Advances in Precision Medicine, 2026, Volume 11, Issue 8
https://bbwpublisher.com/journal/APM
Online ISSN: 2424-9106
Print ISSN: 2424-8592

The Effect of Acupoint Application Nursing Combined with Airway Clearance Technique on Sleep Quality in Patients with Chronic Obstructive Pulmonary Disease

Zhaoru Tang, Hongli Yu *

Zhejiang Xiaoshan Hospital, Xiaoshan 311200, Zhejiang, China

Copyright: © 2026 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: *Objective:* To explore the effect of acupoint application nursing combined with airway clearance technique on the sleep quality of patients with chronic obstructive pulmonary disease. *Method:*A retrospective analysis was conducted on the data of 150 patients with chronic obstructive pulmonary disease collected in our hospital from March 2024 to February 2026. They were divided into a control group (conventional nursing + airway clearance technique) and an observation group (acupoint application nursing + airway clearance technique) according to different nursing plans, with 75 cases in each group. Observe the sleep quality, blood gas indicators, and complications of the two groups. The PSQI scores of the observation group were lower than those of the control group after one course of nursing and two courses of nursing ($p < 0.05$). After one course of nursing and two courses of nursing, the PaO2 of the observation group was higher than that of the control group, and the $PaCO_2$ was lower than that of the control group ($p < 0.05$). The incidence of complications in the observation group was lower than that in the control group ($p < 0.05$). *Conclusion:* Acupoint application nursing combined with airway clearance technique can effectively improve the sleep quality and blood gas indicators of patients with chronic obstructive pulmonary disease and reduce the risk of related complications.

Keywords: Acupoint plaster care; Airway clearance technique; Chronic obstructive pulmonary disease

Online publication: August 26, 2026

1. Introduction

Chronic obstructive pulmonary disease is a disease characterized by persistent airflow limitation and often progresses in a progressive manner [1]. In addition to typical respiratory symptoms, patients often have varying degrees of sleep disorders, which affect neuroendocrine and immune functions and increase the risk of acute exacerbation. At present, the clinical management of chronic obstructive pulmonary disease focuses on drug therapy, which has limited effect on improving sleep quality. Airway clearance technology can promote the discharge of airway secretions and reduce airway obstruction through effective coughing,

positional drainage, chest tapping, and respiratory training [2]. Traditional Chinese Medicine acupoint application nursing is the process of applying traditional Chinese medicine preparations to specific acupoints, through the dual effects of drug stimulation and meridian conduction, to achieve the effects of regulating organs, relieving asthma and cough, and calming the mind and aiding sleep [3]. This study explores the effect of acupoint application nursing combined with airway clearance technique on the sleep quality of patients with chronic obstructive pulmonary disease. The report is as follows.

2. Data and methods

2.1. General information

Retrospective analysis of data from 150 patients with chronic obstructive pulmonary disease collected by our hospital from March 2024 to February 2026, divided into a control group and an observation group according to different nursing plans, with 75 cases in each group. There were 48 males and 27 females in the control group; The age range is 48–75 years old, with an average of (64.25 ± 7.38) years old; The course of illness is 4–12 years, with an average of (7.36 ± 2.15) years; 32 cases were classified as COPD grade II, 35 cases as COPD grade III, and 8 cases as COPD grade IV. There were 46 males and 29 females in the observation group; The age ranged from 46 to 73 years old, with an average of (65.08 ± 7.62) years old; The course of the disease is 4–13 years, with an average of (7.78 ± 2.12) years; 31 cases were classified as COPD grade II, 37 cases as COPD grade III, and 7 cases as COPD grade IV. There was no statistically significant difference in baseline data between the two groups ($p > 0.05$).

2.1.1. Inclusion criteria

(1) Meet the diagnostic criteria for chronic obstructive pulmonary disease [4];
(2) Age range: 46–75 years old;
(3) The condition is in a stable phase;
(4) Clear consciousness;
(5) Complete clinical data.

2.1.2. Exclusion criteria

(1) Patients with severe organ dysfunction;
(2) Patients with combined other lung diseases;
(3) Individuals with combined mental and neurological disorders or cognitive impairments;
(4) Individuals with sensitive skin or damaged or infected areas on the application site.

2.2. Method

The control group received routine nursing combined with airway clearance techniques. (1) Routine care. After admission, explain the pathogenesis, triggering factors, and medication methods of the disease to the patient. It is recommended that patients adopt a high protein, high vitamin, and easily digestible diet, and avoid spicy and stimulating foods that produce gas. (2) Airway clearance technique. ① Effective cough training. Guide the patient to sit in a seated or semi recumbent position, take a deep breath and hold it for 3 seconds, then contract the abdominal muscles and cough vigorously to expel phlegm, 3 times a day for 15 minutes each time. ② Position drainage. Choose an appropriate position based on the location of the lesion

and use gravity to promote secretion drainage, twice a day for 15 minutes each time. ③ Chest tapping. The nurse brings her fingers together in a cup-shaped shape and rhythmically taps the patient's back with wrist strength, from outside to inside and from bottom to top, twice a day for 15 minutes each time. ④ Lip pursed abdominal breathing training. Guide the patient to inhale slowly through the nose, exhale slowly with pursed lips like a whistle, and coordinate with abdominal movements, 3 times a day for 15 minutes each time.

