

Editorial

Chronic obstructive pulmonary disease in primary healthcare institutions in China: Challenges and solutions[☆]



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Chronic obstructive pulmonary disease (COPD) is a preventable and treatable condition characterized by persistent respiratory symptoms and airflow limitation. It usually results from airway and/or alveolar abnormalities caused by exposure to noxious particles or gases.¹ The burden of respiratory diseases, most commonly COPD, ranks third among all systemic diseases in China.² In the latest epidemiological survey, the prevalence rate of COPD in rural areas was significantly higher than that in urban areas (9.6% vs. 7.4%).³ Furthermore, most patients with COPD first visit primary healthcare institutions. However, the overall prevention and treatment standard for COPD at the primary level in China is not promising.^{4–6} This study aimed to introduce and present challenges in the prevention and treatment of COPD based on the relevant literature to improve the knowledge of and attention on healthcare-related treatment and prevention for COPD.

Current problems in the prevention and treatment of COPD at primary hospitals in China

Insufficient knowledge of the disease

The prevalence of COPD is high, and this condition is considered the most important chronic non-communicable disease in China. However, knowledge about this condition and the attention provided by the society and healthcare professionals as a whole are insufficient. The rates of missed diagnoses and misdiagnoses of COPD are relatively high in primary healthcare institutions and higher-level healthcare institutions. Chronic bronchitis and emphysema have similar symptoms, and they often coexist with COPD. Moreover, most patients with COPD present with the typical clinical features and pulmonary function characteristics of these two diseases.⁷ Therefore, COPD is often simply diagnosed as chronic bronchitis or emphysema. Based on a previous study, during the initial diagnosis at community hospitals, the rate of COPD misdiagnosis was 22.92%, and that of missed diagnosis was 22.09%.² Moreover, up to 70% of COPD patients were underdiagnosed.⁸ This result is correlated to the limited allocation of healthcare resources and the differences in the level of medical education.⁹ In a

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survey conducted in a suburb in Shanghai, only 19.4% of 593 general practitioners understood that COPD is classified into the acute exacerbation and stable phases, and only half believed that patients in the stable phase still required treatment. Moreover, 39.6% of practitioners were aware that oxygen therapy should be administered for >15 h/d as a standard home therapy, and only 8% of patients received prescriptions that are in accordance with the recommendations of the Global Initiative for Chronic Obstructive Lung Disease (GOLD).¹⁰ Another recent survey conducted in Northeast China included physicians from 77 tertiary hospitals. In this survey, the physicians were asked about the risk factors, symptoms, exacerbations, comorbidities, and diagnostic criteria of COPD, and only 22.5% recognized that biomass fuels may cause COPD. Moreover, 59.0% were knowledgeable of the importance of spirometry for the diagnosis of COPD, and only 23.7% considered that, in addition to the typical symptoms, limitation of activity was an important symptom. Lastly, <30% were aware of comorbidities other than recurrent lung infections, which include arrhythmia, hypertension, and sleep-disordered breathing.¹¹ Furthermore, a COPD questionnaire was administered in a community hospital in Guangdong to investigate the physicians' knowledge of COPD, and results showed that the passing rates for the definition of risk factors and non-pharmacological treatments were >60%, whereas those for typical clinical manifestations and pharmacological treatment were <40%.¹² In addition, primary care physicians in a certain region in Yunnan had insufficient understanding and low utilization rate of pulmonary function tests, and only 10.39% of physicians received relevant continuing education.² These data indicate that the current disease knowledge of primary care physicians about COPD in China is far from sufficient. The number of primary care physicians who were participating in continuing education over the past few years has been increasing. However, they are still in urgent need of systematic training on COPD-related knowledge.

Nonstandard therapies

Inhalers are the preferred form of long-term therapeutic drugs for COPD.^{1,13} However, at present, anti-asthmatic drugs provided by rural or urban community health centers are mainly in oral or intravenous dosage forms, and the most commonly used drugs are theophylline and expectorants. Very few rural patients receive long-term inhalation maintenance therapy.¹⁴ In addition, despite the significant association between

smoking and COPD,³ only 19.8% of physicians actively advise smokers to quit smoking during the course of diagnosis and treatment.¹⁵ Therefore, insufficient therapy and inadequate disease knowledge among health-care workers have affected the standard treatment of COPD at the primary level. In addition to nonstandard therapies caused by underdiagnosis, primary care physicians often only deal with acute exacerbations. Hence, the long-term management of COPD is considered insufficient. The challenges associated with nonstandard therapies have led to more severe and frequent acute exacerbations of COPD among patients in China.

Active promotion of the implementation of the primary guidelines for the management of COPD

COPD is preventable and controllable, and early identification and standard therapy can delay the disease process. In addition, community management can be used to improve the disease awareness rate of residents and enhance their knowledge on disease prevention, thereby reducing the incidence rate of COPD. Thus, the early diagnosis and treatment, education, and management of COPD at the primary level are particularly important.²

Increasing awareness of active screening

Active screening is an important aspect in standardized management.¹⁶ Active screening of COPD can help achieve the optimal timing for disease treatment and reduce disease burden.¹⁶ However, a previous survey showed that only 27.1% of community health service centers/township hospitals offered COPD screening.¹⁶ GOLD 2019 pointed out that the daily assessment of electronic health records and the administration of screening questionnaires about COPD at the primary level can facilitate the identification and diagnosis of COPD.¹ Considering that a high number of COPD patients in China are at the primary level, the abovementioned method may improve the diagnosis rate of COPD in primary healthcare facilities; thus, it is worth investigating.

