

Effects of traditional Chinese medicine nursing combined with conventional nursing in patients with chronic obstructive pulmonary disease: a meta-analysis

Original article

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Abstract: Objective: This meta-analysis aims to evaluate the effects of traditional Chinese medicine (TCM) nursing combined with conventional nursing in patients with chronic obstructive pulmonary disease (COPD).

Methods: Data were collected from the databases of PubMed, Embase, the Cochrane Library, Web of Science, Google Scholar, China National Knowledge Infrastructure (CNKI), WanFang Data (WF) and VIP Database, including literature regarding the effects of TCM nursing combined with conventional nursing in patients with COPD published before January 2017. The Jadad scale was used to assess the quality of the eligible literature. The weighted mean differences and odds ratios were used to analyze St. George's Respiratory Questionnaire (SGRQ) scores, pulmonary function, hospital stay, and clinical efficacy.

Results: Twenty-three randomized controlled trials comprising 3116 cases (TCM nursing combined with the conventional nursing group: 1559; conventional nursing group: 1557) met the inclusion criteria. TCM nursing combined with conventional nursing was associated with a lower SGRQ score, higher forced expiratory volume in 1 second (FEV1) value, higher FEV1/forced vital capacity (FVC) value, higher FEV1% value, higher FEV1 predicted value, shorter hospital stay, and preferable clinical efficacy.

Conclusions: TCM nursing combined with conventional nursing emphasized that dialectical nursing can be performed preferably in patients with COPD.

Keywords: traditional Chinese medicine nursing • dialectical nursing • pulmonary disease • chronic obstructive • pulmonary function • meta-analysis

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1. Introduction

Chronic obstructive pulmonary disease (COPD) is a common, preventable, and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation resulting from airway and/or alveolar abnormalities that are usually caused by significant exposure to noxious particles or gases, as defined by the Global Initiative for Chronic Obstructive Lung Disease (GOLD).¹ Globally, because of continued exposure to COPD risk factors and population aging, the COPD burden is expected to increase in the coming decades.² COPD is a systemic disease that is asso-

ciated with a wide variety of symptoms and affects patients' physical, psychological, and social conditions.³ COPD presents high morbidity and mortality but can be decreased by proper treatment and conventional care or traditional Chinese medicine (TCM) nursing.

With the development of TCM, TCM nursing is becoming increasingly widely used in clinical practice, including in patients with COPD. Chinese medical care researchers have explored involving TCM nursing theory, education, management, practice, and so on to promote the development of TCM nursing. Currently, the clinical efficacy of conventional nursing has been

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recognized. There are a considerable number of nonrandomized trials and randomized controlled trials (RCTs) involving the comparison of TCM nursing combined with conventional nursing and conventional nursing alone. The sample size in current studies is limited and multicenter trials are lacking, making the evidence of TCM nursing combined with conventional nursing unreliable and lacking power.

The aim of this study was to compare the effects of TCM nursing combined with conventional nursing with conventional nursing alone in patients with COPD. The meta-analysis allows clinical outcomes to be quantified for evaluating the advantages of TCM nursing combined with conventional nursing.

2. Materials and methods

2.1 Inclusion and exclusion criteria

Criteria for inclusion and exclusion of studies were established according to the participants, interventions, comparisons, outcomes, and study design (PICOS) principles. The inclusion criteria were as follows: (1) participants: all of the included participants had a diagnosis of COPD, according to the guidelines for the diagnosis and treatment of COPD and received conventional Western medicine; (2) interventions: the participants in the study group were treated with TCM nursing combined with conventional nursing. Conventional nursing involves daily care, dietary nursing, activity nursing, oxygen therapy, assistance with coughing, condition observation, medication care, and health education. TCM nursing, characterized as dialectical nursing, includes dietetic care, emotional nursing, physical therapy of TCM, TCM health education, and TCM rehabilitation training; (3) comparisons: participants in the control group received conventional nursing; (4) outcomes: the study should have reported at least one of the following clinical outcomes: St. George's Respiratory Questionnaire (SGRQ) score, pulmonary function index (forced expiratory volume in 1 second [FEV1], FEV1/forced vital capacity [FVC], FEV1%, and FEV1 predicted value), hospital stay, and clinical efficacy; and (5) study design: RCTs aimed at studying the effect of TCM nursing intervention on the clinical outcome of patients with COPD. Exclusion criteria were as follows: (1) literature was not designed rigorously; (2) the control group was not designed in the literature; (3) data in the literature were unknown; or (4) relevant data could not be extracted from the literature. For literature that was duplicated or reported by the same research institution, publications with higher quality or more detailed data were included.