The observation group received acupuncture point application nursing on the basis of the control group. According to the doctor's advice, Huangqin, Baibu, and almond powder were mixed with vinegar to make pills, which were applied to the acupoints of Tiantu, Danzhong, Dazhui, and Shuangfeishu. Clean the local skin before applying, apply the pill to the selected acupoint, and fix it with medical tape. Apply for 4–6 hours each time, once a day for 5 days as one course of treatment, with an interval of 1 day before proceeding to the next course of treatment.

Both groups received two courses of care.

2.3. Observation indicators

(1) Sleep quality

Pittsburgh Sleep Quality Index (PSQI) was used to evaluate sleep quality before nursing, after one course of nursing, and after two courses of nursing. The total score was 0–21, with higher scores indicating poorer sleep quality. The Cronbach's alpha coefficient was 0.902.(2)Blood gas indicators

Before nursing, after one course of nursing, and after two courses of nursing, arterial oxygen partial pressure (PaO_2) and arterial carbon dioxide partial pressure ($PaCO_2$) are measured using a blood gas analyzer while the patient is under oxygen inhalation.(3) Complications

After the nursing is completed, the total number of cases of dizziness, chest tightness, and worsening cough in both groups will be counted to calculate the overall incidence rate.

2.4. Statistical processing

SPSS 27.0 software was used, and count data were expressed as [n, (%)]. Inter group comparisons were conducted using χ^2 test or Fisher's exact test; The measurement data is represented by ( ), and the comparison between groups is conducted using one-way analysis of variance (ANOVA) and *t*-test. The repeated measures data are analyzed using repeated measures of variance. $p < 0.05$ indicates a statistically significant difference.

3. Results

3.1. Comparison of sleep quality

The PSQI scores of the observation group were lower than those of the control group after one course of nursing and two courses of nursing ($p < 0.05$). See **Table 1**.

Table 1. Comparison of sleep quality between two groups（OBJ， in points）

Category	Countdown	PSQI		
		After two courses of nursing care	After one course of nursing care	Before nursing
Observation group	75	17.18 ± 2.16	8.78 ± 1.61	5.42 ± 1.25
Control group	75	17.36 ± 2.21	12.92 ± 1.98	9.05 ± 1.82

F (Interaction), p (Interaction)	-	8.086, < 0.001
F (between groups) p (between groups)	-	8.975, < 0.001
F (point in time) p (point in time)	-	9.110, < 0.001

3.2. Comparison of blood gas indicators

After one course of nursing and two courses of nursing, the PaO_2 of the observation group was higher than that of the control group, and the $PaCO_2$ was lower than that of the control group ($p < 0.05$). See **Table 2**.

Table 2. Comparison of blood gas indicators between two groups (mmHg)

Countdown	Category	PaO_2			PaO_2		
		Before nursing	After one course of nursing care	After two courses of nursing care	Before nursing	After one course of nursing care	After two courses of nursing care
Observation group	75	58.32 ± 6.45	69.65 ± 5.29	76.42 ± 4.25	56.71 ± 5.25	47.51 ± 4.32	42.81 ± 4.42
Control group	75	57.86 ± 6.78	63.30 ± 5.20	70.01 ± 5.25	56.70 ± 5.22	52.09 ± 4.29	47.49 ± 4.38
F (Interaction), p (Interaction)	-		9.553, < 0.001			9.553, < 0.001	
F (between groups) p (between groups)	-		8.721, < 0.001			8.721, < 0.001	
F (point in time) p(point in time)			9.001, < 0.001			9.001, < 0.001	

3.3. Comparison of complications

One case of pulmonary dizziness and one case of chest tightness occurred in the observation group, with an incidence rate of 2.67% (2/75); In the control group, there were 2 cases of worsening cough, 4 cases of chest tightness, and 4 cases of dizziness, with an incidence rate of 13.33% (10/75). The incidence of complications in the observation group was lower than that in the control group ($\chi^2 = 5.797$, $p = 0.016$).

4. Discussions

Chronic obstructive pulmonary disease (COPD) is a chronic respiratory system disease with a long course and slow progression. Patients suffer from symptoms such as cough, sputum production, and difficulty breathing for a long time. In addition, repeated acute exacerbations can easily lead to negative emotions and affect sleep. Sleep disorder has a high incidence in patients with chronic obstructive pulmonary disease. The retention of airway secretions and the elevation of the diaphragm in the supine position can aggravate dyspnea, resulting in frequent arousal.

