Am J Transl Res 2021;13(9):10593-10598
www.ajtr.org /ISSN:1943-8141/AJTR0132011

*Original Article*

# Analysis of the application and efficacy of "Trinity" rehabilitation nursing in management of bronchial asthma

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Received February 18, 2021; Accepted April 30, 2021; Epub September 15, 2021; Published September 30, 2021

**Abstract:** Objective: To investigate the application and clinical efficacy of "Trinity" nursing mode in bronchial asthma health management. Methods: A total of 100 patients with bronchial asthma admitted to our hospital from June 2017 to June 2020 were divided into a reference group and a research group according to the order of admission (50 cases in each group). The reference group received conventional nursing, while the research group received "Trinity" nursing. The control of asthma, health literacy, hospitalization, treatment compliance and disease recurrence rate were compared between the two groups. Results: The asthma control test (ACT) score of the research group was higher than that of the reference group; the health literacy score of the research group was higher than that of the reference group; the hospitalization time and treatment cost of the research group were less compared to the reference group. After 1 month of treatment, there was no significant difference between the two groups, and the compliance of the research group was significantly higher than that of the latter after 3 months and 6 months of treatment. The disease recurrence of the research group was significantly lower compared to the reference group 1 month, 3 months, and 6 months after treatment, respectively ($P<0.05$). Conclusion: "Trinity" nursing mode has a positive clinical effect in the health management of bronchial asthma, which can promote respiratory function and health literacy of patients, help patients save hospitalization expenses, improve treatment compliance and control the recurrence of asthma diseases. Therefore, it is worthy of promotion.

**Keywords:** "Trinity" rehabilitation nursing, health management, bronchial asthma, application method, effect analysis

## Introduction

Bronchial asthma is a common chronic inflammation, involving a variety of cells and cellular components such as mast cells and lymphocytes [1]. As a prevalent chronic respiratory disease, bronchial asthma can cause anhelation, cough and other symptoms. If not timely treated, it will further induce airway remodeling and irreversible airway constriction [2]. The frequently used method is long-term anti-inflammatory therapy, and intensive therapy such as high-dose hormone will be adopted for severe patients [3]. However, the control effect of conventional treatment and nursing mode on asthma disease is not ideal or conducive to the rapid recovery of patients. Therefore, the "Trinity" nursing mode should be adopted. We conducted this study in order to further explore the effect of the "Trinity" model on the health management of asthma patients.

## Material and methods

### *General materials*

In this study, 100 patients with bronchial asthma admitted to the department of Respiratory Medicine of our hospital from June 2017 to June 2020 were assigned into a reference group and a research group according to their admission order, with 50 patients in each group. Approval was obtained from the ethics committee of our hospital.

### *Inclusion/exclusion criteria*

Inclusion criteria: patients who conformed to the definition of asthma as specified in the

*Guidelines for The Primary Treatment of Bronchial Asthma* issued by *Chinese Thoracic Society (CTS)* in 2018 [4]; Cough, dyspnea, wheezing, chest distress, respiratory difficulties and other symptoms that usually occurred at night and in the morning; The patient's chief complaint ability and expression ability were normal; All of them signed informed consent voluntarily.

Exclusion criteria: Patients with a history of mental illness, chronic obstructive pulmonary disease, occupational asthma, or critically ill with asthma.

*Methods*

Patients in the reference group were given routine nursing service, including health education and medication guidance. After discharge, they were followed up by means of WeChat or telephone to find out the problems in nursing and to propose solutions in time [5].

Patients in the research group followed a “Trinity” nursing service model, which mainly includes the following contents. First, a special respiratory disease clinic was set up, respiratory specialists were selected, outpatient time was fixed, and diagnosis and treatment scheme was developed for asthma patients [6]. Patients were helped to establish a correct concept of asthma prevention and treatment, and guide patients in self-management and monitoring. Patients were also guided in the rational use of drugs and in making long-term drug use plans. Emergency treatment plans were formulated during the onset period and the long-term follow-up and evaluation system was improved. Second, an asthma education center was established for the education and management of asthma with a reference to the *Global Initiative on Asthma Prevention and Control 2019 (GINA2019)* [7]. It mainly included the effective monitoring of asthma symptoms and future risks, pulmonary function monitoring (PEF), and the establishment of management archives for asthma patients [11]. The pathogenesis and inducing factors of asthma were explained to patients to help them form a scientific concept of prevention and treatment [8]. Measurement skills of peak current meter were mastered for asthma diaries [9]. Third, an *Asthma Patients' Association* was established with the participation of asthma patients, their families and medical staff [10]. The association regularly carried out activities such as asthma knowledge contest, asthma prevention and treatment knowledge lecture, patient experience exchange meeting, quality of life exhibition, etc. for no less than 4 times a year, each lasting for no less than 2 hours [11].

