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

Effect of Airway Nursing Intervention Based on the Concept of Humanistic Care on Lung Function in Children with Asthmatic Bronchitis

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Abstract: *Objecti ve:* To evaluate the effect of airway nursing intervention on improving lung function in children with asthmatic bronchitis under the concept of humanistic care. *Methods:* A total of 60 children with asthmatic bronchitis who were treated in our hospital from March 2024 to March 2026 were selected. According to the differences in nursing plans, the children were divided into an experimental group (n = 30) and a control group (n = 30). Patients in the control group received routine airway care, while patients in the experimental group received a humanistic care intervention based on routine airway care. After 14 days, lung function, symptom disappearance time, efficacy, and parent satisfaction were compared between the two groups. *Results:* Before nursing, there was no statistically significant difference in FEV_1, FVC and PEF indicators between the two groups of patients ($P > 0.05$); after different nursing models were applied to the two groups of patients, the FEV_1, FVC and PEF indicators of the patients in the experimental group were significantly improved compared to the patients in the control group ($P < 0.05$). The clinical symptom disappearance time of patients in the experimental group was shorter than that of the control group, and the total hospitalization time was also shorter ($P < 0.05$). The total treatment effectiveness and parent satisfaction of patients in the experimental group were higher than those of the control group, and the incidence of complications was lower ($P < 0.05$). *Conclusion:* Using the concept of humanistic care on the basis of routine airway care can effectively improve the pulmonary function of children with asthmatic bronchitis, shorten the time when clinical symptoms disappear, improve the treatment effect, and also promote the establishment of a friendly nurse-patient relationship and reduce complications, which is worthy of promotion and application in clinical practice.

Keywords: Humanistic care; Airway nursing; Asthmatic bronchitis; Children; Pulmonary function

Online publication: August 26, 2026

1. Introduction

Asthmatic bronchitis is a very common respiratory disease among infants and young children. The airway

lumen of infants and young children is narrower than that of adults. The airway cartilage has insufficient support and is not yet fully developed, causing softening problems. After an inflammatory reaction occurs in the respiratory tract, inflammatory stimulation can easily cause the airway mucosa to become soft. Congestion and edema occur. At the same time, hypersecretion of the glands will produce a large amount of abnormal secretions. In addition, inflammatory stimulation induces airway smooth muscle spasm, which ultimately leads to further narrowing and obstruction of the airway in children. The main clinical manifestations are obvious wheezing attacks, irritating coughs, and expiratory dyspnea [1]. During a wheezing attack, the ventilatory function of children is impaired, and insufficient oxygen inhalation can easily induce hypoxemia. If timely and effective intervention and control are not provided after the attack, the condition of some children may further progress and eventually develop into chronic asthma, which will have adverse effects on the long-term respiratory system function and growth and development of the children. The current clinical treatment for this disease mainly focuses on anti-infection and anti-inflammation, bronchodilation, and dilution of sputum to promote sputum excretion. However, young children are young and have poor tolerance for invasive nursing operations and the discomfort caused by the disease itself. The degree of cooperation with treatment and nursing is low. The child's nursing compliance often limits the actual effect of relying solely on drug treatment and is difficult to meet expectations [2]. Although conventional airway care can help children maintain airway patency and improve ventilation status through operations such as sputum suction and airway humidification, the care process mostly focuses on the improvement of physiological symptoms, and there is obviously insufficient attention to the emotional needs and emotional comfort of children during the illness, as well as the cultivation of parents' disease care skills. Humanistic care nursing is a new nursing model formed under the development of modern nursing science. It advocates the core idea of "child- and family-centered" nursing and advocates the comprehensive integration of psychological and emotional support, disease and care health education, treatment environment optimization, etc. into the whole process of nursing work, making up for the shortcomings of traditional nursing that only focuses on physiological problems. In recent years, with the increasing social requirements for medical services, the concept of humanistic care nursing has been gradually promoted and applied in the field of pediatric clinical nursing, and has also provided a new direction for the improvement and optimization of nursing programs for asthmatic bronchitis [3]. This study took 60 children with asthmatic bronchitis as subjects to evaluate the improvement effect of airway nursing on lung function under the concept of humanistic care, and provide a basis for clinical nursing.

2. Materials and methods

2.1. General information

A total of 60 children with asthmatic bronchitis who were treated in our hospital from March 2024 to March 2026 were selected. According to the differences in nursing plans, the children were divided into an experimental group (n = 30) and a control group (n = 30). There were 16 male children and 14 female children in the experimental group; the age range was 6 months to 4 years old, with an average of (2.35 ± 0.82) years; the duration of the disease was between 3 and 8 days, with an average of (5.12 ± 1.85) days. In the control group, there were 17 male children and 13 female children; the age range was 6 months to 5 years, with an average of (2.62 ± 0.86) years; the duration of the disease was 3 to 8 days, with an average of (5.08 ± 1.82) days. There was no statistically significant

difference in the baseline data between the two groups ($P > 0.05$).