2.2 Search strategy

A literature search was conducted in a variety of electronic databases, including PubMed, Embase, Cochrane Library, Web of Science, Google Scholar, China National Knowledge Infrastructure (CNKI), WanFang Data (WF) and VIP, for research published before January 2017. The following terms or keywords were used ((“pulmonary disease, chronic obstructive” [MeSH Terms] OR (“pulmonary”[All Fields] AND “disease”[All Fields] AND “chronic” [All Fields] AND “obstructive” [All Fields]) OR “chronic obstructive pulmonary disease” [All Fields] OR (“chronic”[All Fields] AND “obstructive” [All Fields] AND “lung” [All Fields] AND “disease” [All Fields]) OR “chronic obstructive lung disease” [All Fields] OR “chronic obstructive pulmonary disease” [All Fields] OR “COPD”[All Fields]))AND ((“medicine, Chinese traditional” [MeSH Terms] OR (“medicine” [All Fields] AND “Chinese” [All Fields] AND “traditional”[All Fields]) OR “Chinese traditional medicine”[All Fields] OR (“traditional” [All Fields] AND “Chinese” [All Fields] AND “medicine” [All Fields]) OR “traditional Chinese medicine” [All Fields] OR “TCM” [All Fields]) AND (“nurses” [MeSH Terms] OR “nurses” [All Fields] OR “nurse” [All Fields] OR care [All Fields])). No language restrictions were followed.

2.3 Quality assessment

The Jadad scale⁴ was used to assess the quality of the selected publications that met the inclusion criteria. All of the eligible RCTs were assessed by three reviewers (Chenyang Li, YuNan Ji, and ZhenHua Hou) independently. The criteria of Jadad were as follows: (1) Generation of random sequences (appropriate: 2 points; unclear: 1 point; inappropriate: 0 points); (2) Allocation concealment (appropriate: 2 points; unclear: 1 point; inappropriate: 0 points; unused: 0 points); (3) Double blinding (appropriate: 2 points; unclear: 1 point; inappropriate: 0 points); and (4) Withdrawal (describes the number and rationale for the withdrawal: 1 point; The number and rationale of withdrawal are not described: 0 points). Four aspects of the evaluation quality were used: 1–3 points were regarded as low quality, and 4–7 points were regarded as high quality.

2.4 Data extraction

Two investigators (Chenyang Li and Lingli Xie) extracted the data independently. The following data were extracted from each publication: first author, year of publication, type of study, selection criteria, age, number of participants, randomness in method, SGRQ scores, pulmonary function, hospital stay, and clinical efficacy.

2.5 Statistical analysis

Meta-analysis was performed using Stata12.0 software (StatCorp, College Station, TX, USA). Weighted mean differences (WMDs) were used to compare SGRQ scores, pulmonary function, and hospital stay. Clinical efficacy was compared using odds ratios (ORs), and subgroup analysis was performed. Statistical heterogeneity was evaluated by the use of Cochran Q and I^2 statistics. A value of $P \leq 0.10$ was considered statistically significant, and a random-effect model was used. Otherwise, a fixed-effect model was used. Begg's test and Egger's linear regression test were performed to evaluate the publication bias.

3. Results

3.1 Study selection and characteristics

Using the search strategies described, 753 potential articles were initially retrieved, and 662 studies were excluded after screening the titles. Fifty studies (reviews or case reports) were excluded after assessing the abstracts. Upon full-text review, 18 reports were excluded because the control groups were missing. Therefore, 23 studies were eligible for this meta-analysis (Figure 1); the characteristics and quality assessment of eligible studies are shown in Table 1. These

eligible articles involved 3116 participants (TCM nursing combined with conventional nursing group: 1559, conventional nursing group: 1557). All included studies were reported in the Chinese language.

