

Effects of Childlike Nursing Combined with Chinese Herbal Patching on Pediatric Bronchopneumonia and Symptom Recovery Time

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Abstract: *Objective:* To evaluate the intervention effect of childlike nursing combined with Chinese herbal patching on pediatric bronchopneumonia. *Methods:* 1036 children with bronchopneumonia (one family member included for each child) who were admitted to the hospital between January 2024 and June 2024 were selected and randomly divided into two groups using a random number table. The combined group received childlike nursing combined with Chinese herbal patching, while the control group received routine nursing. Symptom recovery time, treatment compliance, inflammatory factor levels, quality of life of the children, and family satisfaction were compared between the two groups. *Results:* The symptom recovery time in the combined group was shorter than that in the control group, treatment compliance was higher, inflammatory factor levels after intervention were lower, quality of life scores of the children were lower, and family satisfaction was higher ($P < 0.05$). *Conclusion:* The implementation of childlike nursing combined with Chinese herbal patching for children with bronchopneumonia can shorten their symptom recovery time, significantly improve treatment compliance and quality of life, reduce inflammatory reactions, and achieve high satisfaction among family members.

Keywords: Childlike nursing; Chinese herbal patching; Pediatric bronchopneumonia; Symptom recovery time

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1. Introduction

Bronchopneumonia is a common disease among children, caused by factors such as incomplete respiratory system development and low immunity in children. The incubation period is approximately 2–3 weeks, with symptoms including pharyngitis, loss of appetite, or bronchitis. If the condition progresses, it can lead to fever or cough, requiring early treatment^[1]. Nebulization is a basic therapy that allows children to inhale small particle droplets, enabling drug components to effectively target the bronchi and improve pneumonia symptoms. However, due to their young age, children may have limited cooperation with the treatment plan and may exhibit resistant behavior, thereby reducing the efficacy. Therefore, nursing intervention is necessary for these children. Routine nursing

provides orderly care based on the child's disease state and psychological changes, but its measures are relatively one-sided, making it difficult to achieve ideal nursing results. Childlike nursing is a nursing mode specifically designed for children. It is highly interactive and fun, helping to eliminate negative emotions and improve treatment compliance among children^[2]. Chinese herbal patching is a characteristic nursing method of traditional Chinese medicine. It can regulate Qi and blood circulation, improve organ function, and adjust Yin and Yang balance based on meridian and acupoint theories, thereby promoting symptom recovery. Therefore, this study selected 1036 children with bronchopneumonia and their family members to evaluate the advantages of combined childlike nursing and Chinese herbal patching.

2. Materials and methods

2.1. General information

A total of 1036 children with bronchopneumonia and their family members who are admitted to the hospital between January 2024 and June 2024 are selected. They are evenly divided using a random number table. The combined group consisted of 518 children, including 316 males and 202 females, aged between 2 and 13 years with a mean age of (7.53 ± 1.59) years. The course of disease ranged from 3 to 12 days with a mean of (7.16 ± 1.53) days. Among the 518 family members, there are 176 males and 342 females, aged between 26 and 53 years with a mean age of (34.68 ± 4.17) years.

The reference group consisted of 518 children, including 320 males and 198 females, aged between 2 and 14 years with a mean age of (7.65 ± 1.52) years. The course of disease ranged from 2 to 13 days with a mean of (7.31 ± 1.60) days. Among the 518 family members, there are 182 males and 336 females, aged between 25 and 51 years with a mean age of (34.71 ± 4.22) years. There were no significant differences between the two groups ($P > 0.05$).

2.1.2. Inclusion criteria

- (1) Diagnosis of bronchopneumonia based on imaging techniques and clinical signs.
- (2) Children with normal communication abilities.
- (3) Complete admission information; meeting the indications for traditional Chinese medicine plaster application.
- (4) Informed consent for the study.

