

# *Clinical effect of personalized nursing model in the care of children with Mycoplasma pneumoniae infection*

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**Abstract:** This paper aims to explore the clinical effects of personalized care model in the care of children with M. pneumoniae infection. In February 2022-February 2023, our hospital selected 80 children with M. pneumoniae infection as the study subjects. According to the principle of randomization, the patients were divided into two groups: 40 cases in the observation group and 40 cases in the control group. The control group received routine nursing mode, while the observation group received personalized nursing mode. We then compared the treatment efficiency, disappearance of clinical symptoms, hospitalization time, and the incidence of adverse reactions between the two groups. The results showed that the treatment efficiency of the observation group was higher than that of the control group, and the difference was statistically significant ( $p < 0.05$ ). Additionally, the disappearance time of clinical symptoms such as shortness of breath, expectoration, lung rales, and normalization of white blood cell (WBC) count were shorter in the observation group compared to the control group ( $p < 0.05$ ). Furthermore, the incidence of adverse reactions in the observation group was lower than that of the control group, and the difference was significant ( $p < 0.05$ ). This paper concludes that, for children with mycoplasma pneumoniae infection, personalized care mode can improve the treatment effect, quickly relieve clinical symptoms, reduce the incidence of adverse reactions, and have clinical use value.

## 1. Introduction

Mycoplasma pneumoniae is a Gram-negative bacterium that is one of the common pathogens that cause pneumonia in children[1]. The pathogen can be transmitted through the air, children after infection can appear fever, cough, shortness of breath and other symptoms of symptoms, serious can lead to respiratory failure, heart failure and other complications[2]. The child has a rapid onset, rapid progress, and diverse clinical manifestations. In the early stage of the disease, there may only be mild cough and low fever, but with the progression of the disease, severe cough, high fever, dyspnea and other symptoms can appear, and may also lead to pleural effusion, atelectasis and other complications, causing serious impact on the health of children. In clinical treatment, due to the young age of the children, the heart is not mature, resulting in poor treatment compliance, will inevitably affect the treatment effect. Reasonable nursing measures can effectively alleviate the symptoms of children, reduce the risk of complications, improve the degree of cooperation, and

then promote the recovery of children[3]. With the continuous improvement of clinical requirements for nursing work, nursing means are also diversified. This paper aims to explore the application effect of personalized nursing mode in the nursing of such children, in order to provide a basis for clinical nursing practice. It is reported as follows.

## 2. Data and methods

### 2.1 General information

A total of 80 cases were included in this survey, which were randomly selected from February 2022 to February 2023 in our hospital. According to the random number table method, the children were divided into two groups: observation and control group, with 40 cases in each group. In the observation group, 22 males and 18 females, age range 2-9 years, mean age ( $4.32 \pm 0.52$ ), 4-13 days, mean ( $5.58 \pm 1.03$ ) days; 21 males and 19 females, aged between 3-10 years, mean ( $5.32 \pm 1.11$ ), 5-12 days, mean ( $5.23 \pm 1.15$ ) days; general data including gender and age ( $p > 0.05$ ), with good comparability.

Inclusion criteria: (1) the child is 3 months to 12 years; (2) the child has stable condition with no serious complications, and can accept and cooperate with nursing measures; (3) the parents or legal guardian agrees the child to participate in the study and sign the informed consent.

Exclusion criteria: (1) the child has heart disease, kidney disease, immune system disease and other diseases that may affect the study results; (2) the child has known allergic reactions to the drugs and materials that may be used in the study.

### 2.2 Methods

After admission, the children in both groups were given routine anti-infection, expectorant and fever, cough and asthma. The control group provides routine nursing, mainly for the children's condition, such as environmental nursing, condition monitoring, medication guidance, notice of attention and other basic nursing contents; the specific nursing methods given by the observation group are as follows:

#### 2.2.1 Disease condition monitoring



Figure 1: Medical staff conducted a physical examination of the child

The hospital staff should conduct meticulous temperature monitoring at least four times a day to

observe any abnormal trend of body temperature and persistent high fever in patients. They should also carefully observe the respiratory tract, including the nature of cough, the color and quantity of sputum, and any symptoms of dyspnea. Additionally, regular heart rate and blood pressure monitoring, along with blood oxygen saturation measurement, should be performed to understand the circulation and respiratory function of the child. Lastly, they should closely observe any lung changes and new respiratory symptoms that may arise. As shown in Figure 1.