3.2 Statistical results

3.2.1 SGRQ scores

Four studies⁵⁻⁸ reported indications for SGRQ scores, and a fixed-effect model was used for studying inter-study heterogeneity ($I^2 = 0.0\%$, $P = 0.990$). TCM nursing combined with conventional nursing was associated with lower SGRQ scores than conventional nursing (WMD = -15.06 , 95% confidence interval [CI]: -16.56 to -13.55 , $P = 0.000$) (Table 2).

3.2.2 Pulmonary function

Significant heterogeneity was observed in six studies⁸⁻¹³ that reported data on the FEV1 value ($I^2 = 95.7\%$, $P = 0.000$), 11 studies^{6-10,12-17} that reported data on the FEV1/FVC value ($I^2 = 96.2\%$, $P = 0.000$), and four studies^{8,14,15,18} that reported data on the FEV1% value ($I^2 = 97.8\%$, $P = 0.000$); a random-effect model was used for analysis. There was a higher FEV1 value (WMD = 0.29 , 95% CI: 0.13 – 0.45 , $P = 0.000$), a higher FEV1/FVC value (WMD = 4.95 , 95% CI:

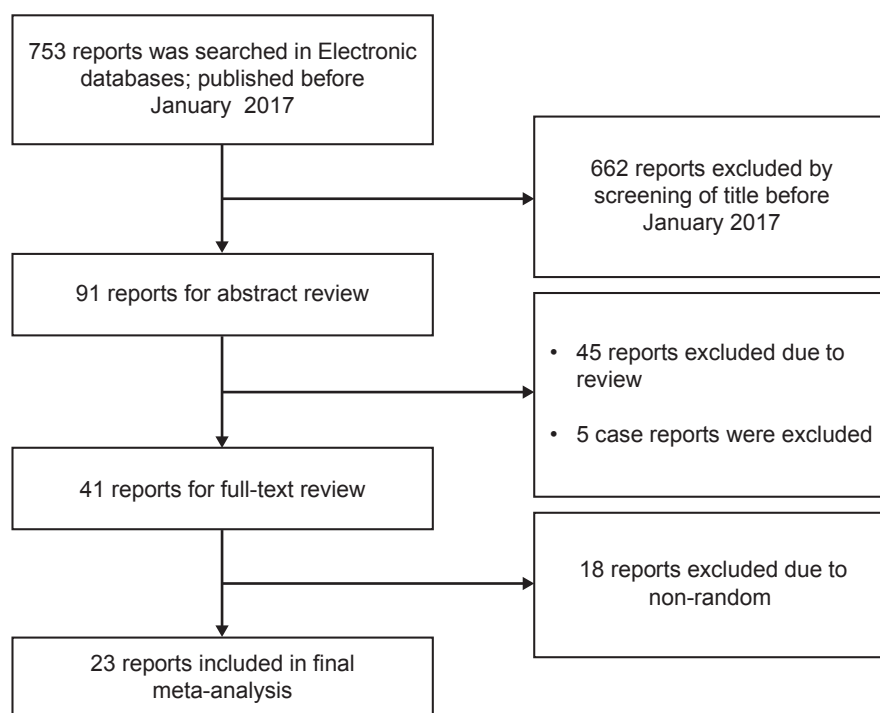


Figure 1. Flow chart of eligible studies.

