

Psychological nursing effect on chronic obstructive pulmonary disease patients with respiratory failure

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Abstract

This study explores the effect of psychological nursing interventions on the improvement of negative emotions and psychological states in patients with chronic obstructive pulmonary disease (COPD) combined with respiratory failure. A total of 100 patients with COPD complicated by respiratory failure, admitted from January 2023 to December 2024, were selected. They were randomly assigned to 2 groups: the control group (received routine nursing) and the experimental group (received psychological nursing interventions), with 50 patients in each group. The differences in negative emotions, mental states, quality of life, and nursing satisfaction before and after the intervention were compared between the 2 groups. After the intervention, both the Self-Rating Anxiety Scale and Self-Rating Depression Scale scores in both groups significantly decreased, with the experimental group showing a more significant reduction ($P < .05$). The Symptom Checklist-90 scores also showed a decreasing trend after the intervention in both groups, and the experimental group exhibited a greater decrease ($P < .05$). The Generic Quality of Life Inventory-74 improved in both groups after the intervention, with the experimental group showing a more significant improvement than the control group ($P < .05$). The satisfaction rate of the experimental group was also significantly higher than that of the control group ($P < .05$). Implementing psychological nursing interventions in patients with COPD and respiratory failure can effectively alleviate negative emotions such as anxiety and depression, improve mental states, enhance quality of life, and increase patient satisfaction with nursing services.

Abbreviations: COPD = chronic obstructive pulmonary disease, GQOLI-74 = Generic Quality of Life Inventory-74, PSQ = Patient Satisfaction Questionnaire, SAS = Self-Rating Anxiety Scale, SCL-90 = Symptom Checklist-90, SDS = Self-Rating Depression Scale.

Keywords: chronic obstructive pulmonary disease, psychological nursing intervention, respiratory failure

1. Introduction

Chronic obstructive pulmonary disease (COPD) is a chronic lung disease characterized by persistent airflow limitation, closely related to chronic airway inflammation. Its main clinical manifestations include chronic cough, sputum production, and progressive dyspnea. According to data from the World Health Organization, COPD has become the third leading cause of death globally, seriously threatening human health and life safety.^[1,2] In China, the incidence of COPD is increasing year by year, particularly among the elderly, with a significant rise in the prevalence rate. Some patients may also develop respiratory failure during the disease progression, further worsening their clinical symptoms, significantly affecting quality of life and survival prognosis.^[3]

Respiratory failure is a severe complication in the course of COPD, referring to the inability of the body to maintain normal gas exchange, often manifesting as hypoxemia and/or hypercapnia. When patients enter the stage of respiratory failure, their dyspnea symptoms worsen, metabolic disorders occur, and negative psychological states such as anxiety and depression are easily triggered.^[4] Numerous studies^[5-7] have shown that abnormal psychological states not only reduce patients' treatment adherence, affecting the effectiveness of medications and rehabilitation, but also potentially exacerbate the condition, creating a vicious cycle. Therefore, in addition to conventional treatments such as pharmacotherapy and oxygen therapy, active and effective psychological care interventions are of significant importance for stabilizing the condition and improving quality of life.

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The datasets generated during and/or analyzed during the current study are not publicly available, but are available from the corresponding author on reasonable request.

Due to the nonexperimental nature of the research, the study protocol did not need to be submitted for consideration and approval to an ethical review committee.

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Traditional COPD care primarily focuses on disease management, oxygen guidance, and medication instructions, often neglecting psychological support. Clinical surveys indicate that COPD patients with respiratory failure commonly experience varying degrees of emotional disorders, especially under the strain of chronic pain and concerns about disease prognosis. Anxiety and depression symptoms are particularly prominent. If such negative emotions are not intervened in a timely manner, they can impact patients' confidence in and cooperation with treatment, and through the neuroendocrine-immune network system, influence immune function and inflammatory responses, thereby accelerating disease progression.^[8,9]

Psychological care, as an essential component of modern nursing concepts, emphasizes patient-centered care, focusing on multiple dimensions such as emotions, psychology, and social adaptation. It aims to alleviate negative emotions through psychological counseling, emotional soothing, and cognitive-behavioral interventions, thereby enhancing patients' confidence and ability to cope with the disease. In recent years, the effectiveness of psychological care has been widely confirmed in chronic diseases such as cancer, cardiovascular diseases, and mental health.^[10-12] However, research on its application in respiratory diseases, especially in COPD patients with respiratory failure, remains limited, and systematic intervention programs and clinical validation are still lacking.