### 2.2.2 Respiratory tract care

The hospital should maintain indoor air circulation and appropriate humidity to avoid excessive dryness or humidity, thus reducing the risk of respiratory infection. It should also guide children in effective coughing techniques, including correct cough posture and breathing skills, to facilitate the discharge of sputum. Additionally, the hospital should conduct appropriate atomization inhalation treatment based on the children's conditions to dilute sputum and promote its discharge. Finally, regular oral care should be performed to prevent oral infection. As shown in Figure 2.



Figure 2: Nursing staff for the sputum extraction care for the children

### 2.2.3 Dietary management

According to the age, taste, and appetite of children, doctors provide them with a nutritious and digestible diet such as lean meat, fish, vegetables, and fruits, etc. They encourage children to drink more water to maintain water and electrolyte balance and promote sputum discharge. For children with poor appetite, doctors ensure their nutritional intake through a small number of meals. Doctors also pay close attention to the dietary reactions of children, such as food intolerance, and adjust the diet plan in time accordingly.

### 2.2.4 Activities and rest

The hospital should ensure that the children have sufficient rest time, avoid engaging in strenuous activities, reduce physical exertion and respiratory burden. Additionally, based on their individual physical conditions, the hospital should encourage the children to participate in suitable indoor activities, such as walking and stretching, to enhance their physical fitness and immunity. Furthermore, the hospital should regularly change the children's positions to facilitate the discharge of respiratory secretions. Lastly, it is crucial to educate the children and their parents on avoiding exposure to allergens, such as tobacco smoke, pets, flowers, and plants, in order to minimize

respiratory irritation.

### 2.2.5 Psychological support

Nursing staff should communicate with the children with a gentle and friendly attitude, establish a trust relationship, and improve the compliance of the children; To the age and psychological characteristics, use cartoon pictures, toys and other items to provide psychological counseling, to divert their attention to the disease, reduce anxiety and fear; encourage parents to accompany, care for the children, enhance the confidence of some parent-child activities, such as telling stories, drawing, to relieve the psychological pressure of the children. As shown in Figure 3.



Figure 3: Nursing staff to communicate with the children

### 2.2.6 Drug care

Doctors should adjust the dosage according to age and weight to avoid overdose or deficiency. They should closely observe drug efficacy and adverse reactions, such as rash and gastrointestinal reactions, and provide timely treatment when necessary. Additionally, doctors should strengthen medication guidance for children and their parents to ensure that they fully understand the correct usage and precautions of the drugs. Finally, doctors should adopt patient and meticulous communication techniques to explain the necessity of drug treatment and obtain the cooperation of patients and their families.

### 2.2.7 Health education

According to the age characteristics of the children, vivid and vivid education methods, such as animated cards, animated video stories, etc., to make the children easy to understand and accept; the education content mainly includes how to cooperate with the treatment and educate parents, make them understand the causes, symptoms, treatment, preventive measures and nursing skills, inform the parents to pay close attention to the condition changes, master the correct respiratory care methods, such as regularly turning the children, etc. As shown in Figure 4.



Figure 4: Nursing staff to provide health education for the children

## 2.3 Observed indicators

The two groups of children were compared with the following indicators: (1) treatment response rate. After treatment, the child's temperature returned to normal, cough, shortness of breath and other symptoms disappeared, lung rales, significantly decreased, the child's appetite and sleep quality, good mental state, regarded as significant effect; after treatment, the indicators of the child improved, but not reach the standard, regarded as effective; after treatment, the children did not meet the above requirements, or worse, as ineffective; treatment is effective = (effective cases + effective cases) / number of patients  $\times 100\%$  [4]. (2) Time to disappearance and hospitalization of all clinical symptoms. The time of disappearance of clinical symptoms such as shortness of breath, expectoration, lung wet rales, white blood cell (WBC) count and hospital stay were recorded in the two groups. (3) The incidence of adverse reactions. The occurrence of adverse reactions such as nausea, vomiting and rash in the two groups was counted.

## 2.4 Statistical analysis

$\bar{x}$  The data in this experiment were analyzed by SPSS 28.0 software, and the measurement data were shown in  $[\pm s]$  table, the t test, the count data were expressed as percentage, the comparison was chi-square test, and  $p < 0.05$  was considered as significant.

## 3. Results

### 3.1 To compare the treatment response rate between the two groups

The response rate was higher than the control group significantly ( $p < 0.05$ ) as shown in Table 1.