Articles	Study period	Case	Number in study group	Number in control group	Outcomes ^a	Quality assessment
Dai 2016 ⁵	2012/11–2015/12	COPD	20	20	1	3
Li 2015 ⁶	2013/6–2015/6	Stable COPD	50	50	1, 3, 5	3
He 2014 ⁷	2010/12–2013/10	Stable COPD	60	60	1, 3, 5	3
Zheng et al 2014 ⁸	2011/1–2012/12	Stable COPD	143	143	1, 2, 3, 5	4
Peng 2009 ⁹	2007/1–2009/1	Stable COPD	50	50	2, 3	3
Chen et al 2015 ¹⁰	–	Stable COPD	53	53	2, 3, 7	4
Li 2015 ¹¹	2014/1–2014/12	Stable COPD	43	43	2	4
Zuo et al 2015 ¹²	2013/4–2014/3	COPD	36	36	2, 3	3
Pei et al 2015 ¹³	2014/6–2015/6	Stable COPD	46	46	2, 3, 7	4
Shi et al 2014 ¹⁴	2013/5–2013/12	Acute exacerbation COPD	15	15	3, 4	4
Liu 2014 ¹⁵	2013/1–2014/1	COPD	53	53	3, 4	4
Wang et al 2015 ¹⁶	2013/7–2014/7	COPD	40	38	3, 5	4
Huang 2016 ¹⁷	2012/10–2014/10	Stable COPD	42	42	3, 5	3
Li et al 2013 ¹⁸	2008/1–2013/2	Stable COPD	300	300	4, 7	3
Fu et al 2014 ¹⁹	2012/1–2013/12	Acute exacerbation COPD	50	50	6	4
Lei 2014 ²⁰	2012/8–2014/2	COPD	100	100	6, 7	4
Liang et al 2010 ²¹	2008/1–2009/1	Acute exacerbation COPD	45	45	6	4
Pan 2013 ²²	2011/4–2012/3	Acute exacerbation COPD	64	64	6, 7	4
Fan 2015 ²³	2013/5–2015/5	COPD	40	40	7	3
Zhang et al 2013 ²⁴	2011/1–2013/1	Acute exacerbation COPD	27	27	7	4
Nie et al 2012 ²⁵	2011/1–2011/11	Acute exacerbation COPD	120	120	7	3
Han 2015 ²⁶	2013/9–2014/10	Acute exacerbation COPD	60	60	7	4

Table 1. Study characteristics and inclusion criteria

Notes: ^a1 = SGRQ scores; 2 = FEV1 Value; 3 = FEV1/FVC Value; 4 = FEV1% value; 5 = FEV1 predicted value; 6 = hospital stay; 7 = clinical efficacy.

Outcomes	Number of studies	Number of patients		Pooled WMD	95% CI of pooled WMD	P	Heterogeneity	
		Study group	Control group				I ² (%)	P
SGRQ scores	4	273	273	−15.06	−16.56 to 13.55	0.000	0.0	0.990
FEV1 value	6	371	371	0.29	0.13 to 0.45	0.000	95.7	0.000
FEV1/FVC value	11	588	586	4.95	2.71 to 7.19	0.000	96.2	0.000
FEV1% value	4	511	511	9.20	4.71 to 13.68	0.000	97.8	0.000
FEV1 predicted value	4	192	190	4.13	3.44 to 4.82	0.000	0.0	0.725
Hospital stay	4	259	259	−3.96	−5.79 to 1.94	0.000	95.9	0.000

Table 2. Results of meta-analysis of outcomes

2.71–7.19, $P=0.000$), and a higher FEV1% value (WMD = 9.20, 95% CI: 4.71–13.68, $P=0.000$) compared with those with conventional nursing (Table 2). Four studies^{6,7,16,17} reported data on the FEV1 predicted value; the FEV1 predicted value in TCM nursing combined with conventional nursing was higher than that in conventional nursing alone (WMD = 4.13, 95% CI: 3.44–4.82, $P=0.000$) with interstudy heterogeneity ($I^2 = 0.0\%$, $P=0.725$) (Table 2).

3.2.3 Hospital stay

Four studies^{19–22} recorded hospital stay. There was significant heterogeneity ($I^2 = 95.9\%$, $P=0.000$), and a random-effect model was used. There was a shorter hospital stay in the TCM combined with conventional nursing group (WMD = -3.96 , 95% CI: -5.79 to -1.94 , $P=0.000$) (Table 2).

