provide the patients with reasonable dietary guidance. If there was any adverse reaction, the respiratory rehabilitation nursing was discontinued immediately.

2.3. Observation indexes

- (1) Patients' respiratory function in 3 months after treatment.
- (2) Patients' quality of life after treatment (i.e. score on the quality of life scale assessment questionnaire).

2.4. Statistical methods

The research results were imported into SPSS22.0 software to analyze the data. Count data were expressed as percentages, and the χ^2 test was used for comparison between groups. Measurement information was expressed as mean \pm standard deviation (SD), and *t*-test was used for comparison between groups, and the difference was considered significant at $P < 0.05$.

3. Results

3.1. Comparison of clinical data between the two groups

There was no statistically significant difference in the comparison of gender, age, disease duration, and other information between the two groups ($P > 0.05$), as shown in **Table 1**.

Table 1. Comparison of clinical data between the two groups of patients

Information	Study group ($n = 42$)	Control group ($n = 26$)	χ^2/t	P
Gender	Male: 20 (47.62) Women: 22 (52.38)	Male: 14 (53.85) Women: 12 (46.15)	0.249	> 0.05
Age	58.23 ± 10.09	58.31 ± 11.02	0.031	> 0.05
Disease duration	2.13 ± 0.69	2.01 ± 0.78	0.663	> 0.05

3.2. Comparison of quality of life between the two groups after treatment

The total score of quality of survival in the study group (65.71 ± 12.02) was significantly higher than that in the control group (52.73 ± 11.54), and the difference was statistically significant ($P < 0.05$), as shown in **Table 2**.

Table 2. Comparison of quality of life between the two groups after treatment

Groups	Number of cases	Quality of life
Study group	42	65.71 ± 12.02
Control group	26	52.73 ± 11.54
<i>t</i>	-	4.393
<i>P</i>	-	0.000

3.3. Improvement of pulmonary function indexes and exercise endurance indexes of the two groups of patients

After the treatment, the pulmonary function test results of the two groups of patients were in the normal range, and the study group was slightly better than the control group, with a statistically significant difference ($P < 0.05$); the score of the study group was significantly higher than that of the control group in terms of exercise endurance, with a statistically significant difference ($P < 0.05$), as shown in **Table 3**.

Table 3. Improvement of pulmonary function indexes and exercise endurance indexes in two groups of patients

Groups	Spirometry (ml)	Exercise endurance (min)
Study group ($n = 42$)	2983.69 \pm 136.98	63.71 \pm 12.12
Control group ($n = 26$)	2698.25 \pm 142.14	53.14 \pm 11.88
<i>t</i>	8.124	3.521
<i>P</i>	0.000	0.000

4. Discussion

COPD is a chronic respiratory disease, the occurrence of this disease is closely related to genetic factors, environmental factors, aging, and other factors. Some studies have shown that COPD can lead to a decline in the respiratory function of patients, and is accompanied by a decrease in the ventilation and ventilation capacity of the lungs, so that the oxygen metabolism of the patient's body is affected, and in severe cases, severe hypoxia can occur and even threaten the patient's life [5]. During the development of COPD, patients often suffer from anxiety, fear, and other negative emotions due to recurrent episodes of the disease, which affects the therapeutic effect and prognosis. In addition, COPD patients' ability to take care of themselves gradually decreases due to long-term illness, which leads to a variety of complications and imposes a heavy burden on the family and society. Therefore, it is important to improve the quality of patients' lives to relieve their psychological pressure. Respiratory rehabilitation nursing is a nursing model under the guidance of healthcare professionals, based on a comprehensive assessment of the patient's physical condition and psychological state, to formulate an individualized rehabilitation nursing program and implement it [6].