2.1.3. Exclusion criteria

- (1) Bronchial hypoplasia.
- (2) Abnormal heart, liver, and kidney function.
- (3) Presence of foreign bodies in the airway.
- (4) Abnormal coagulation function.
- (5) Withdrawal from the study.

2.2. Methods

2.2.1. Reference group

The reference group received routine nursing care, which included maintaining a comfortable treatment

environment by opening windows for ventilation daily, placing green plants appropriately, posting promotional posters, etc., to create a relaxed atmosphere. Daily disinfection of indoor items, wet mopping of floors, and prevention of cross-infection are also performed. Children are guided to have a high-vitamin and high-protein diet with a balanced dietary structure to enhance their physical fitness.

2.2.2. Combined group

The combined group received childlike nursing care combined with traditional Chinese medicine plaster application:

(1) Childlike nursing care:

- (a) Auditory childlikeness: Nurses are required to walk lightly when entering and exiting the ward, open and close doors gently, and handle nursing supplies with care to reduce noise. They communicated with children using appropriate tones and friendly attitudes, avoiding loud noises to eliminate their fear. Soft music, slow-paced nursery rhymes, or cartoons are played indoors, keeping the volume below 65dB to create a warm atmosphere.
 - (b) Visual childlikeness: The walls of the ward are painted sky blue or beige, and the nurses' uniforms are changed to light pink. Children's paintings are also posted. Toys such as building blocks and dolls are placed in the ward for children to play freely. Knowledge of nebulization treatment is explained using children's drawings and picture books, allowing children to fully grasp the cooperation methods for treatment. Warm light sources are used on the walls and ceiling to reduce adverse environmental stimuli for children.
 - (c) Interactive nursing care: Communication with family members is established to evaluate children's preferences, understand their daily routines, and actively interact with them using cartoons, songs, or discussions about cartoon characters or toys to build closer relationships. Recognizing and encouraging language is utilized to enhance children's trust.
- (2) Traditional Chinese medicine plaster application: The formula for relieving cough and asthma consisted of processed *Ephedra* (6g), coltsfoot (10g), perilla seed (12g), almond (10g), licorice root (3g), *Scutellaria* root (6g), white mulberry root-bark (10g), and prepared *Pinellia tuber* (10g). These herbs are ground into powder, mixed with Vaseline and ginger juice to form a paste, and shaped into small cakes with a diameter of about 0.5cm. The plaster is applied to the child's Tanzhong, Feishu, Dingchuan, and Tiantu acupoints for 2 to 4 hours each. The application is performed once daily for 1 week.

2.3. Observation indicators

- (1) Symptom recovery time: Observe the recovery time of symptoms such as cough, fever, asthma, and lung rales.
- (2) Treatment compliance: Complete compliance refers to the child actively cooperating with the treatment process without crying or irritability; basic compliance refers to the child basically cooperating with the treatment process, occasionally crying or showing irritability; non-compliance refers to the child refusing to cooperate with the treatment process, with obvious crying or irritability.
- (3) Inflammatory factor levels: Before intervention and 1 week after intervention, collect 3ml of fasting venous blood, and use enzyme-linked immunosorbent assay (ELISA) to evaluate the levels of tumor necrosis factor- α (TNF- α) and interleukin-8 (IL-8) after centrifugation.

- (4) Quality of life of children: Select a respiratory questionnaire that includes disease impact, activity limitations, and disease symptoms, each with a maximum score of 100. The quality of life is scored negatively.
- (5) Family satisfaction: Use a self-made family satisfaction survey scale that includes nursing attitude, nursing interaction, individual guidance, etc., with a total score of 100. Scores above 75 indicate great satisfaction, scores between 40 and 75 indicate basic satisfaction, and scores below 40 indicate dissatisfaction.

2.4. Statistical analysis

Data processing software is SPSS 28.0. Measurement data is expressed as $[\bar{x} \pm s]$, compared and tested using t-values. Count data is expressed as $[n/\%]$, compared and tested using chi-square values. Statistical significance is indicated by $P < 0.05$.