3.2.4 Clinical efficacy

Clinical efficacy was reported by ten studies.^{10,13,18,20,22–27} The analysis of clinical efficacy did not exhibit heterogeneity ($I^2 = 0.0\%$, $P=0.606$). The difference in clinical

efficacy was statistically significant between the groups, and there was a preferable clinical efficacy in the TCM combined with conventional nursing group (OR = 4.41, 95% CI: 2.85–6.82, $P=0.000$) (Figure 2). Subgroup analysis was conducted to compare the clinical efficacy of TCM nursing combined with conventional nursing between patients with acute exacerbation of COPD (AECOPD) and patients with stable COPD. There was no significant heterogeneity ($I^2 = 0.0\%$, $P=0.448$), and a fixed-effect model was used. For patients with AECOPD, TCM nursing combined with conventional nursing had greater clinical efficacy (OR = 10.42, 95% CI: 4.11–26.42, $P=0.000$), relative to patients with stable COPD (OR = 2.89, 95% CI: 1.43–5.86, $P=0.003$) (Figure 3).

3.2.5 Publication bias

Evaluation of publication bias was performed using Begg's test and, based on clinical efficacy, showed no significance ($P=0.325$). Figure 4 shows that there is no publication bias and depicts the distribution of ORs comparing the clinical efficacy for the ten studies included in this meta-analysis.

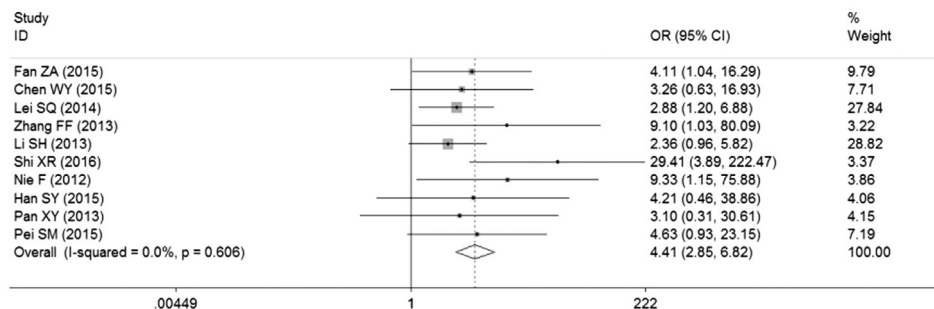


Figure 2. Forest plots of analysis of study group versus control group for clinical efficacy. The results are presented as individual and pooled ORs and 95% CIs. CI = confidence interval; OR = odds ratio.

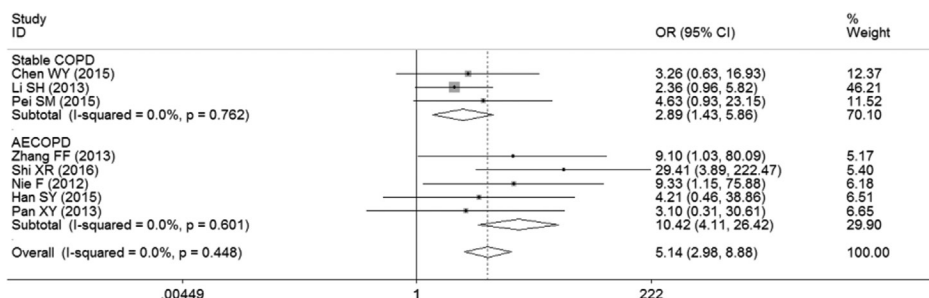


Figure 3. Forest plots of subgroup analysis of stable COPD versus AECOPD for clinical efficacy. The results are presented as individual and pooled ORs and 95% CIs. AECOPD = acute exacerbation of COPD; CI = confidence interval; COPD = chronic obstructive pulmonary disease; OR = odds ratio.