Inclusion criteria: (1) Meet the diagnostic criteria for asthmatic bronchitis in children; (2) Have typical symptoms of wheezing, coughing, and dyspnea; (3) Chest X-ray shows thickening of bronchial texture; (4) Parents of patients sign an informed consent form. Exclusion criteria: (1) Combined with congenital heart disease, severe pulmonary dysplasia or respiratory failure; (2) Combined with immunodeficiency disease or long-term use of glucocorticoids; (3) Allergy to aerosolized drugs; (4) Incomplete clinical data.

2.2. Method

The control group used conventional airway nursing intervention. The specific nursing content is as follows: first, maintain a suitable basic environment in the ward, keep the temperature and humidity in the ward within a reasonable range according to the diagnosis and treatment needs of children, and provide a stable and comfortable basic diagnosis and treatment environment for children; secondly, implement airway nursing operations and arrange responsible nurses every day. Carry out daily turning and patting care on the children's backs; the frequency is 2-3 times/d, and the duration of each operation is controlled at 10-15 minutes. Through correct body positioning and back-buckling vibration, the secretions in the children's airways are helped to loosen, promote their smooth discharge, and improve the children's ventilation status; in terms of medication and care, according to the medical team, the child was instructed to carry out aerosol inhalation treatment. The drug used was albuterol sulfate combined with budesonide suspension. The treatment frequency was 2 times/d to help relax the bronchus and reduce airway inflammation. At the same time, the corresponding anti-infective drugs were selected according to the etiological examination results of the child to control airway infection accurately. In daily care, parents are instructed to give the children a light and easy-to-digest diet, avoid irritating foods that aggravate airway discomfort, and urge the children to clean their mouths every day to reduce the risk of colonization of pathogenic bacteria in the mouth; the children's vital signs and changes in blood oxygen saturation are closely monitored throughout the entire care process [4].

The experimental group added humanistic care intervention measures on the basis of routine care:

(1) Create a childlike ward environment: post brightly colored cartoon patterns on the walls of the ward that are in line with the cognitive preferences of infants and young children; place clean and soft plush toys in the public activity area for children to play, and play children's songs with a soothing rhythm every day to help children become familiar with and adapt to the medical environment, and minimize children's fear of unfamiliar wards and medical staff.

(2) Carry out systematic parent health education and hold an offline special class for parents once a week. By printing a clear and intuitive graphic health manual and using a human airway simulation model for on-site demonstrations, parents will be guided step by step to master the standardized operation methods of home atomization treatment and the key points of correct sputum care operations.

(3) Implement personalized emotional soothing. Before carrying out various nursing operations, proactively close the distance with the children through gentle handshakes and gentle touches, and use small stickers and other small rewards to establish a trusting relationship with the children to ease the children's resistance. During the nursing operations, play the children's favorite cartoons to distract their attention and reduce the discomfort caused by the operation; when the children cry due to discomfort, soothe them with soothing and gentle music in a timely manner to help them calm down.

(4) Promote family care and parent-child interaction, encourage parents to stay with their children throughout the entire care process, and arrange 15-20 minutes of exclusive interaction time every day to assist parents and children in touch interaction, help stabilize the children's emotions, and also help adjust the children's breathing rhythm [5].

(5) When the child is discharged from the hospital, the nursing staff instructs the parents on the medication and precautions for the child.

Both groups took 14 days or discharge as the observation endpoint.

2.3. Observation indicators

(1) Compare the pulmonary function of the two groups of patients, and use a pulmonary function tester to measure the patients' FEV_1, FVC and PEF.

(2) Evaluate the disappearance time of clinical symptoms of the two groups of patients, including the disappearance time of wheezing, cough, and hospitalization time.

(3) Compare the clinical treatment effects, parent care satisfaction (evaluated using a self-made questionnaire) and the occurrence of complications between the two groups of patients.

2.4. Statistics

The collected data were analyzed using SPSS 28.0 statistical software, and t and $\chi 2$ tests were performed. The difference with $P < 0.05$ was statistically significant.

3. Results

3.1. Two groups of pulmonary function indicators

According to **Table 1**, it can be seen that before nursing, the FEV_1, FVC and PEF indicators of the two groups of patients had no significant statistical difference ($P > 0.05$); after nursing, the FEV_1, FVC and PEF indicators of the patients in the experimental group were better than those of the control group ($P < 0.05$).