This study is based on clinical practice, selecting 100 COPD patients with respiratory failure hospitalized between January 2023 and December 2024 in our hospital. These patients were randomly divided into a routine care group and a psychological care group using a random number table method. The aim is to explore the impact of systematic psychological care interventions on patients' negative emotions, mental state, quality of life, and satisfaction on the basis of routine treatment. Quantitative indicators such as the Self-Rating Anxiety Scale (SAS), Self-Rating Depression Scale (SDS), Symptom Checklist-90 (SCL-90), and the Generic Quality of Life Inventory-74 (GQOLI-74) were used for pre- and post-intervention comparisons, in order to provide reliable evidence for clinical nursing interventions.

The implementation of this study will not only help deepen healthcare workers' understanding of the psychological status of COPD patients with respiratory failure but also promote the establishment and optimization of individualized care models, improving the overall treatment and rehabilitation outcomes. Furthermore, the study aims to reinforce the "body-mind integration" nursing concept, providing new perspectives and references for improving the comprehensive management of chronic diseases.

2. Materials and methods

2.1. General information

This study included 100 COPD patients with respiratory failure who were treated in our hospital from January 2023 to December 2024. All patients met the relevant clinical diagnostic criteria and had complete clinical data. This study has been approved by the Ethics Committee of Ya'an Traditional Chinese Medicine Hospital, approval number: 2023-045, and informed consent was obtained from the patients and their families before the study began. The participants were randomly assigned to 2 groups using a random number table method, with 50 patients in each group: the control group and the experimental group. A randomization sequence was generated using a computer-generated random number table by an independent statistician. Group assignments were placed in sequentially numbered, opaque, sealed envelopes to ensure allocation concealment. The envelopes were opened by a research nurse who was not involved in the patient recruitment or outcome assessment.

All randomly assigned patients enrolled in this study completed follow-up, with no withdrawals or loss to follow-up,

resulting in no missing data. In the data analysis, the intention-to-treat principle was adopted, and all patients in the randomization groups were included in the final statistical analysis to ensure the reliability and representativeness of the results. If missing data actually existed, the proportion of missing data and the method of handling should be specified, such as multiple imputation.

In the control group, there were 27 male and 23 female patients, aged between 51 and 76 years, with a mean age of 60.78 ± 6.84 years. The duration of illness ranged from 2 to 7 years, with an average disease duration of 4.12 ± 1.68 years. In the experimental group, there were 28 male and 22 female patients, aged between 49 and 77 years, with a mean age of 61.14 ± 6.94 years. The disease duration ranged from 1 to 8 years, with an average disease duration of 4.23 ± 1.75 years. Statistical tests for baseline characteristics such as gender, age, and disease duration showed no significant differences between the 2 groups ($P > .05$), indicating that the groups were comparable. Therefore, the 2 groups of patients were suitable for comparative analysis of the intervention effects.

2.1.1. Inclusion criteria. The participants were required to meet the following criteria: diagnosis of COPD according to the guidelines, confirmed by pulmonary function tests and arterial blood gas analysis; no significant cognitive dysfunction or psychiatric history, with good communication and language expression abilities, able to independently complete the relevant assessment scales; fully understand the purpose and content of the study, and have signed an informed consent form, willing to cooperate with the care and intervention measures.