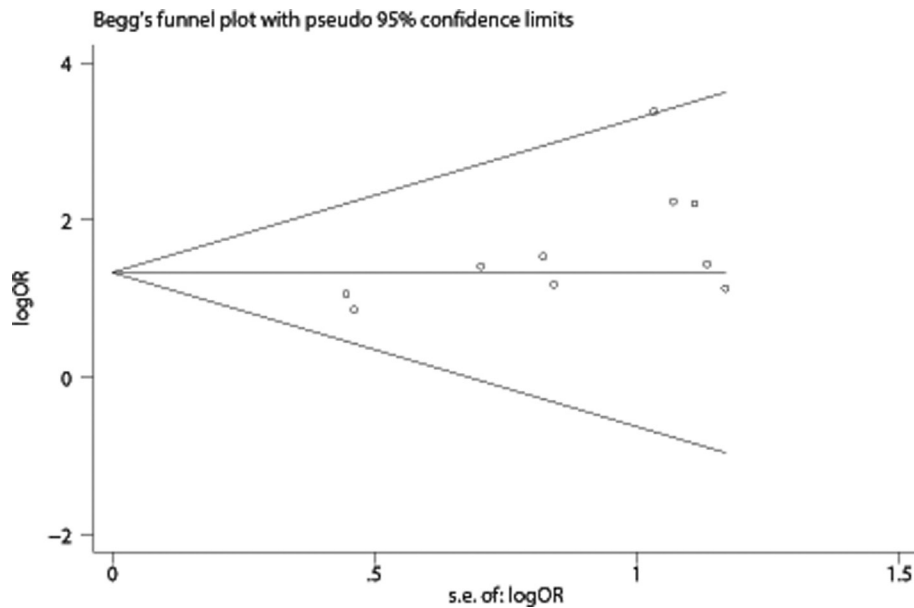


Figure 4. Funnel plots of the evaluation of potential publication bias in the efficacy of TCM nursing combined with conventional nursing in patients with COPD. COPD = chronic obstructive pulmonary disease; s.e. = standard error; TCM = traditional Chinese medicine.

4. Discussion

To our knowledge, this comprehensive and detailed meta-analysis is the first to evaluate the association between TCM nursing combined with conventional nursing and conventional nursing alone in treating COPD. This meta-analysis presents us with the evidence that TCM nursing combined with conventional nursing can provide patients with COPD a higher life quality, better lung function, preferable clinical efficacy, and a shorter hospital stay. Furthermore, subgroup analysis indicates that TCM nursing combined with conventional nursing has greater clinical efficacy in patients with AECOPD and stable COPD.

According to the TCM syndrome differentiation standard,²⁸ COPD can be divided into several types, such as exterior cold and interior heat, obstructed lung-Qi by retention of phlegm, stagnated lung-Qi, stagnation of phlegm-heat in the lung, and so on. TCM nursing is based on the theoretical system of TCM, which mainly embodies the concept of wholism and treatment determination based on syndrome differentiation. Tuinaology of TCM is a form of Chinese manipulative therapy that prevents and treats diseases. Currently, it is best known as “Tuina” and “Anmo”. The active principles of Tuina therapy can be considered to keep the balance of Yin and Yang, dredge the meridians and collaterals, regulate the Qi and blood, regulate the Zang-Fu organ function, restore and treat injured soft tissue to reduce the displacement, and lubricate joints. For

regulation on the material level, Tuina can regulate the respiration system. When conducting Tuinaology, Feishu, Fenglong, Neiguan, Pishu, Qihai, Zhongji, and Tiantu can be selected to treat patients with COPD. Each procedure is performed for 3 minutes, once a day, until a local acid bilge feeling is reported. Studies²⁹ suggest that Tuina can improve lung function and the quality of life of patients with COPD; this finding is consistent with the results of this meta-analysis. Apart from Tuinaology, acupuncture treatment is also important for COPD patients' rehabilitation.³⁰ The COPD rehabilitation guideline recommends that effective exercise can be ensured with moderate intensity.³¹ Traditional rehabilitation exercises such as six words, eight brocade, and Tai chi are relevant to improvements in exercise capacity, respiratory function, and respiratory muscle strength. Additionally, because COPD is a prolonged disease, patients with COPD are prone to be depressed and anxious. TCM emotional care is necessary.

