

# THERAPEUTIC EFFECT OF ANTIBIOTIC COMBINATION WITH CHILD CHIQIAO QINGRE GRANULES IN CHILDREN WITH RESPIRATORY INFECTIONS

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**Abstract.** To evaluate the effectiveness of Child Chiqiao Qingre Granules combined with antibiotic management in treating children with acute cough and respiratory infections, this study enrolled 138 pediatric patients from August 2023 to December 2024. Participants were randomly divided into three groups: an antibiotic-only group (n=45), a Child Chiqiao Qingre Granules-only group (n=45), and a combined therapy group (n=48). Written informed consent was obtained from all guardians. Data collection focused on clinical outcomes, including recovery rates, symptom improvement times, and adverse reactions, while comparing the therapeutic effects across groups. The combined therapy group demonstrated the highest recovery rate ( $P<0.05$ ) and fastest symptom resolution, particularly for fever, cough, rhinorrhea, and loss of appetite ( $P<0.05$ ). Symptom improvement occurred earlier in the antibiotic-only group compared to the Child Chiqiao Qingre Granules-only group ( $P<0.05$ ). Antibiotic usage was significantly reduced in the combined therapy group compared to the antibiotic-only group ( $P<0.05$ ). Adverse reactions were less frequent in the combined therapy group (2.08%) compared to the antibiotic-only group (11.11%), with no severe complications observed. Parental satisfaction was highest in the combined therapy group, with significantly lower dissatisfaction rates compared to other groups ( $P<0.05$ ). These findings suggest that combining Child Chiqiao Qingre Granules with antibiotics may improve therapeutic outcomes, reduce adverse reactions, and enhance patient satisfaction in managing acute cough and respiratory infections in children.

**Keywords:** acute cough, child Chiqiao Qingre granules, antibiotic stewardship, pediatric pharmacology, traditional medicine integration, pediatric medicine

## Introduction

Acute cough and respiratory infection are common diseases in children (Lin et al., 2022; Deng et al., 2023) and are widely distributed around the world. These illnesses caused by a virus or bacteria, presenting the symptoms of an upper respiratory infection such as cough, runny nose and sore throat. Because children's immune systems are not fully developed, they are particularly vulnerable to the pathogens mentioned above, making them high-risk patients. Therefore, the treatment of acute cough and respiratory infections, especially in children, has been the focus of the medical community and parents. Antibiotics are commonly used in clinical treatment, especially for children with bacterial infection (Baima et al., 2022). However, since viral respiratory infections are also more common, antibiotic abuse and overuse have led to a series of problems, such as increased bacterial resistance and increased risk of adverse reactions (Xiong et al., 2021). Therefore, the search for more safe and effective treatment, especially the possibility of traditional Chinese medicine treatment, has become a current research

hotspot. As a traditional Chinese medicine preparation, child Chiqiao Qingre granules have a history of hundreds of years and have been widely used in the clinical practice of traditional Chinese medicine in the treatment of acute cough and respiratory infection in children. Child Chiqiao Qingre Granules is a traditional Chinese medicine preparation with a long history of application, which is traditionally used to treat respiratory diseases such as cold and cough caused by wind-heat invading the surface, phlegm-heat accumulation of lung syndrome. Modern pharmacological studies have shown that the drug has many pharmacological effects: antiviral components can inhibit viral replication, antibacterial components can kill pathogenic bacteria, anti-inflammatory components can reduce inflammation, immune regulation components can enhance the body immunity. The main components of this medicine are honeysuckle, forsythia, peppermint, etc., which has the effect of clearing heat and detoxifying, dispersing wind-heat, eliminating phlegm and relieving cough. It is especially suitable for the clinical treatment of respiratory tract infection in children, and the incidence of adverse reactions is low (Zheng et al., 2022; Zhou et al., 2022). Compared with antibiotic treatment, Child Chiqiao Qingre Granules have the following potential advantages: they can effectively remove pathogens such as viruses and bacteria, improve inflammatory response, and regulate immunity. Compared with other traditional Chinese medicine preparations, this drug has the characteristics of classic prescription, precise curative effect and less adverse reactions. Compared with the current commonly used western medicine preparations, the drug can effectively shorten the course of disease and promote the comprehensive recovery of children (Wang et al., 2022; Chen et al., 2022; Xia et al., 2022). However, there is still a lack of sufficient clinical evidence to support the efficacy and safety. Existing studies have shown that the combination of traditional Chinese medicine and antibiotics has unique advantages in the treatment of respiratory infections, but there is still a gap in the study of children. In particular, the synergistic mechanism of antibiotics and traditional Chinese medicine preparations Child Chiqiao Qingre Granules remains to be clarified, and the clinical efficacy and safety evaluation of them in children with respiratory tract infections still need to be further studied. The aim of this study is to investigate the effect of antibiotic management on the therapeutic effect of Qiaoqing Heat Granules in children with acute cough and respiratory infections. Specifically, this study seeks to address the gap in current research by exploring the combined use of antibiotics and traditional Chinese medicine in pediatric respiratory infections, particularly focusing on the safety, efficacy, and optimization of this integrative approach. By examining how antibiotics and Qiaoqing Heat Granules interact and complement each other in alleviating symptoms and improving outcomes, this research aims to provide a safer and more effective treatment plan for clinical practice. Additionally, the study seeks to optimize treatment strategies for acute cough and respiratory infections in children, while further exploring the application of this integrative approach in pediatric diseases. This work is expected to provide more scientific evidence for the use of traditional Chinese medicine in pediatric treatment and to safeguard children's health.