The results of this study showed that the total score of quality of life in the study group (65.71 \pm 12.02) was significantly higher than that in the control group (52.73 \pm 11.54), and the difference was statistically significant ($P < 0.05$), which indicated that respiratory rehabilitation nursing played a positive role in improving the quality of life of COPD patients. Chen *et al.* [7] found that the results of the quality of life assessment showed that patients in the respiratory rehabilitation nursing group showed significant improvement in mental health, ability to perform daily activities, and social functioning, and the degree of improvement was more pronounced compared with the control group. Zhou [8] found that patients learned correct breathing techniques and self-management methods during respiratory rehabilitation care, which enabled them to better cope with the challenges posed by COPD in their daily lives and improved the quality of their lives. The results of this study are consistent with the findings of the literature, which is mainly due to the fact that respiratory rehabilitation nursing provides a series of rehabilitation training for the patients, including respiratory muscle exercises and aerobic exercises. This training enhances patients' respiratory muscle strength and endurance, strengthens lung function and oxygen utilization efficiency, and thus improves patients' dyspnea and exercise endurance. Respiratory rehabilitation nursing also includes health education for patients to better understand the pathophysiologic process of COPD and the importance of rehabilitation. At the same time, by training patients in proper breathing techniques, medication use, and self-management skills in daily life, they are able to manage the disease more effectively and reduce the risk of acute exacerbations. COPD patients often face psychological problems such as anxiety and depression, and respiratory rehabilitation nursing focuses on the psychological needs of patients by providing psychological and social support. This helps to reduce patients' psychological stress and enhance their social interaction and confidence in life, thus improving the quality of life. Respiratory rehabilitation nursing is usually accomplished by a multidisciplinary team, including respiratory physicians,

nurses, rehabilitation therapists, etc. This collaborative model ensures that patients receive comprehensive and continuous nursing care, and improves therapeutic effects and patient satisfaction. The improvement of COPD patients' quality of life by respiratory rehabilitation nursing is due to the combined effects of targeted rehabilitation training, health education and self-management skills training, psychological and social support, and multidisciplinary teamwork, which together help patients improve their lung function, reduce their disease burden, and enhance their self-management ability, thereby improving their quality of life.

The results of this study showed that after treatment, the results of pulmonary function tests in both groups were in the normal range, and the study group (2983.69 ± 136.98) was slightly better than the control group (2698.25 ± 142.14), with statistically significant differences ($P < 0.05$); in terms of exercise endurance, the study group's score (63.71 ± 12.12) was significantly higher than that of the control group (53.14 ± 11.88), and the difference was statistically significant ($P < 0.05$), indicating that the patients' exercise and lung capacity was improved. Zhu *et al.* [9] found that the number of acute exacerbations and the number of hospitalizations were reduced after respiratory rehabilitation nursing care, indicating that respiratory rehabilitation nursing care helps to reduce the burden of disease in patients with COPD and that the lung function indexes of the patients have been improved. Tao *et al.* [10] found that pulmonary function indicators such as FEV1 (first-second forced expiratory volume) and FVC (forced vital capacity) were significantly improved in the respiratory rehabilitation nursing group after receiving rehabilitation care, and the improvement was more significant compared with the control group. The results of this study are consistent with the findings of the literature, and the results of this study suggest that respiratory rehabilitation nursing has a positive impact on the quality of life of COPD patients and that respiratory rehabilitation nursing brings substantial benefits to COPD patients by improving pulmonary function and quality of life, reducing hospitalization, and enhancing self-management ability.

5. Conclusion

In conclusion, respiratory rehabilitation nursing is a nursing model based on the concept of evidence-based medicine, which emphasizes patient-centeredness, enhances patients' self-management ability and confidence in recovery through the provision of comprehensive, individualized, and continuous nursing care, and improves treatment outcomes. The implementation of respiratory rehabilitation nursing care for COPD patients can not only improve their respiratory function and reduce morbidity and mortality rates, but also significantly improve their subjective well-being and quality of life, which is worthy of clinical promotion. However, there are still some limitations in this study, such as a small sample size and short follow-up time, etc. Future studies can further expand the sample size and extend the follow-up time to assess the effect of respiratory rehabilitation nursing more comprehensively, and the promotion and application of respiratory rehabilitation nursing should be emphasized in clinical practice, so as to provide a more comprehensive and personalized rehabilitation support for COPD patients.

Disclosure statement

The author declares no conflict of interest.

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