Because of the significant heterogeneity of the eligible studies, random-effects models were used during pooling of data. Significant heterogeneity persisted during the sensitivity analysis, especially when comparing the FEV1 value, FEV1/FVC value, and FEV1% value between the two groups. The significant heterogeneity was likely a result of the differences in some potentially confounding variables that were not specifically considered, such as disease type, demographic characteristics, or methodology differences among studies.^{6-10,12-17}

In addition, the studies did not use the same TCM nursing methods, and the severity of illness was also different, leading to potential heterogeneity. COPD severity might affect the rehabilitation of lung function, so there was a significant heterogeneity, especially in comparing the FEV1 value, FEV1/FVC value, and FEV1% value. Thus, more rigorous RCTs should be conducted to evaluate the parameters that have significant heterogeneity in this meta-analysis.

This meta-analysis suggests that for the treatment and rehabilitation of COPD, TCM nursing combined with conventional nursing can be performed preferably. We attempted to search the literature as thoroughly as possible to minimize publication bias. Begg's test and Egger's linear regression test, as well as the funnel plots, showed that there was no publication bias, indicating that this meta-analysis approximated the actual results. However, there are some limitations as follows. First, the study of the application of Chinese and Western medicine nursing care in patients with COPD is limited to Chinese language texts; relevant English literature was not retrieved. Second, because some evaluation indicators that were included in the studies are not uniform, data extraction was limited and further subgroup analysis could not be performed. Third, the sample size

of the studies was relatively small; a large-scale multicenter RCT comparing TCM nursing integrated with conventional nursing with conventional nursing alone in patients with COPD is warranted.

5. Conclusions

TCM nursing combined with conventional nursing can achieve maximum optimization by integrating the advantages of TCM nursing with conventional nursing. This meta-analysis shows that for patients with COPD, TCM nursing combined with conventional nursing emphasized that dialectical nursing can be preferably performed. However, because there is significantly high heterogeneity among studies, further studies should be undertaken to confirm this evidence.

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Conflicts of interest

All contributing authors declare no conflicts of interest.

References

1. Vestbo J, Hurd SS, Agustí AG, et al. Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease: GOLD executive summary. *Am J Respir Crit Care Med.* 2013;187:347-365.
2. Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Med.* 2006;3:e442.
3. Barnes PJ. Against the Dutch hypothesis: asthma and chronic obstructive pulmonary disease are distinct diseases. *Am J Respir Crit Care Med.* 2006;174:240-243.
4. Jadad AR, Moore RA, Carroll D, et al. Assessing the quality of reports of randomized clinical trials: is blinding necessary? *Control Clin Trials.* 1996;17:1-12.
5. Dai JJ. Integrated traditional Chinese and western nursing management of chronic obstructive pulmonary disease in 20 patients. *Nurs Integr Trad Chin Western Med.* 2016;2:66-67. 70 (in Chinese).
6. Li MX. To investigate the effects of TCM nursing intervention on respiratory muscle strength, lung function and quality of life in patients with stable COPD. *World Latest Med Inf (Electronic Version).* 2015;15:120. (in Chinese).
7. He XM. Study on application of TCM nursing in pulmonary function and quality of life of patients with COPD stable phase. *J Sichuan Trad Chin Med.* 2014;32:169-171. (in Chinese).
8. Zheng XH, Liu J, Luo Y, Jing XR, Qiu F. The application of holistic nursing with traditional Chinese medicine in patients with stable chronic obstructive pulmonary disease. *Contemp Med Forum.* 2014;12:20-22. (in Chinese).
9. Peng J. Effects of syndrome differentiation on quality of life and pulmonary function in patients with chronic obstructive pulmonary disease. *Guid J Trad Chin Med Pharm.* 2009;15:71-72. (in Chinese).
10. Chen WY, Wan JF, Liu LL. Combining traditional Chinese and western medicine nursing on stability of chronic obstructive pulmonary disease. *Liaon J Trad Chin Med.* 2015;42:619-621. (in Chinese).
11. Li J. Study on TCM nursing on the improvement of pulmonary function of patients with COPD in stable stage. *Chin Med Mod Distance Educ China.* 2015;13:120-121. (in Chinese).
12. Zuo AW, Xiong GZ. Effects comparison of integrated traditional Chinese medicine nursing and routine nursing application to chronic obstructive