2.1.2. Exclusion criteria. Patients with any of the following conditions were excluded from the study: coexisting with other types of respiratory diseases, such as bronchiectasis, asthma, or tuberculosis, which may affect the judgment of this study; severe dysfunction of important organs such as the heart, liver, and kidneys, or in an acute exacerbation phase of systemic diseases; organic brain damage, schizophrenia, severe depression, moderate to severe intellectual disabilities, or other neuropsychiatric disorders; diagnosed with malignant tumors that may affect survival prognosis and psychological assessments; poor patient compliance or refusal to participate in the research process, making it difficult to complete follow-up and nursing cooperation.

2.2. Methods

2.2.1. Control group nursing plan. Patients in this group received basic routine nursing interventions. They were strictly guided to take medications according to medical orders, ensuring the accuracy of medication time and dosage. Basic nursing was also strengthened to ensure the patient's daily needs, such as assistance with diet, elimination, and position management. Respiratory management was emphasized with regular sputum clearance and oxygen therapy guidance to alleviate dyspnea. The ward environment was kept clean and comfortable, with regular cleaning and disinfection, creating a treatment atmosphere conducive to recovery.

2.2.2. Experimental group nursing plan. In addition to routine nursing, the experimental group also received systematic psychological nursing interventions, which included the following 5 aspects.

2.2.2.1. Establishing a good nurse-patient relationship. Nursing staff proactively established communication channels with patients, patiently listened to their psychological feelings and emotional changes, focused on their emotional status, identified and analyzed the specific triggers of negative emotions such

as anxiety and fear, and provided emotional counseling and personalized nursing advice to enhance trust and compliance.

2.2.2.2. Cognitive education intervention. The nursing team provided detailed explanations to patients and their families about the causes, pathogenesis, disease progression, and possible complications of COPD. The aim was to enhance their scientific understanding of the disease, emphasize the importance of noninvasive or invasive ventilatory support in maintaining gas exchange and improving symptoms, and guide them in the proper use of ventilators to reduce treatment resistance and anxiety, improving treatment initiative.

2.2.2.3. Psychological counseling measures. Psychological counseling was delivered by trained nursing staff based on principles of supportive psychotherapy and patient-centered care. The intervention included structured communication techniques such as active listening, therapeutic conversation, and guided relaxation, aimed at reducing anxiety and emotional distress. Empathy was conveyed through both verbal and nonverbal interactions, alongside encouragement to enhance patients' confidence. Environmental elements such as soft music or calming television programs were also used to promote a soothing atmosphere. This intervention was implemented twice daily (morning and evening), with each session lasting approximately 20 minutes, beginning on the first postoperative day and continuing until hospital discharge (average of 7 days). A standardized protocol was followed to ensure consistency across all patients.

2.2.2.4. Providing multidimensional social support. Family members were encouraged to actively participate in the care process, increasing companionship and interaction to enhance the family support system. Nursing staff regularly provided feedback on the positive changes and phased effects of treatment, helping patients perceive the treatment's effectiveness subjectively. Typical successful treatment cases were used for comparison to enhance patients' confidence in recovery and provide more psychological support.

2.2.2.5. Optimizing ward environment management. The comfort needs of patients were considered by adjusting the indoor temperature, humidity, and lighting, ensuring air circulation and freshness. Noise levels in the environment were reduced without interfering with the operation of treatment equipment, for example, by lowering the volume of alarms or monitoring devices, and minimizing patient disturbance during nighttime nursing operations to ensure rest quality. Nursing operations were also reasonably arranged to minimize disruption and maintain continuity and comfort in treatment and care.

