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# Evaluation of the Effectiveness and Satisfaction of Nurses' Full Humanistic Care in the Treatment and Nursing of Pediatric Nebulization

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**Abstract:** *Objective:* To evaluate the value of humanistic nursing care during pediatric nebulization treatment. *Methods:* From January 2024 to June 2024, 250 pediatric patients receiving nebulization treatment were given routine care and included in the control group. From July 2024 to December 2024, 250 pediatric patients receiving nebulization treatment were given full humanistic care by nurses and included in the observation group. The differences in patient compliance, symptom resolution time, parental satisfaction, and emotional scores were compared. *Results:* The compliance of pediatric nebulization patients in the observation group was higher than that in the control group ($P < 0.05$). The disappearance time of inflammation, cough, expectoration, fever, and hospital stay in the observation group were shorter than those in the control group ($P < 0.05$). Parental satisfaction with pediatric nebulization in the observation group was higher than that in the control group ($P < 0.05$). The scores of anxiety (SAS) and depression (SDS) among parents of pediatric nebulization patients in the observation group were lower than those in the control group ($P < 0.05$). *Conclusion:* The application of nurses' full humanistic care in pediatric nebulization treatment can promote the resolution of respiratory system symptoms, optimize patients' lung function, improve patient cooperation, and is highly effective and feasible.

**Keywords:** Pediatric Nebulization; Humanistic Care; Nursing Effect

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## 1. Introduction

Due to the incomplete development of children's bodies, they are prone to secondary respiratory diseases after being infected with external pathogens. Nebulization is often used as a treatment method, which utilizes nebulization devices to convert medications into fine mist particles that enter the body through the mouth and nose. This method has multiple effects, such as anti-inflammation, spasmolysis, and expectoration, and has advantages such as precise targeting, rapid onset, and high safety. It has been widely used in the treatment of pediatric diseases [1]. However, children have low self-awareness and may not cooperate with nebulization

procedures, making it necessary to provide nursing services during treatment. Conventional nursing only follows medical instructions and does not prioritize humanistic care, resulting in poor patient cooperation. Nurses' full humanistic care is a modern nursing strategy that is systematic and scientific, meeting the psychological and physiological needs of patients [2]. This study explores the value of humanistic care using 500 pediatric nebulization patients from January 2024 to January 2025 as samples.

## 2. Materials and methods

### 2.1. Materials

From January 2024 to June 2024, a total of 250 pediatric patients receiving nebulization treatment are given routine care and included in the control group. Meanwhile, from July 2024 to December 2024, another 250 pediatric patients receiving nebulization treatment are given nurses' full humanistic care and included in the observation group. The data of pediatric nebulization patients in the observation group were compared with those in the control group ($P > 0.05$). See Table 1 for details.

**Table 1.** Analysis of data on pediatric patients undergoing nebulization inhalation therapy

| Group | Gender | | | Age(years) | | Disease duration(d) | |
|---|---|---|---|---|---|---|---|
| | | Male | Female | Range | Mean | Range | Mean |
| Observation group | 250 | 140 (56.00) | 110(44.00) | 2–6 | 4.58 ± 0.48 | 3–10 | 6.48 ± 1.25 |
| Control group | 250 | 142 (56.80) | 108(43.20) | 2–7 | 4.61 ± 0.51 | 3–11 | 6.51 ± 1.29 |
| $X^2$/t | - | 0.0325 | | 0.6773 | | 0.6773 | |
| *P* | - | 0.8569 | | 0.4985 | | 0.4985 | |

### 2.2. Inclusion and exclusion criteria

The inclusion criteria in this study are: (1) Respiratory system symptoms such as cough, expectoration, and fever; (2) Family members signed the informed consent; (3) Nebulization therapy.

Meanwhile, the exclusion criteria in this study are: (1) Hepatic and renal dysfunction; (2) Congenital heart disease; (3) Poor mental state.

### 2.3. Methods

#### 2.3.1. Observation group

Nurses provided humanistic care throughout the process, including:

(1) Assessment of the child's condition: Changes in the child's face, respiratory status, and vital signs are observed. It is assessed whether the child has nausea, vomiting, or other adverse reactions to nebulization. Nebulization procedures are gently completed, forced nebulization is avoided, and conditions such as hypoxia are prevented.

(2) Environmental management: The patient's room is ventilated twice daily and is disinfected once daily. A disinfection machine is used for two hours each day to reduce bacteria in the indoor environment. The temperature and humidity of the environment are adjusted to enhance the child's comfort. A quiet state is maintained in the treatment room, and negative distractions such as noise are avoided. The child's anxiety is alleviated to improve the effectiveness of control. The room is checked for dangerous items to prevent

accidental injuries.

(3) Psychological counseling: Children undergoing nebulization are often young, and respiratory diseases can affect their psychological and physical health. Psychological counseling is provided due to the child's young age and limited language ability. For children ≤ 1 year old, physical touch such as hugging, stroking, and comforting is used to soothe them. For children > 1 year old, affirmative and encouraging language is communicated to guide cooperation. During nebulization, attention is diverted using cartoons or small toys. The psychological and emotional needs of parents are also addressed, and they are informed of the expected efficacy of nebulization to enhance their confidence in recovery.