- pulmonary disease. *Chin Med Mod Distance Educ China*. 2015;13:121-122. (in Chinese).
13. Pei SM, Zheng XY, Bo SP, Yao JJ. Effect of integrated traditional and western medicine nursing intervention on stable chronic obstructive pulmonary disease. *Med Inf*. 2015;28:118-119. (in Chinese).
 14. Shi PF, Long B, Pan MZ, Li ZQ, Zhou Y, Peng YF. Clinical application and study of traditional Chinese medicine nursing care in patients with asthma (acute attack of chronic obstructive pulmonary disease). National Training Course on Hypertension Prevention and Knowledge Promotion and Healthy Blood Pressure. *Chin J Integr Trad Chin Western Med*. 2014. (in Chinese).
 15. Liu QH. Impact analysis of exerting traditional Chinese medicine nursing to the quality of life among patients with COPD. *J Sichuan Trad Chin Med*. 2014;32:161-163. (in Chinese).
 16. Wang HY, Wang L. Application of Chinese medicine nursing program in elderly patients with chronic obstructive pulmonary disease. *Clin J Chin Med*. 2015;7:24-25. (in Chinese).
 17. Huang XT. Effects of TCM nursing on pulmonary function and quality of life in stable stage COPD patients. *J Baotou Med College*. 2016;32:119-120. (in Chinese).
 18. Li SH, Li JQ, Li WQ, et al. Clinical observation of combine traditional Chinese and western medicine nursing in stable stage chronic obstructive pulmonary. *Shanxi J Trad Chin Med*. 2013;29:55-57. (in Chinese).
 19. Fu XF, Li L, Cao X. Clinical nursing pathway of Chinese and western medicine in nursing of patients with AECOPD. *J Emerg Trad Chin Med*. 2014;23:1769-1772. (in Chinese).
 20. Lei SQ. Effects of holistic nursing intervention on chronic obstructive pulmonary disease. *Chin Med Mod Distance Educ China*. 2014;12:122-123. (in Chinese).
 21. Liang GX, Zeng L. Nursing based on the differences of symptoms in acute exacerbation of chronic obstructive pulmonary disease. *Mod Hosp*. 2010;10:96-98. (in Chinese).
 22. Pan XY. Clinical nursing pathway in the treatment of patients with acute chronic obstructive pulmonary disease. *Today Nurse*. 2015;2:30-32. (in Chinese).
 23. Fan ZA. To study the comprehensive nursing intervention of patients with chronic obstructive pulmonary disease. *Nei Mongol J Trad Chin Med*. 2015;34:166. (in Chinese).
 24. Zhang FF, Lin S. Effect of integrated traditional Chinese and western medicine on acute exacerbation of chronic obstructive pulmonary disease. *Health Required*. 2013;12:409. (in Chinese).
 25. Nie F, Duan YY. Nursing of patients with acute exacerbation of chronic obstructive pulmonary disease with integrated traditional Chinese and western medicine. *J Emerg Trad Chin Med*. 2012;21:853-854. (in Chinese).
 26. Han SY. Effect of integrated traditional Chinese and western medicine on acute exacerbation of chronic obstructive pulmonary disease. *Cardio Dis J Integr Trad Chin Western Med (Electronic)*. 2015;3:175-176. (in Chinese).
 27. Shi XR. The application effect of integrated western and Chinese nursing in acute episode chronic occlusive pulmonary disease. *Today Nurse*. 2016;8: 21-22. (in Chinese).
 28. Tian DL, Cai G. *Chinese Internal Medicine*. Shanghai: Shanghai Scientific & Technical Publishers; 2013. (in Chinese).
 29. Zhang W. Effect of massage on chronic obstructive pulmonary disease. *Guide China Med*. 2015;13:195. (in Chinese).
 30. Suzuki M, Namura K, Ohno Y, et al. The effect of acupuncture in the treatment of chronic obstructive pulmonary disease. *J Altern Complement Med*. 2008;14:1097-1105.
 31. Spruit MA, Singh SJ, Garvey C, et al. An official American Thoracic Society/European Respiratory Society statement: key concepts and advances in pulmonary rehabilitation. *Am J Respir Crit Care Med*. 2013;188:e13-e64.

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