## **Materials and methods**

### ***General information***

A total of 138 children with acute cough and respirator infection treated in the department of pediatrics in our hospital from August 2023 to December 2024 were

recruited as the study objects. Their age ranged from 1 to 7 years old, with an average age of  $4.36 \pm 1.17$  years old, including 68 male children and 70 female children. According to the treatment regimen, the children were divided into the following three groups, antibiotic group (n=45), Child Chiqiao Qingre granule group (n=45) and the combined treatment group (n=48). Children were randomly assigned to the treatment group or the control group according to the random number table method, and the random number was generated by the computer to ensure the fairness and scientificity of the grouping. Equalization analysis was performed according to age, sex, and severity of disease to ensure that baseline characteristics were comparable between the two groups. All guardians of the children were informed of the protocol and signed an informed consent form.

Child Chiqiao Qingre Granules are produced by Jichuan Pharmaceutical Group Co., LTD., and the approval number is Z20123090. The preparation process includes the processing, extraction, concentration, drying and other standardized steps to ensure the stability of product ingredients and quality control. All batches of products are subject to strict quality control and active ingredient content determination. Each batch of products is accompanied by a quality inspection report, and the same production batch number is used in the study to reduce possible differences between batches and ensure the stability and reliability of the study results.

#### *Enrollment criteria*

patients age ranged from 1 to 10 years old. They had acute cough and respiratory infections tested for etiology by throat swab or nasopharyngeal swab sampling; And they also had such symptoms as cough, runny nose, fever and so on; Importantly, they did not have obvious heart, lung, kidney and other organ function damage diseases; Lastly, they volunteered to participate in the study and signed an informed consent form.

#### *Exclusion criteria*

Firstly, Children suffered from severe heart disease, pulmonary infectious diseases, and immune system abnormalities, etc. Secondly, Children were on long-term use of antibiotics or immunomodulators. Thirdly, children were allergic to Child Chiqiao Qingre granules or antibiotics. Lastly, the guardians refused to sign informed consent.

#### *Medical ethics issues*

This study had been approved by the Ethics Committee of our institution, and all procedures complied with ethical norms and regulations. The guardians signed the written informed consent before being included in the study.

### **Methods**

#### *Drug intervention*

In the antibiotic group, amoxicillin was taken orally 30 mg/kg three times a day for 7 consecutive days. Amoxicillin was chosen because it is the antibiotic of choice for children with acute cough and respiratory infections. And at current levels of moderate resistance, most susceptible biological dose options should be covered, in line with domestic prescribing guidelines for children, to achieve a minimum inhibitory concentration of about 1.5. At levels greater than the minimum inhibitory concentration,

no less than 5 days of treatment is required to achieve bacterial eradication. The 7-day course was chosen with poor adherence in mind and for practical reasons to match current practice at the start of the study to gain greater acceptance by clinicians and parents. The medication scheme of Child Chiqiao Qingre Granules is adjusted individually based on the age, weight and severity of the disease to ensure the safety and effectiveness of medication. The specific dosage is as follows: under 1 year of age, take 0.5 to 1 bag each time, 3 times a day; 1 to 1.5 bags for 1 to 3 years, 3 times a day; 4 to 6 years old 1.5 to 2 bags per time, 3 times a day; 7 to 12 years old 2 to 3 bags per time, 3 times a day. The combined treatment group was given antibiotics and Child Chiqiao Qingre granules at the same time, and the dosage was halved for 7 days. In the course of treatment, the doctor will adjust the dosage according to the actual situation of the child, and give antibiotics or stop the drug if necessary. After the end of medication, the average dosage of antibiotic was measured, which was the total amount of medication use or the number of children.

### *Recording process*

Parents used an effective daily diary to record the child's symptoms and daily activities. The diary recorded the severity and duration of such symptoms as cough, nasal congestion or runny nose, disturbed sleep, general feeling unwell, fever, and interference with normal activities. The primary outcome refers to the duration of symptoms, as previously used in the acute lower respiratory infection study, recorded in a daily diary for up to 28 days until symptoms resolve, and the secondary outcome refers to the severity of symptoms, such as cough, phlegm, nasal congestion or runny nose, fever, and interference with normal activities. Total symptom duration refers to the time from the onset of symptoms until symptoms begin to resolve. If new or worsening symptoms or complications, side effects including allergies, diarrhea, rashes, or nausea happened, please visit the doctor again.