2.3. Observation indicators

2.3.1. Negative emotion assessment. Emotional states were quantitatively assessed before the intervention (pretreatment) and on the second day after the intervention. The SAS and the SDS were used for measurement, with both scales having a maximum score of 100. The critical values for emotional abnormalities were 50 for SAS and 53 for SDS. A higher score indicated more severe anxiety or depression, while a lower score indicated milder negative emotions.^[13,14]

2.3.2. Mental state evaluation. The SCL-90 was used for multidimensional mental state assessment. This scale includes 9 dimensions: somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, phobia, paranoia, and psychosis, with a scoring range of 1 to 5, where 1 indicates no symptoms and 5 indicates extreme severity. A lower total score and lower factor scores indicate better mental stability and higher psychological health levels.^[15]

2.3.3. Quality of life evaluation. Quality of life was assessed before and after the nursing intervention. The GQOLI-74 was used, which includes 4 dimensions: social function, psychological function, physical function, and material living conditions. The total score range is 0 to 100, with higher scores indicating better overall quality of life and more significant improvements in social adaptation and physical and mental well-being.^[16]

2.3.4. Patient satisfaction with nursing. Patient satisfaction was evaluated using the Patient Satisfaction Questionnaire (PSQ), a standardized and widely validated tool for assessing patients' perceptions of healthcare services. The PSQ covers multiple domains including nursing staff attitude, professional skills, health education effectiveness, and basic nursing quality. The total score ranges from 0 to 100, with scores ≥ 90 indicating "satisfied," 75 to 89 indicating "neutral," and < 75 indicating "dissatisfied." In this study, satisfaction was analyzed based on the proportion of "satisfied" and "neutral" responses to evaluate patient acceptance of the nursing intervention. The Chinese version of the PSQ used has demonstrated good reliability and validity in previous studies.^[17]

2.3.5. Assessment timing. All observation indicators were assessed on the seventh day after patient admission, with the assessment timing selected 1 week after intervention implementation to reflect the short-term effects of nursing interventions. If patients were discharged early, the relevant assessments were completed on the day of discharge.

2.4. Statistical methods

All data in this study were analyzed using SPSS 26.0 statistical software (IBM Corp., Armonk). Continuous variables with normal distribution were described using mean \pm standard deviation ($\bar{x} \pm s$), and inter-group comparisons were made using independent *t*-tests. Categorical variables or count data were expressed as frequencies and percentages [n (%)] and analyzed using chi-square (χ^2) tests. All tests were 2-sided, with a significance level set at $\alpha = 0.05$. A *P*-value < 0.05 indicated that the difference was statistically significant, suggesting that there was a significant difference between the observed variables.

3. Results

3.1. Comparison of anxiety and depression scores between the 2 groups

After the intervention, both SAS and SDS scores decreased in the 2 groups. The experimental group showed a significantly greater reduction compared to the control group. Specifically, the mean SAS score in the experimental group was 46.39 ± 4.26 versus 49.67 ± 4.23 in the control group after intervention, with a mean difference of -3.28 (95% CI: -4.50 to -2.06), Cohen *d* = 0.82, *P* < .001. The mean SDS score was 46.28 ± 3.67 in the experimental group versus 48.63 ± 5.37 in the control group, with a mean difference of -2.35 (95% CI: -3.89 to -0.81), Cohen *d* = 0.53, *P* < .001. These results indicate a moderate to large effect of the intervention on anxiety and depression symptoms. Detailed data are shown in Table 1.

3.2. Comparison of mental health scores between the 2 groups

After the intervention, both the control and experimental groups showed significant reductions in SCL-90 scores across all measured dimensions, indicating improved mental health status. Notably, the experimental group exhibited significantly

Table 1**Comparison of SAS and SDS scores between the 2 groups.**

Group	n	SAS score		SDS score	
		Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Control group	50	57.32 ± 6.21	49.67 ± 4.23	52.43 ± 8.63	48.63 ± 5.37
Experimental group	50	59.67 ± 6.24	46.39 ± 4.26	61.43 ± 8.25	46.28 ± 3.67
<i>t</i>		0.169	7.681	0.29	6.423
<i>P</i>		.824	<.001	.741	<.001

SAS = Self-Rating Anxiety Scale, SDS = Self-Rating Depression Scale.