3. Results

3.1. Comparison of symptom recovery time between the two groups

The symptom recovery time in the combined group was shorter than that in the reference group ($P < 0.05$), as shown in Table 1.

Table 1. Comparison of symptom recovery time between the two groups $[\bar{x} \pm s, d]$

Group	Cases	Cough (Mean \pm SD)	Fever (Mean \pm SD)	Dyspnea (Mean \pm SD)	Lung rales (Mean \pm SD)
Combined group	518	5.61 \pm 0.58	3.22 \pm 0.41	6.38 \pm 1.53	4.30 \pm 0.77
Reference group	518	6.49 \pm 0.75	4.89 \pm 0.47	8.97 \pm 1.64	5.32 \pm 0.81
<i>t</i>	-	21.125	60.941	26.282	20.772
<i>P</i>	-	< 0.001	< 0.001	< 0.001	

3.2. Comparison of treatment compliance between the two groups

Treatment compliance in the combined group was higher than that in the reference group ($P < 0.05$), as shown in Table 2.

Table 2. Comparison of treatment compliance between the two groups $[n/\%]$

Group	Cases	Full compliance	Partial compliance	Non-compliance	Compliance [%] (n/N)
Combined group	518	269	244	5	99.03 (513/518)
Reference group	518	251	249	18	96.53 (500/518)
χ^2	-	-	-	-	7.515
<i>P</i>	-	-	-	-	0.006

3.3. Comparison of inflammatory factor levels between the two groups

Before intervention, there was no difference in inflammatory factor levels between the two groups ($P > 0.05$). After 1 week of intervention, the inflammatory factor levels in the combined group were lower than those in the reference group ($P < 0.05$), as shown in Table 3.

Table 3. Comparison of inflammatory factor levels between the two groups [$\bar{x} \pm s$, ng/ml]

Group	Cases	TNF- α (pg/mL)		IL-8 (pg/mL)	
		Pre- intervention	Post- intervention	Pre- intervention	Post-Intervention
Combined group	518	17.35 \pm 2.65	8.15 \pm 1.42	29.83 \pm 3.78	12.35 \pm 2.05
Reference group	518	17.31 \pm 2.69	11.08 \pm 1.46	29.74 \pm 3.81	16.22 \pm 2.08
* t^* -value	-	0.241	32.743	0.382	30.160
P -value	-	0.810	< 0.001	0.703	< 0.001

3.4. Comparison of quality of life scores of children between the two groups

Before intervention, there was no difference in quality of life scores between the two groups ($P > 0.05$). After 1 week of intervention, the quality of life scores in the combined group were lower than those in the reference group ($P < 0.05$). The data can be observed in **Table 4** below.

Table 4. Comparison of quality of life scores of children between the two groups [$\bar{x} \pm s$, points]

Group	Cases	Disease impact		Activity limitation		Disease symptoms	
		Pre- intervention	Post- intervention	Pre- intervention	Post- intervention	Pre- intervention	Post- intervention
Combined group	518	49.65 \pm 4.51	29.32 \pm 4.54	70.51 \pm 4.82	43.55 \pm 3.19	55.29 \pm 4.98	25.41 \pm 2.78
Reference group	518	49.71 \pm 4.57	34.59 \pm 4.60	70.48 \pm 4.91	55.97 \pm 3.44	55.34 \pm 4.92	36.24 \pm 3.16
t	-	0.213	18.558	0.099	60.253	0.163	58.565
P	-	0.832	<0.001	0.921	< 0.001	0.871	< 0.001

3.5. Comparison of family satisfaction between the two groups

Family satisfaction in the combined group was higher than that in the reference group ($P < 0.05$).