Spirometry is the gold standard for the diagnosis of COPD, and it provides a basis for the classification of disease severity, evaluation of disease progression and prognosis, and establishment of treatment guidelines.¹ Nevertheless, the use of this technique has yet to be promoted among primary healthcare institutions. According to a survey conducted on the current status of diagnosis and treatment for COPD at the primary level in the rural areas of 10 provinces, municipalities, and

autonomous regions in China, spirometry was not included in the first five items administered to both outpatients and inpatients with COPD.¹⁷ Moreover, an early large-scale epidemiological survey in China found that among all patients diagnosed with COPD, the rate of previous diagnosis was <35.1%, and less than 1/3 of diagnoses were confirmed via spirometry.¹⁸

Portable spirometers are easy-to-use and affordable, and they do not differ significantly from traditional spirometers in terms of accuracy. Short-term training can improve the diagnosis rates of primary care physicians and help identify patients at risk.¹⁹ To promote the use of spirometry at the primary level, the 2017 Medium-to-Long-Term Plan for the Prevention and Treatment of Chronic Disease in China (2017–2025) (No. 12 [2017] of the General Office of the State Council) proposed that community health service centers and township hospitals should gradually perform simple spirometry tests and provide other related services, and spirometry tests must be included in the routine physical assessment of individuals aged over 40 years.¹⁶ The implementation plan will fundamentally change the passive nature of the diagnosis and treatment of COPD in China and can move us toward the path of active discovery and prevention in standardized chronic disease management.

Standardization of treatment protocol

The first-line drugs for the long-term treatment of COPD include inhaled long-acting bronchodilators, such as long-acting β_2 agonists (LABAs) and long-acting muscarinic antagonists (LAMAs), which can be combined with inhaled glucocorticoids (ICSs).¹³

The guidelines for the primary care of COPD (2018) recommend combination therapy, including LAMA/LABA or ICS/LABA, to patients with severe airflow obstruction (forced expiratory volume [FEV₁] <50% of the predicted value), multiple symptoms, or frequent acute exacerbations. For patients diagnosed with COPD and concomitant asthma, the recommended initial treatment is ICS/LABA. Patients who do not present with significant symptom relief after treatment or who experience frequent acute exacerbations can receive ICS/LABA/LAMA triple therapy. Patients should be provided with graded treatment and management based on the severity of acute exacerbations and underlying disease. Moreover, these guidelines emphasize the significance of smoking cessation and recommend N-acetylcysteine as an adjunct in treating stable COPD.¹³ In the latest National Health Insurance drug list, LAMA, LABA, and ICS/LABA have been included as

first-line drugs,²⁰ which can essentially address the problems faced by primary healthcare institutions in terms of the accessibility of long-term therapeutic drugs for COPD. Most healthcare workers, particularly primary healthcare workers, face the need to use a standardized treatment for COPD, which is considered important.

Strengthening of follow-up management

Reducing acute exacerbations is the long-term goal of COPD treatment, and the future risk of acute exacerbations can be predicted based on symptoms, pulmonary function, and history of acute exacerbations in the previous years. Therefore, once patients are diagnosed with COPD, they should be included in the graded management of COPD and undergo regular follow-ups and assessments. Patients with severe COPD (FEV₁ <50% of predicted value) should be examined once every 6 months, and patients with mild/moderate COPD (FEV₁ \geq 50% of predicted value) must undergo assessment once a year.¹³

At present, knowledge about diagnosis and the evaluation of acute exacerbations in COPD are still considered insufficient. According to the guidelines for the primary care of COPD (2018), symptoms that go beyond daily variability and worsen persistently are considered acute exacerbations. The guidelines state that the use of the Dyspnoea, Obstruction, Smoking, Exacerbation (DOSE) index as the evaluation criteria is more feasible for primary healthcare institutions. A DOSE score \geq 4 indicates a higher risk of admission and a higher mortality rate. To provide individualized treatment, primary care physicians can determine high-risk groups by identifying these characteristics.¹³ In addition, physicians can provide verbal descriptions of acute exacerbations during consultations, and this can help increase patients' attention and the understanding of acute exacerbations in COPD and determine their history of acute exacerbations, thereby facilitating the early identification and management of COPD. The guidelines also pointed out that >80% of patients experiencing acute exacerbations can receive drug therapy as outpatients.¹³ Therefore, familiarity with the severity classification, admission criteria, and outpatient treatment and management procedures for acute exacerbations in COPD is extremely important in rationalizing the use of healthcare resources and in improving the treatment and prognosis of acute exacerbations in COPD.

Pulmonary rehabilitation is one of the most effective therapeutic strategies that can improve dyspnea, health

status, and exercise endurance in patients with COPD, and this strategy includes exercise training, education and self-management, proper diet, and mental health.¹³ Pulmonary rehabilitation requires professional guidance, and it is an important part of long-term management in COPD.

Establishment of a complete referral system

Graded diagnosis and treatment are currently the most effective methods for the prevention and control of COPD. Through the establishment of a regional specialist medical consortium, which is a key measure in healthcare reform, we can better achieve the two-way referral between tertiary and primary healthcare institutions and implement the rational utilization of resources. Hence, a three-tier network for COPD must be established.

Conclusion and prospects

The capabilities of primary healthcare institutions and primary care physicians in preventing and controlling respiratory diseases directly affect the overall prevention and control of respiratory diseases in China. In the past, the prevention and control of COPD at the primary level did not receive significant attention, and primary healthcare resources did not play an important role, which resulted in the lack of diagnosis, treatment, and standardized management of COPD. In the Outline of the Healthy China 2030 Plan, which was recently issued by the State Council, the prevention and control of chronic respiratory diseases are crucial components of the national health strategy. The prevention and control of COPD, including the increased use of spirometry, are the key components of the action plan. We believe that with the initiation and implementation of the action plan, the prevention and control of COPD at the primary level will significantly improve.

Conflict of interest

None.

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