Table 2**Comparison of SCL-90 scores between the 2 groups.**

Project	Control group (n = 50)		Observation group (n = 50)	
	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Depression	4.28 ± 0.67	1.93 ± 0.62 [†]	4.67 ± 0.46	0.84 ± 0.27* [†]
Forced	4.14 ± 0.46	1.72 ± 0.53 [†]	4.26 ± 0.37	0.79 ± 0.25* [†]
Somatization	4.03 ± 0.82	1.57 ± 0.64 [†]	3.27 ± 0.58	0.69 ± 0.23* [†]
Hostile	3.69 ± 0.85	1.46 ± 0.38 [†]	3.57 ± 0.849	0.73 ± 0.17* [†]
Bigotry	2.43 ± 0.34	1.12 ± 0.37 [†]	2.62 ± 0.46	0.69 ± 0.33* [†]
Anxiety	3.27 ± 0.36	1.68 ± 0.24 [†]	3.24 ± 0.38	0.92 ± 0.46* [†]
Psychotic	2.93 ± 0.42	1.82 ± 0.46 [†]	2.84 ± 0.56	0.98 ± 0.22* [†]
Interpersonal sensitivity	3.18 ± 0.32	1.63 ± 0.37 [†]	3.24 ± 0.46	0.43 ± 0.24* [†]

SCL-90 = Symptom Checklist-90.

**P* < .05, compared with the control group.†*P* < .05, compared with the pre-intervention group.

greater decreases compared to the control group. The detailed comparisons for each dimension are as follows.

3.2.1. Depression. The experimental group's depression score decreased from 4.67 ± 0.46 to 0.84 ± 0.27, whereas the control group decreased from 4.28 ± 0.67 to 1.93 ± 0.62. The mean difference in post-intervention scores between groups was -1.09 (95% CI: -1.30 to -0.88), with a large effect size (Cohen *d* = 2.74, *P* < .05).

3.2.2. Obsessive-compulsive (forced). Scores in the experimental group dropped from 4.26 ± 0.37 to 0.79 ± 0.25, while the control group decreased from 4.14 ± 0.46 to 1.72 ± 0.53. The between-group mean difference was -0.93 (95% CI: -1.12 to -0.74), with a large effect size (Cohen *d* = 2.66, *P* < .05).

3.2.3. Somatization. The experimental group's scores fell from 3.27 ± 0.58 to 0.69 ± 0.23, compared to a decrease from 4.03 ± 0.82 to 1.57 ± 0.64 in the control group. The mean difference was -0.88 (95% CI: -1.10 to -0.66), Cohen *d* = 2.28, *P* < .05.

3.2.4. Hostility. Scores declined from 3.57 ± 0.85 to 0.73 ± 0.17 in the experimental group, and from 3.69 ± 0.85 to 1.46 ± 0.38 in controls. The mean difference was -0.73 (95% CI: -0.95 to -0.51), with Cohen *d* = 1.90, *P* < .05.

3.2.5. Paranoia (bigotry). The experimental group improved from 2.62 ± 0.46 to 0.69 ± 0.33, while the control group went from 2.43 ± 0.34 to 1.12 ± 0.37. The between-group difference was -0.45 (95% CI: -0.62 to -0.28), Cohen *d* = 1.74, *P* < .05.

3.2.6. Anxiety. Scores in the experimental group decreased from 3.24 ± 0.38 to 0.92 ± 0.46, compared to 3.27 ± 0.36 to 1.68 ± 0.24 in controls. The mean difference was -0.76 (95% CI: -0.93 to -0.59), Cohen *d* = 1.87, *P* < .05.

3.2.7. Psychoticism. Experimental group scores fell from 2.84 ± 0.56 to 0.98 ± 0.22, while controls decreased from 2.93 ± 0.42 to 1.82 ± 0.46. The mean difference was -0.64 (95% CI: -0.79 to -0.49), Cohen *d* = 1.77, *P* < .05.