Table 5. Comparison of family satisfaction between the two groups [n/%]

Group	Cases	Very Satisfied	Somewhat Satisfied	Dissatisfied	Satisfaction
Combined group	518	288	226	4	99.23 (514/518)
Reference group	518	280	223	15	97.10 (503/518)
χ^2 value	-	-	-	-	6.487
P -value	-	-	-	-	0.011

4. Discussion

Bronchopneumonia in children has a complex pathogenesis, such as lung tissue inflammation, pulmonary edema, or hemorrhage, which can narrow the bronchial diameter, lead to airway obstruction, and further reduce the child's cough reflex ability, manifesting as symptoms such as dyspnea or shortness of breath^[3]. The long duration of the disease can severely affect the basic life of the child. The continuous progression of the disease can aggravate the child's physical discomfort, increase their fear and irritability, and thus reduce treatment compliance^[4]. In addition,

children have poor self-control and difficulty accurately expressing their inner thoughts, and they may exhibit significant resistance to unfamiliar environments. Therefore, it is necessary to strengthen nursing intervention to comfort their emotions. Routine nursing mainly focuses on the child's symptoms and disease progression, ignoring their mental health and failing to emotionally resonate with them, resulting in average nursing effectiveness^[5].

Childlike nursing can effectively interact with children based on factors such as their natural instincts and nursing specificities, using childlike objects to stimulate their interest. Based on this premise, nursing plans are introduced to improve children's integration into the nursing environment^[6]. Herbal patching can apply herbal formulations to multiple acupoints, exerting effects such as clearing heat, relieving cough, and calming qi to alleviate the child's disease symptoms as soon as possible. The combination of the two incorporates the advantages of both Western and traditional Chinese medicine, enabling humanistic and comprehensive nursing in a relaxed atmosphere, thereby significantly improving nursing effectiveness^[7].

The results showed that the combined group had a shorter symptom recovery time, significantly increased treatment compliance, decreased levels of inflammatory factors after 1 week of intervention, and a decrease in quality of life scores. Comparisons of the above data between the groups yielded $P < 0.05$. The reason for this is that childlike nursing can arrange the ward according to the child's personality traits, creating a quiet and comfortable treatment environment. Playing music or posting promotional posters in the ward can distract children, reducing their excessive focus on treatment and nursing operations, thereby improving physical and mental comfort^[8]. Moreover, music or animated cartoons can stimulate children's excitement, bringing them closer to nursing staff and enhancing interaction frequency. Using language such as praise and recognition to show respect and encouragement to children, guiding them to express their thoughts, can alleviate their nervousness and other psychological issues, improving treatment compliance.

Herbal patching is a nursing method derived from the premises of traditional Chinese medicine pharmacology and meridian acupoint theory, enabling drugs to be absorbed through the skin and directly reach the lesion site^[9]. In the formula, Ephedra can relieve asthma and disperse lung Qi, Flos Farfarae, *Armeniacae semen amarum*, and Cortex Mori can relieve asthma and cough; *Fructus perillae* and Radix *Scutellariae* can dry dampness and clear heat; Radix *Glycyrrhizae* can harmonize various medicines; and Rhizoma *Pinelliae* can resolve phlegm and dry dampness. The combined use of these herbs can relieve cough, clear heat, and calm asthma. Among the selected acupoints, the Danzhong acupoint can smooth Qi, open orifices, and eliminate phlegm; the Feishu acupoint can disperse lung qi; the Dingchuan acupoint can relieve asthma and cough; and the Tiantu acupoint can regulate qi and widen the chest. Combined patching of these acupoints can nourish the lungs, resolve phlegm, calm asthma, and relieve cough^[10].

5. Conclusion

In summary, implementing childlike nursing and herbal patching nursing for children with bronchopneumonia can improve their physical and mental comfort and enhance their cooperation with the nursing process. Simultaneously, it can improve children's immunity, increase drug absorption rate, and promote symptom improvement as soon as possible.

Disclosure statement

The authors declare no conflict of interest.

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