Through retrospective analysis of patient medical records, it was found that the PSQI scores of the observation group were lower than those of the control group after one course of nursing and two courses of nursing ($p < 0.05$). Analyzing its mechanism of action, airway clearance technology can promote the discharge of airway secretions, reduce airway resistance, alleviate nighttime breathing difficulties and cough symptoms, reduce the number of awakenings caused by respiratory discomfort, and thus prolong continuous sleep time.

Combining acupoint application nursing, selecting acupoints such as Feishu, Bishu, Shenshu, Dingchuan, etc., through transdermal absorption of drugs and acupoint stimulation, to exert the effects of

regulating the lungs, spleen and kidneys, relieving cough and asthma, resolving phlegm and unblocking collaterals; The calming acupoints such as Shenmen and Sanyinjiao, combined with the warming and promoting effects of drugs such as mustard seed and Xixin, can regulate autonomic nervous function, reduce sympathetic nervous excitability, promote the recovery of parasympathetic nervous tension, and help improve sleep depth [5]. After one course of nursing and two courses of nursing, PaO_2 in the observation group was higher than that in the control group, and $PaCO_2$ was lower than that in the control group ($p < 0.05$). Airway clearance technology can directly improve the pulmonary ventilation and ventilation function by removing the retention of sputum and reducing airway obstruction. Lip shrinking abdominal breathing training can enhance the muscle strength of diaphragm and auxiliary respiratory muscles, and optimize the breathing mode.

Acupoint application stimulates the Back Shu and Du Mai acupoints to regulate lung qi and blood circulation, improve blood gas indicators, promote inflammation absorption and damage repair. Mustard seed has the effect of dispelling phlegm and relieving asthma, while Gan Sui, Yan Hu Suo and other herbs have anti-inflammatory and immune regulating functions. After transdermal absorption, various drugs can form high drug concentrations locally and directly act on the respiratory tract [6]. The incidence of complications in the observation group was lower than that in the control group (P. After the improvement of blood gas indicators, hypoxia and hypercapnia were corrected. In addition, the improvement of patients' sleep quality and daytime activity endurance also have a certain positive effect on reducing dizziness and cough [7]. In addition, there are certain limitations to this study, as the study duration is relatively short and there may be insufficient statistical efficacy for complications. In the future, multi center randomized controlled trials can be conducted to extend follow-up time and further explore the long-term effects of this combination model.

5. Conclusion

In summary, the combination of acupoint application nursing and airway clearance technology can effectively improve the sleep quality and blood gas indicators of patients with chronic obstructive pulmonary disease, and reduce the risk of related complications.

Disclosure statement

The author declares no conflict of interest.

References

[1] Li A, Guo H, Li B, 2023, The Effect of Comprehensive Pulmonary Rehabilitation Nursing Intervention on Sleep Quality and Quality of Life of Stable COPD Patients. Practical Clinical Journal of Integrated Traditional Chinese and Western Medicine, 23(5): 113–116.

[2] Wang J, Shi T, 2021, Observation of the Effect of Airway Clearance Technique in Patients with Acute Exacerbation of Chronic Obstructive Pulmonary Disease. Medical Diet and Health, 19(4): 56–57.

[3] Lu Q, 2024, Observation of the Application Effect of Comfort Care Combined with Chinese Herbal Acupoint Patch in Chronic Obstructive Pulmonary Disease. Chinese Journal of Ethnic Medicine, 30(2): 76–78.

[4] Chronic Obstructive Pulmonary Disease Group of the Respiratory Medicine Branch of the Chinese Medical

Association, Chronic Obstructive Pulmonary Disease Working Committee of the Respiratory Medicine Branch of the Chinese Medical Association, 2021, Guidelines for the Diagnosis and Treatment of Chronic Obstructive Pulmonary Disease (Revised 2021 Edition). Chinese Journal of Tuberculosis and Respiratory Diseases, 44(3): 170–205.

[5] Ding J, Hu Y, Chang R, et al., 2025, Observation of the Effect of Traditional Chinese Medicine Acupoint Application on COPD Patients. Chinese Journal of Drug Abuse Prevention and Treatment, 31(9): 1731–1733.

[6] Hong T, Chen J, 2022, Observation of the Effect of Acupoint Application and Nursing Intervention for Winter Disease and Summer Treatment in Patients with Chronic Obstructive Pulmonary Disease. Grassroots Medicine Forum, 26(3): 127–129.

[7] Li H, 2023, The Therapeutic Effect of Acupoint Application Combined with Traditional Chinese Medicine Retention Enema on AECOPD Patients with Respiratory Failure. Famous Doctor, 2023(23): 24–26.

Publisher's note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.