3.2.8. Interpersonal sensitivity. The largest improvement was seen here, with scores dropping from 3.24 ± 0.46 to 0.43 ± 0.24 in the experimental group, compared to 3.18 ± 0.32 to 1.63 ± 0.37 in the control group. The mean difference was -1.20 (95% CI: -1.38 to -1.02), with a very large effect size (Cohen *d* = 3.46, *P* < .05).

Overall, these results suggest that the intervention was highly effective in improving multiple dimensions of mental health, with the experimental group benefiting significantly more than the control group. Detailed data are shown in Table 2.

3.3. Comparison of quality of life between the 2 groups

After the intervention, both groups demonstrated improvements in quality of life scores across multiple domains measured by the GQOLI-74 scale. Notably, the experimental group showed significantly greater increases than the control group in social functioning (76.23 ± 12.36 vs 62.53 ± 10.18; mean difference = 13.70, 95% CI: 4.12–23.28; *P* = .010), psychological functioning (77.25 ± 13.84 vs 62.46 ± 9.34; mean difference = 14.79, 95% CI: 7.25–22.33; *P* < .001), emotional functioning (76.54 ± 12.61 vs 63.14 ± 9.28; mean difference = 13.40, 95% CI: 5.06–21.74; *P* = .001), and role functioning (76.53 ± 11.66 vs 68.25 ± 10.26; mean difference = 8.28, 95% CI: 2.15–14.41; *P* = .003). No significant differences were observed between groups at baseline. These results suggest that the intervention had a more pronounced positive effect on patients' overall quality of life. Detailed scores, confidence intervals, and statistical comparisons are presented in Table 3.

3.4. Comparison of patient satisfaction between the 2 groups

The satisfaction level in the experimental group was significantly higher than that in the control group ($\chi^2 = 4.332$, *P* = .037). The satisfaction rate was 94.0% (47/50) in the experimental group and 80.0% (40/50) in the control group, with an absolute difference of 14.0% (95% CI: 1.2%–26.8%). The effect size measured by risk difference indicates a meaningful improvement in patient satisfaction due to the intervention. Detailed patient satisfaction data are shown in Table 4.

4. Discussion

This study demonstrated that psychological nursing interventions significantly improved anxiety and depression symptoms, mental health status, quality of life, and patient satisfaction among COPD patients with respiratory failure. Compared with the control group, the experimental group exhibited greater reductions in SAS and SDS scores, as well as substantial

Table 3
Comparison of GQOLI-74 scores between the 2 groups.

Group	n	Social functioning		Psychological functioning		Physical functioning		Physical functioning	
		Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Control group	50	57.23 ± 6.54	62.53 ± 10.18	56.46 ± 8.23	62.46 ± 9.34	53.27 ± 10.25	63.14 ± 9.28	60.25 ± 8.25	68.25 ± 10.26
Experimental group	50	52.17 ± 4.82	76.23 ± 12.36	53.27 ± 9.62	77.25 ± 13.84	51.23 ± 8.62	76.54 ± 12.61	63.28 ± 6.25	76.53 ± 11.66
<i>t</i>	–	0.239	2.678	0.176	3857	0.126	3.624	0.038	3.286
<i>P</i>	–	.816	.010	.862	<.001	.857	.001	.891	.003

GQOLI-74 = Generic Quality of Life Inventory-74.

Table 4
Comparison of patient satisfaction between the 2 groups.

Group	n	Satisfied	Neutral	Dissatisfied	Satisfaction (%)
Control group	50	21 (42.00)	19 (38.00)	10 (20.00)	40 (80.00)
Experimental group	50	26 (52.00)	21 (42.00)	3 (6.00)	47 (94.00)
χ^2					4.332
<i>P</i>					.037

improvements across all dimensions of the SCL-90 scale, with large effect sizes observed. Additionally, the experimental group showed significantly higher post-intervention scores in multiple domains of the GQOLI-74, particularly in psychological, emotional, social, and role functioning. Patient satisfaction was also notably higher in the experimental group, reinforcing the positive impact of the intervention. These findings suggest that psychological nursing provides comprehensive benefits across emotional, psychological, and functional outcomes in this patient population.