(4) Education: Some parents of children undergoing nebulization may have inadequate knowledge about nebulization. Educational videos and manuals are used to explain the advantages and principles of nebulization to parents. Parents are advised not to apply oily face cream, as it may increase glucocorticoid adherence. Risk factors such as air pollution and smoke are explained, and preventive advice is given to avoid recurrence of the child's condition.

(5) Position guidance: The child's position is adjusted according to breathing difficulty and individual needs to improve comfort. After repositioning, changes in complexion and respiratory status are observed.

(6) Nebulization precautions: The nebulization solution is prepared in advance, and a suitable diluent is selected based on the child's condition, with sterile distilled water being recommended. The child's respiratory tract is cleaned before inhalation, and a sitting position is maintained to help the drug reach the targeted area.

(7) Post-nebulization management: The child's face is cleaned immediately after therapy. For younger children, the mouth is cleaned with a sterile saline swab. Older children are given warm water to gargle. The child's back is gently patted to assist with expectoration.

### 2.3.2. Control group

Nebulization equipment and medication are prepared according to the doctor's instructions. After receiving the nebulization device, the child is assisted into a supine or seated position, and unnecessary distractions are avoided. The medication is placed in the nebulizer, the mask is secured on the child's face, and the nebulization device is turned on. The child is guided to breathe correctly, and the nebulization inhalation time and medication dosage are adjusted based on the child's actual physiological state.

## 2.4. Observation indicators

(1) Child compliance: The child is recorded as compliant if the nebulization procedure is completed without refusal or crying. If mild crying occurs but the child is comforted through body language and encouraging words and is able to cooperate, the case is recorded as partially compliant. If the child cries incessantly and cannot be effectively comforted, the case is recorded as non-compliant.

(2) Symptom indicators: The disappearance time of inflammation, cough, expectoration, fever, and the length of hospital stay are recorded.

(3) Satisfaction: Satisfaction is evaluated using a self-made parental satisfaction scale for pediatric nebulization inhalation care. Scores of >70, 30–70, and <30 are interpreted as satisfaction, basic satisfaction, and dissatisfaction, respectively.

(4) Parental emotion scores: SAS (critical value of 50) and SDS (critical value of 53) are positively correlated

with anxiety and depression among parents of children undergoing nebulization inhalation.

### 2.5. Statistical analysis

Data are processed using SPSS 23.0. Count data (%) are tested using the chi-square test, and measurement data (±s) are tested using the t-test. There is a statistically significant difference with $P < 0.05$.

## 3. Results

### 3.1. Child compliance indicator

The compliance rate of the observation group undergoing nebulization inhalation was 97.22%, which was higher than the 80.56% of the control group ($P < 0.05$). The results are shown in **Table 2**.

**Table 2.** Comparison of child compliance indicators (n,%)

| Group | Compliance | Basic Compliance | Non-compliance | Compliance Rate |
|---|---|---|---|---|
| Observation group (*n*=250) | 148(59.20) | 100(40.00) | 2(0.80) | 248(99.20) |
| Control group (*n*=250) | 100(40.00) | 138(55.20) | 12(4.80) | 238(95.20) |
| $X^2$ | - | - | - | 7.3468 |
| *P* | - | - | - | 0.0067 |

### 3.2. Symptoms and indicators of the patients

The observation group showed shorter disappearance times for inflammation, cough, expectoration, fever, and hospital stay compared to the control group ($P < 0.05$), as shown in **Table 3**.

**Table 3.** Comparison of symptom indicators (d, $\overline{x}$±s)

| Group | Time for Inflammation to Disappear | Time for Cough to Disappear | Time for Expectoration to Disappear | Time for Fever to Disappear | Length of Hospital Stay |
|---|---|---|---|---|---|
| Observation group (*n*=250) | 4.39 ± 0.42 | 4.49 ± 1.09 | 4.69 ± 0.69 | 4.09 ± 0.42 | 9.36 ± 1.06 |
| Control group (*n*=250) | 6.91 ± 0.59 | 6.42 ± 1.72 | 6.58 ± 0.83 | 6.15 ± 0.58 | 11.11 ± 1.42 |
| *t* | 55.0171 | 14.9860 | 27.6866 | 45.4845 | 15.6150 |
| *P* | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 3.3. Parent satisfaction indicators

The observation group had a higher parent satisfaction rate of 97.22% for nebulized inhalation compared to 83.33% in the control group ($P < 0.05$), as shown in **Table 4**.

**Table 4.** Comparison of parent satisfaction indicators (n,%)

| Group | Satisfied | Basically satisfied | Dissatisfied | Satisfaction rate |
|---|---|---|---|---|
| Observation group (*n*=250) | 138(55.20) | 110(44.00) | 2(0.80) | 248(99.20) |
| Control group (*n*=250) | 110(44.00) | 126(50.40) | 14(5.60) | 236(94.40) |
| $X^2$ | - | - | - | 9.2975 |
| *P* | - | - | - | 0.0023 |

## 3.4. Parent emotional scores

After nursing, parents of pediatric nebulized inhalation patients in the observation group had lower anxiety (SAS) and depression (SDS) scores compared to the control group ($P < 0.05$). The results are illustrated in **Table 5**.