*Observation index*

Through the investigation of the ACT, patients' asthma control, emergency medication, obstructed activities, dyspnea, and nocturnal wakening were scored. The full score was 5; the higher the score, the better the asthma control.

The health literacy of the two groups was compared and evaluated through the self-made health knowledge questionnaire, which included health knowledge (full score: 18 points), health behavior (full score: 14 points) and health skills (5 points). The higher the score, the higher the patient's health literacy.

The length and expense of hospitalization were compared between the two groups. Treatment compliance at 1 month, 3 months and 6 months after treatment was compared between the two groups, including complete compliance, partial compliance and non-compliance. The compliance rate = (number of complete compliance + number of partial compliance)/total number of cases × 100%. The recurrence rates of asthma at 1 month, 3 months and 6 months after discharge were compared between the two groups.

*Statistical methods*

The data obtained in this study were statistically processed by SPSS22.0 software, and the graphs were plotted by GraphPad prism 8.0. The measurement data were represented as ($\bar{x}\pm s$), and the differences between the groups were examined by T-test. The enumeration data were represented as [n (%)], and the differences between the groups were detected by $\chi^2$ test. $P<0.05$ was considered statistically significant.

## Results

*Comparison of the general data*

In the reference group, there were 27 males and 23 females, aged between 23-69 years

**Table 1.** Disease type and grade

| Group | Disease type | | | Disease grade | | |
|---|---|---|---|---|---|---|
| | Endogenous | Exogenous | Mixed | Mild | Medium | Severe |
| Research group (n=50) | 16 | 25 | 9 | 21 | 15 | 14 |
| Reference group (n=50) | 18 | 25 | 7 | 20 | 17 | 13 |

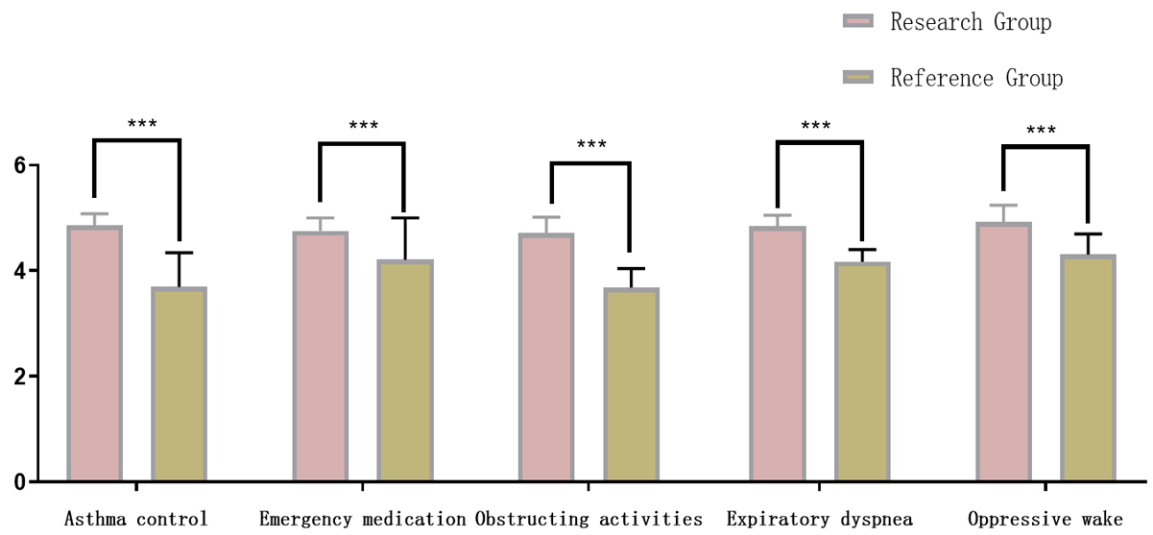


**Figure 1.** ACT scores. Note: The horizontal axis represents each dimension of the ACT score, and the vertical axis represents the number of cases. ***indicated P<0.001.