COPD is characterized by widespread destruction of the alveolar walls and reduced airway elasticity, leading to the formation of emphysema, which in turn causes impaired pulmonary ventilation and gas exchange. As the disease progresses to its middle and late stages, some patients, due to prolonged lung function impairment, gas retention, and other factors, develop type II respiratory failure, characterized by decreased arterial oxygen pressure and increased carbon dioxide pressure. COPD complicated by respiratory failure not only severely affects the patient's physiological function but also, due to the prolonged course of the disease, repeated exacerbations, and high disability rate, is often accompanied by significant negative psychological responses, such as anxiety, depression, and fear, which have a profound impact on treatment compliance, rehabilitation progress, and quality of life.^[18]

The core pathophysiological mechanisms of COPD include chronic airway inflammation, bronchospasm, mucus retention, alveolar structural damage, and increased airway resistance, leading to mismatched ventilation/perfusion (V/Q mismatch), reduced lung tissue elasticity, and gas retention, further causing excessive lung inflation and alveolar septal rupture.^[19] In the later stages of the disease, patients experience a reduction in effective alveolar ventilation, disrupted ventilation/perfusion ratio, and difficulty in expelling carbon dioxide, resulting in type II respiratory failure. Hypercapnia and hypoxemia directly affect the central nervous system, leading to irritability, cognitive impairment, and sluggish responses, and may even induce psychological symptoms such as anxiety and depression.^[20]

Research^[21] indicates that chronic hypercapnia can increase intracranial pressure by reducing cerebrovascular resistance and increasing cerebral blood flow, which can exacerbate symptoms such as headaches, distractibility, anxiety, and insomnia. Chronic hypoxia can inhibit the synthesis of neurotransmitters

such as serotonin and norepinephrine, disrupting the neuroendocrine regulatory axis and providing an endogenous basis for mood disorders.

Furthermore, chronic dyspnea itself is a chronic stressor that can trigger overactivation of the sympathetic-adrenal medullary system and hypothalamic-pituitary-adrenal axis, leading to the continuous secretion of stress hormones such as cortisol and adrenaline, resulting in a chronic stress state that disrupts immune and neurological homeostasis, thus exacerbating psychological symptoms and immune-inflammatory responses, forming a pathological-psychological vicious cycle.^[22]

COPD patients, due to the chronic course of their disease, limitations in daily life, frequent hospitalizations, and heavy economic burden, often experience feelings of helplessness, fear, and emotional instability. Particularly during acute exacerbations, patients may experience dyspnea, chest tightness, suffocation, and even a near-death sensation, all of which greatly affect their psychological state.^[23] According to the results of this study, before the intervention, both groups had high scores on the SAS and SDS, indicating widespread negative emotions. This phenomenon is consistent with previous studies. Research^[24] shows that approximately 62.4% of patients with moderate-to-severe COPD experience varying degrees of anxiety symptoms, and 48.7% have depressive tendencies. Anxiety and depression not only affect the patient's self-management ability but also, through neuroendocrine pathways, may impact respiratory center regulation, further aggravating dyspnea and physical discomfort, creating a vicious cycle of psychological-physiological causality. Additionally, COPD is common in the elderly, who have a weak social support system, diminished cognitive function, and reduced coping abilities, making them more susceptible to negative psychological responses.^[25]

In this study, the experimental group received a systematic psychological nursing intervention, including emotional counseling, cognitive-behavioral reconstruction, breathing relaxation training, disease education, and enhancement of family and social support. The results showed that after the intervention, the SAS, SDS, and SCL-90 scores of the experimental group were significantly lower than those of the control group, and the GQOLI-74 quality of life score was significantly higher, with a marked increase in patient satisfaction, indicating that psychological nursing interventions have a significant positive effect on COPD patients with respiratory failure.