Table 1. Comparison of lung function indicators between the two groups (mean ± SD)

Group	FEV_1(L)		FVC(L)		PEF(L/s)	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatment
Experimental group (n = 30)	0.98 ± 0.15	1.65 ± 0.21	1.52 ± 0.18	2.05 ± 0.22	2.85 ± 0.51	3.68 ± 0.58
Control group (n = 30)	0.95 ± 0.14	1.42 ± 0.18	1.48 ± 0.17	1.82 ± 0.20	2.80 ± 0.48	3.12 ± 0.55
t	0.8008	4.5547	0.8849	4.2370	0.3910	3.8374
P	> 0.05	< 0.001	> 0.05	< 0.001	> 0.05	< 0.001

3.2. Time for symptoms to disappear in both groups

According to **Table 2**, it can be seen that after nursing, the clinical symptom disappearance time of patients in the experimental group was shorter than that of the control group, and the total hospitalization time was also shortened ($P < 0.05$).

Table 2. Comparison of symptom disappearance time between two groups (d, mean ± SD)

Group	Wheezing disappearance time (d)	Cough Disappearance Time (d)	Length of stay (d)
Experimental group (n = 30)	3.82 ± 1.05	4.52 ± 1.28	6.22 ± 1.52
Control group (n = 30)	5.52 ± 1.42	6.22 ± 1.65	8.51 ± 1.98
t	5.2724	4.4588	5.0248
P	< 0.001	< 0.001	< 0.001

3.3. Efficacy, parent satisfaction and incidence of complications between the two groups

According to **Table 3**, it can be seen that after nursing, the clinical efficacy of children in the experimental group was better, parent satisfaction was higher, and the incidence of complications was lower ($P < 0.05$).

Table 3. Comparison of efficacy, parent satisfaction and complication rate (%) between the two groups

Group	Always efficient	Overall satisfaction rate	Complication rate
Experimental group (n = 30)	28 (93.33)	29 (96.67)	2 (6.67)
Control group (n = 30)	22 (73.33)	22 (73.33)	8 (26.67)
χ^2	4.3200	4.7059	4.3200
P	< 0.05	< 0.05	< 0.05

4. Discussions

The pathological core of asthmatic bronchitis is that inflammatory stimulation of the airways causes mucosal edema, smooth muscle spasm and secretion retention, ultimately forming reversible airway obstruction that can be alleviated by intervention. High-quality airway care can help children clear their airways, promote the smooth discharge of abnormal secretions, and reduce local inflammatory reactions in the airways. It is a key link in improving clinical symptoms and controlling the progression of the disease. Traditional airway care is mostly based on various basic technical operations, and the work focuses on the physiological needs of maintaining children's airway patency. There is obviously insufficient attention to the psychological and emotional needs of young children during the treatment process, as well as the skill training required for parents' home care [6]. Humanistic care nursing fully integrates the modern nursing concept of "child and family-centered" into every aspect of nursing work. While implementing basic nursing operations to ensure physical health, it also takes into account the adjustment of children's psychological state and the improvement of parents' caring abilities, which is more in line with the development direction of modern pediatric high-quality nursing [7].

The results of this study show that after treatment, the FEV_1, FVC, and PEF of the experimental group were higher than those of the control group, and the time to disappearance of wheezing and cough, and hospitalization time, were shorter than those in the control group. Atomization combined with turning over and patting on the back can dilute respiratory secretions and improve airway ventilation status; the ward environment reduces the stress level of children and relieves respiratory muscle fatigue; it is effective in soothing emotions and reducing the frequency of crying for parents and children. Research shows that parent education improves lung function. The total effective rate and parent satisfaction of the experimental group were significantly higher than those of the control group, and the incidence of complications was lower than that of the control group. Humanistic care intervention improves medical experience, health

education and family guidance, can improve children's clinical symptoms, improve treatment compliance, and enhance parents' disease care capabilities. Studies have shown that family participatory care applied in the management of children with asthmatic bronchitis can help improve children's lung function, treatment compliance and family satisfaction [8]. Family care encourages active participation and cooperation to improve satisfaction; atomization care maintains airway humidification, prevents sputum retention, and reduces the risk of pulmonary infection; emotional comfort reduces stress, and potential risks are discovered and dealt with in a timely manner, optimizing the overall treatment effect.

5. Conclusion

In summary, airway nursing intervention based on the concept of humanistic care has ideal effects in children with asthmatic bronchitis. It can effectively improve the treatment effect in children, accelerate the disappearance of symptoms, shorten the hospitalization period, reduce the incidence of complications, and promote prognosis. It is worthy of clinical use and promotion.

Disclosure statement

The author declares no conflict of interest.

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