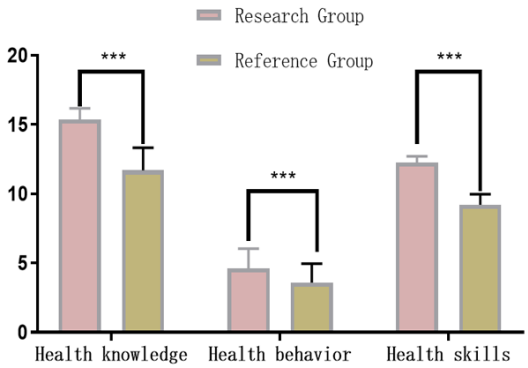


**Figure 2.** Health literacy score. Note: The horizontal axis represents the health literacy evaluation index, and the vertical axis represents the scoring data. ***indicated P<0.001.

with an average age of 39.78±6.22 years old and an average course of disease of 12.25±2.13 years old. In the research group, there were 29 males and 21 females, with an age range of 23-67 years old and an average age of 37.65±5.84 years old. And the course of disease ranged from 1-29 years and the average course was 11.34±3.05 years. No significant difference was found in the gender, age, course of disease, course, and stage of disease between the two groups (P>0.05, **Table 1**).

*Comparison of ACT scores*

Combined with the ACT score, it can be seen that the asthma control of the research group was significantly better than that of the reference group (P<0.05), as shown in **Figure 1**.

*Comparison of health literacy score*

The health knowledge score, health behavior score and health skill score of the research group were generally higher than those of the control group, and the overall health literacy of the research group was better than that of the latter (P<0.05). See **Figure 2**.

*Comparison of hospitalization stay*

The length of hospital stay in the research group was (7.64±3.13) days, and the length of hospital stay in the reference group was (8.79±3.52) days; the treatment cost in the

**Table 2.** Comparison of hospitalization in the two groups ($\bar{x}\pm s$)

| Group | Hospitalization length (d) | Treatment expense (yuan) |
|---|---|---|
| Research group (n=50) | 7.64±3.13 | 3102.62±478.76 |
| Reference group (n=50) | 8.79±3.52 | 3514.38±575.75 |
| T | 3.228 | 3.888 |
| P | 0.002 | <0.001 |

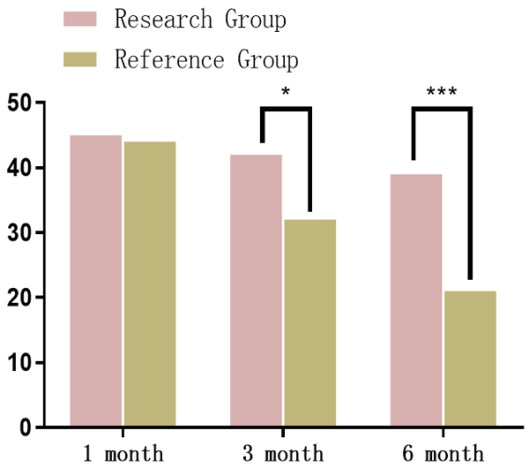


**Figure 3.** Treatment compliance. Note: *indicated P<0.05; ***indicated P<0.001.

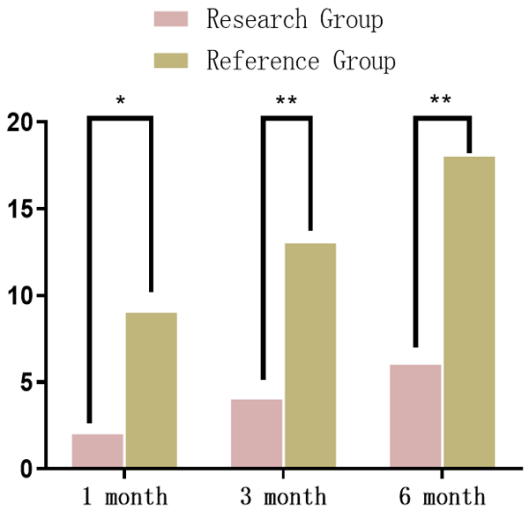


**Figure 4.** Relapse rate of asthma. Note: *indicated P<0.05; **indicated P<0.01.

research group was (3102.62±478.76) yuan, and that of the reference group was (3514.38±575.75) yuan (all P<0.05). See **Table 2**.