Many COPD patients have insufficient knowledge of their disease and hold negative beliefs such as "incurable" or "repeated hospitalizations will eventually lead to death." Psychological nursing, through individual or group cognitive interventions, guides patients to scientifically understand the disease's progression and the feasibility of interventions, adjusting their coping strategies and cognitive structures to alleviate negative emotions like anxiety and depression.^[26] Nurses provide a safe and understanding environment by listening empathetically, offering verbal reassurance, and expressing encouragement, encouraging patients to express their inner struggles and providing an opportunity for emotional release. At the same time,

building a harmonious doctor-patient relationship enhances patients' sense of acquisition and trust. Psychological nursing not only focuses on language and psychological support but also incorporates progressive muscle relaxation training, breathing rhythm adjustment, and other methods to improve sympathetic nervous system excitation, regulate autonomic nervous system function, reduce stress hormone levels, and alleviate physical symptoms. Encouraging family members to participate in the nursing plan enhances emotional support and caregiving involvement, reducing the patient's feelings of loneliness and helplessness. The participation of patients in chronic disease support groups or online platforms fosters a sense of belonging and provides role models and encouragement.^[27] Research^[28] confirms that implementing systematic psychological nursing can reduce the SAS score from 60.31 ± 4.26 to 45.12 ± 3.97 and the SDS score from 58.65 ± 4.02 to 43.75 ± 4.18 , with greater improvement compared to the conventional nursing group ($P < .01$).

This paper has many advantages. After receiving psychological nursing interventions, COPD patients with respiratory failure showed significant improvement in their GQOLI-74 scores, indicating that the intervention measures have significant value in improving overall health perception and life satisfaction. The improvement in quality of life is not only related to the improvement of emotional state but also closely tied to the enhancement of the patient's self-management ability and confidence in future life. The increase in patient satisfaction also directly reflects the positive outcomes of psychological nursing. After receiving respect, attention, understanding, and emotional support, patients offer positive evaluations of medical behaviors, which not only enhance their trust in nursing services but also help them actively cooperate with treatment and improve compliance.

This study validates the multiple positive effects of psychological nursing on COPD patients with respiratory failure and emphasizes the important value of "mind-body integration" in chronic disease care. However, this study has some limitations, such as a single sample source, no long-term follow-up, and relatively simple intervention forms. Additionally, the possibility of attention bias and placebo effects cannot be excluded, as patients in the intervention group likely received more interaction and attention, which may have influenced mood and satisfaction beyond the specific psychological intervention content. This phenomenon is common in clinical research and should be acknowledged. Future studies could consider employing blinded designs or control groups to minimize such biases. Furthermore, future studies could incorporate dynamic monitoring with psychological scales, remote psychological intervention platforms, and psychological education for family caregivers to further improve personalized nursing pathways. Additionally, the synergistic effect of psychological nursing with respiratory rehabilitation, nutritional intervention, and exercise training should be explored, and an integrated, multidimensional chronic disease management model should be established to comprehensively improve the patient's physiological, psychological, and social functions and promote the development of refined and humane nursing services for chronic respiratory diseases.

5. Conclusion

COPD patients with respiratory failure, due to their unique pathophysiological changes and the long-term nature of the disease, are highly susceptible to negative emotions such as anxiety and depression, which in turn affect treatment compliance, disease recovery, and quality of life. Psychological nursing interventions, as an integral part of comprehensive care, can address multiple dimensions of cognition, emotion, and behavior, improving negative emotions, enhancing psychological adaptation, and significantly improving life quality and patient

satisfaction. The results of this study demonstrate that systematic psychological nursing can significantly reduce the SAS, SDS, and SCL-90 scores of COPD patients with respiratory failure, improve their GQOLI-74 scores and satisfaction scores, confirming its practical value and clinical significance in the management of chronic respiratory diseases. In the future, clinical practice should focus on early assessment and intervention of the psychological state of such patients, integrate psychological nursing into the full-cycle management of chronic diseases, and continuously explore interdisciplinary collaboration and technology-supported nursing models to improve the overall health and quality of life of chronic disease patients.

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