Table 1: Treatment response efficiency comparison of the two groups (n=80)

Divide into groups	Example number	Excellence	Valid	Of no avail	Effective percentage %
Observation group	40	28	11	1	97.50
Control group	40	13	20	7	82.50
$X^2$	-	-	-	-	5.000
P	-	-	-	-	0.025



### 3.2 Compare the disappearance time of various clinical symptoms and the time of hospitalization between the two groups

In the observation group, the duration of shortness of breath, expectoration, lung wet rales, WBC count and hospital stay were shorter than that of the control group, and the comparison difference was significant ( $p < 0.05$ ), as shown in Table 2.

Table 2: Comparison of time of disappearance and hospital stay between the two groups ( $\bar{x} \pm s$ , d)

Divide into Groups	Example number	Breathe hard	Expectoration	The lungs are wet	WBC count	Length of stay
Observation group	40	5.15±1.33	5.20±1.11	6.18±1.34	5.21±1.12	8.45±1.04
Control group	40	10.12±2.34	12.05±1.45	12.57±1.35	7.16±1.34	13.15±1.58
T	-	11.678	23.725	21.247	7.062	15.715
P	-	0.000	0.000	0.000	0.000	0.000

### 3.3 Compare the incidence rate of adverse reactions in the two groups

The incidence of adverse reactions in the observation group was lower than that in the control group, and the comparison difference was significant ( $p < 0.05$ ), shown in Table 3.

Table 3: Comparison of the incidence of adverse reactions in the two groups (n=80)

Divide into groups	Example number	Feel like vomiting	Vomit	Erythra	Incidence %
Observation group	40	1	0	0	2.50
Control group	40	3	2	1	15.00
X <sup>2</sup>	-	-	-	-	3.913
P	-	-	-	-	0.047

## 4. Conclusion

M. pneumoniae infection is a clinically common respiratory disease, and its incidence is higher in children, especially during periods of alternating seasons and variable climate<sup>[5]</sup>. In clinical treatment, comprehensive treatment needs to consider the condition, age and other factors for comprehensive treatment. However, in the actual treatment process, children are weak to perceive and self-manage the disease, which requires the active participation of parents and caregivers<sup>[6]</sup>. However, parents' cognition of the disease is obviously insufficient, leading to delayed treatment or improper care, thus affecting the treatment effect<sup>[7]</sup>. In addition, the emotional state of children will also affect the treatment effect, anxiety, fear and other emotions may aggravate the symptoms of children, affect the treatment effect. Therefore, in the clinical nursing work, children should be given scientific and effective nursing intervention to promote the rehabilitation of children. Personalized nursing is a kind of nursing centered on children, according to the age, condition, family background and other factors, develop targeted nursing plan, it can better meet the needs of children and families, improve the treatment effect, reduce the risk of disease recurrence<sup>[8]</sup>. In this nursing mode, nursing staff will make targeted nursing plans according to the age, condition and other factors, which not only pay attention to the physiological needs of children, but also pay

attention to the psychological needs of children, so as to help children to establish a positive treatment attitude and improve the treatment effect<sup>[9]</sup>.

The survey data show that the observation group of children in the treatment efficiency, the clinical symptoms disappear time, hospital stay and adverse reactions are better than the control group ( $p < 0.05$ ), shows that the nursing mode can improve treatment efficiency, shorten the clinical symptoms disappear time and hospital stay, reduce the incidence of adverse reactions. First of all, the nursing mode pays attention to the individual differences of children, according to the age, condition, personality and other characteristics of children, the development of nursing plans, comprehensive attention to the physical and mental needs of children, so as to better meet the needs of children and families, improve the treatment effect<sup>[10-11]</sup>. Secondly, the nursing model emphasizes the close communication and cooperation between the nursing staff and the children and their parents. Nursing staff will actively communicate with children and parents, answer their questions, provide professional nursing guidance, and conduct comprehensive health education for children and parents, so as to improve children and parents' cognition of the disease and self-management ability, help the rehabilitation of children, shorten the length of hospitalization<sup>[12]</sup>. In addition, because the children and their parents have an in-depth understanding of the condition and drugs, can adjust the drug dosage according to the situation of the children, with diet, respiratory care and other precautions, can avoid unnecessary adverse reactions, to ensure the safety of treatment<sup>[13-14]</sup>.

In conclusion, the personalized nursing model has achieved remarkable results in the nursing of children with mycoplasma pneumoniae infection, and can be applied in clinical practice.

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