*Comparison of treatment compliance*

One month after treatment, the compliance rate of the research group was 90.00%, and that of the reference group was 88.00%, with no significant difference (P>0.05); 3 months after treatment, the compliance rates of the research group and the reference group were 84.00% and 64.00% respectively. At 6 months after treatment, the compliance rate was 78.00% in the research group and 42.00% in the control group (P<0.05). See **Figure 3**.

*Comparison of asthma recurrence rate*

Within 1 month after discharge, there were 2 cases of recurrence in the research group and 9 cases in the reference group; after 3 months, there were 4 cases in the research group and 13 cases in the latter group; after 6 months, there were 6 cases in the research group, and 18 cases in the latter (P<0.05), as shown in **Figure 4**.

## Discussion

As a chronic airway disease, bronchial asthma is clinically characterized by chronic inflammation in the airway, and its etiology is mostly related to genetic factors, exercise factors, respiratory infection, trace element deficiency, etc. [12]. Before the attack, asthma patients often have such aura symptoms as itchy eyes, sneezing and nasal congestion. In addition to chest tightness, dyspnea and wheezing, asthma patients also experience cyanosis, fever, pharyngeal itching, night sweats, fatigue and other symptoms, which seriously affect the quality of life of patients [13]. Clinically, there is no fundamental treatment plan for asthma, and traditional treatment and nursing intervention can no longer meet the needs of long-term disease control of bronchial asthma, so the “Trinity” nursing model should be implemented for patients [14]. After patients returning from hospital to family and society, health education and continuous care are carried out throughout the whole process of asthma prevention and treatment through the “Trinity” rehabilitation nursing model, education center and patients’ association [15].

This study found that asthma control situation, health literacy, hospitalization of patients treated with the “Trinity” nursing mode were generally better than the control group under conventional nursing care in terms of treatment compliance and disease recurrence. At 1 month after treatment, the compliance rate of the research group was 90% and that of the control group was 88%; 3 months after treatment, the compliance rate of the research group was 84% and that of the control group was 64%; 6 months after treatment, the compliance rates were 78% and 42%, respectively. Along with the treatment process, the research group showed more and more remarkable clinical advantages. The results of this study were consistent with those of HU et al. [16] who found that the score of the questionnaire on asthma prevention and treatment in the observation group was (86.3±37.8) points and the AQLQ comprehensive score was (5.8±1.7) points, and both were significantly higher than those in the control group ($P<0.05$); The medication compliance rate of the observation group was 86.67%, significantly higher than that of the control group ($P<0.05$). To achieve the purpose of communicating, cooperating and coordinating with patients, doctors have to change the original medical service model from waiting for patients to seek medical treatment to actively provide patients with knowledge and methods of preventing and curing diseases. For chronic diseases such as asthma, a long-term and sustainable care model should be adopted. Only through continuous communication can a good partnership between doctors and patients be established, and patient compliance can be truly improved to boost the effectiveness of prevention and treatment [17].

This study confirmed that through persistent implementation of “Trinity” asthma education and management for patients, continuous education of asthma elementary classes and intensive classes, patients have a deep understanding of the essence of asthma that requires long-term and standardized treatment [18]. Moreover, patients acknowledge that the favorable way to control asthma is inhalation therapy. Inhalation administration directly acts on the airway, with rapid onset and small side effects. It is necessary to inform patients that asthma cannot be cured at present, but under the guidance of doctors, but long-term clinical control can be achieved by strictly following the GINA guidelines and Asthma Prevention and Control Guidelines in China [19, 20]. Through the “Trinity” asthma education and management model, the awareness of asthma patients has been improved, thereby significantly improving the compliance and clinical efficacy. Although this study provides a new basis for the care of bronchial asthma, it still has the following shortcomings. This study is a single-center study with a small sample size and a short follow-up. Therefore, a larger sample, long-term follow-up and multi-center study is needed to verify the effect of the “trinity” model.

To summarize, “Trinity” nursing model in the treatment of bronchial asthma is conducive to improving patients’ respiratory function, health literacy and treatment compliance, and has a positive effect on the treatment cost and disease recurrence.

## Disclosure of conflict of interest

None.

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