**Table 5.** Comparison of parent emotional scores ($\bar{x} \pm s$)

| Group | SAS(score) | | SDS(score) | |
|---|---|---|---|---|
| | Before nursing | After nursing | Before nursing | After nursing |
| Observation group (*n*=250) | 54.11 ± 2.36 | 36.21 ± 1.21 | 55.26 ± 2.41 | 35.42 ± 1.28 |
| Control group (*n*=250) | 54.09 ± 2.37 | 43.58 ± 1.45 | 55.31 ± 2.39 | 44.16 ± 1.39 |
| *t* | 0.0945 | 61.7036 | 0.2329 | 73.1336 |
| *P* | 0.9247 | 0.0000 | 0.8159 | 0.0000 |

# 4. Discussion

Respiratory diseases are common inflammatory conditions in pediatrics, often associated with immune system dysfunction. These diseases lead to an increase in inflammatory cells in the airways, such as histamine and interleukin levels, which can induce pathological changes like increased mucus secretion, airway mucosal edema, and airway stenosis. As the disease progresses, symptoms such as paleness, chest tightness, cough, and dyspnea may arise, affecting the child's normal life and necessitating prompt hospitalization for treatment [3]. Clinically, nebulized inhalation therapy is commonly used to treat pediatric respiratory diseases. The nebulized drug solution is delivered to the lungs in microscopic particles through the respiratory tract, suppressing airway inflammation and relieving bronchial spasms. This approach reduces drug distribution in non-diseased areas, thereby lowering the risk of adverse drug reactions [4]. However, due to their young age, children often cannot effectively cooperate with nebulization procedures. Therefore, nursing intervention is essential during nebulization therapy. Conventional nursing primarily focuses on completing nebulization procedures and alleviating symptoms, overlooking the individualized needs of patients. As clinical nursing concepts continue to evolve, the nurse-led humanistic care model has gradually matured. This model prioritizes patients receiving nebulized inhalation therapy, providing efficient services that improve patient compliance and reduce nurse-patient disputes [5].

Based on the data analysis in this article, the compliance rate of the observation group receiving nebulization inhalation was 97.22%, which was higher than the control group's 80.56%, with $P < 0.05$. Analyzing the reasons, children may feel anxious and scared when entering an unfamiliar environment for medical treatment. During the entire process of humanistic nursing care, nurses comfort young children through physical contact and older children through encouraging words and playing cartoons, which can alleviate their negative emotions. Emphasis

on environmental management, such as daily disinfection, ventilation, and adjustment of temperature and humidity in the ward, can reduce children's resistance to the medical environment and further improve their compliance [6]. Another set of data shows that the disappearance time of inflammation, cough, phlegm, fever, and hospitalization time in the observation group were shorter than those in the control group, with $P < 0.05$. This is because nurses focus on the actual physiological and psychological needs of children during the entire process of humanistic nursing care, which can reduce their struggling and crying, and avoid problems such as interrupted nebulization and wasted medicine due to low treatment compliance, thereby shortening the time for various symptoms to subside [7].

Another set of data indicates that the satisfaction rate of parents of children receiving nebulization inhalation in the observation group was 97.22%, which was higher than the control group's 83.33%, with $P < 0.05$. This is because nurses provide a comfortable medical environment for children receiving nebulization therapy, reduce their fear and anxiety towards the unfamiliar medical environment, and comfort them in various ways according to their age during the nebulization process, which can shift their attention away from the procedure, eliminate their nervousness, and improve their compliance. Emphasis on ward environment management can also enhance the comfort of children during their visit, resulting in high satisfaction among parents [8]. The final set of data reveals that the SAS and SDS scores of parents in the observation group were lower than those in the control group, with $P < 0.05$.

Children are special types of patients who may fear unfamiliar environments, be mischievous, shy, sensitive, and have limited understanding of their own illnesses and nebulization therapy. Resistance to treatment during the therapy process can exacerbate negative emotions among parents, which is not conducive to a good doctor-patient relationship [9]. Implementing a comprehensive humanistic nursing care strategy allows nurses to assess the child's respiratory status, facial changes, monitor vital signs, observe adverse reactions, and perform gentle operations, thereby establishing a good nurse-patient relationship. Nurses fully understand the child's mental and pathological states, comfort them emotionally, and urge them to cooperate with respiratory disease treatment, thus alleviating parents' negative emotions [10].

## 5. Conclusion

In summary, the implementation of comprehensive humanistic nursing care for children receiving nebulized inhalation can improve lung function, shorten the duration of illness, increase parental satisfaction, and enhance children's cooperation with nebulization procedures. This approach has significant value for promotion in clinical practice.

## Disclosure statement

The authors declare no conflict of interest.

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