### *Criteria for symptom improvement*

Cough symptoms alleviation consists of three aspects: recovery refers to the complete disappearance of cough symptoms and the absence of coughing in the child. Remarkable efficiency indicates a significant reduction in cough symptoms, as well as a significant reduction in the frequency and intensity of coughing. Complete improvement indicates that cough symptoms have enhanced, but have not yet been completely relieved.

Dyspnea improvement includes three aspects: recovery refers to the complete disappearance of dyspnea, and the child's breathing is normal. The remarkable effect indicates that the dyspnea is significantly reduced, and the respiratory rate and depth return to normal. Complete improvement indicates the improvement in breathing difficulties, but not complete remission.

### *Satisfaction questionnaire*

A satisfaction questionnaire was designed for the clinical treatment effect, symptom improvement time and related adverse reactions. The results of the survey will help healthcare organizations understand patient feedback on different drug regimens and provide references for improving treatment regimens and increasing patient satisfaction. In order to ensure the effectiveness of the questionnaire, the age and understanding

ability of patients were fully considered in the questionnaire design, and the opinions of both children and guardians were integrated when filling in the questionnaire.

### Statistical analysis

SPSS20.0 statistical software was used in this study. The measurement data were expressed as "mean  $\pm$  standard deviation" ( $\pm$ s). One-way analysis of variance was used for inter-group comparison, and LSD-t test was used for inter-group comparison. The statistical data were expressed as percentage (%) and  $\chi^2$  analysis was used for comparison among groups.  $P < 0.05$  meant that the difference was statistically significant.

## Results

### Statistics of general data of children

According to the general information of the patients, the ratio of the male to female in the antibiotic group was 19:25, with an average age of  $4.49 \pm 1.08$  years old, an average height of  $97.45 \pm 12.55$  cm, an average weight of  $16.35 \pm 2.44$  kg, and an average disease duration of  $2.14 \pm 0.53$  d. the ratio of the male to female in the Child Chiqiao Qingre Granules group was 25:20, with an average age of  $4.35 \pm 1.16$  years, an average height of  $102.56 \pm 10.31$  cm, an average weight of  $16.35 \pm 2.44$  kg, and an average disease course of  $2.14 \pm 0.53$  d. the ratio of the male to female in the combined treatment group was 24:24, with an average age of  $4.55 \pm 1.21$  years, an average height of  $99.63 \pm 10.42$  cm, an average weight of  $16.67 \pm 2.15$  kg, and an average disease course of  $2.25 \pm 0.51$ . There was no significant difference in general information among the groups of children ( $P > 0.05$ ) (Table 1).

**Table 1.** Statistics of general data of children ( $\bar{x} \pm s$ )

Items	Antibiotic group (n=45)	Child Chiqiao Qingre Granules Group (n=45)	Combined Treatment Group (n=48)	F Value	P Value
Sex (Male: Female)	19: 25	25: 20	24:24	6.035	0.442
Age (Years)	4.49 $\pm$ 1.08	4.35 $\pm$ 1.16	4.55 $\pm$ 1.21	3.112	0.502
Height (cm)	97.45 $\pm$ 12.55	102.56 $\pm$ 10.31	99.63 $\pm$ 10.42	4.201	0.372
Weight (kg)	16.35 $\pm$ 2.44	17.48 $\pm$ 2.23	16.67 $\pm$ 2.15	1.7914	0.216
Course of Disease (d)	2.14 $\pm$ 0.53	2.36 $\pm$ 0.64	2.25 $\pm$ 0.51	2.553	0.308

### Comparison of prognosis and therapeutic effect of children

According to relevant clinical treatment standards, the treatment effects of each group of children were compared. In the antibiotic group, 13 cases were cured, 24 cases had remarkable effects and 8 cases showed complete improvement in symptoms. In Child Chiqiao Qingre Granules group, 18 cases were cured, 21 cases had remarkable effects, and 6 cases were completely improved. In the combined treatment group, 29 cases were cured, 16 cases had remarkable effects, and 3 cases were improved completely. The recovery rate of the combination treatment group was higher than that of the antibiotic group and Child Chiqiao Qingre Granule group ( $P < 0.05$ ), while the remarkable efficiency and symptom improvement rate of the combination treatment

group were lower than those of the antibiotic group and Child Chiqiao Qingre Granule group ( $P < 0.05$ ). The recovery rate of Child Chiqiao Qingre Granule group was higher than that of the antibiotic group ( $P < 0.05$ ), and there was no difference in remarkable efficiency and symptom improvement rate between Child Chiqiao Qingre Granule group and the antibiotic group ( $P > 0.05$ ). Considering that the treatment group showed the highest recovery rate, this means that children are more likely to recover in a shorter period of time, thus reducing the risk of treatment failure and disease persistence (Table 2).

**Table 2.** Comparison of prognosis and therapeutic effect of children ( $\bar{x} \pm s$ )

Effects	Cure Rate (%)	Remarkable Efficiency Rate (%)	Improvement Rate (%)
Antibiotic Group (n=45)	13 (28.89%)	24 (53.33%)	8 (17.78%)
Child Chiqiao Qingre Granules Group (n=45)	18 (40.00%)	21 (46.67%)	6 (13.33%)
Combined Treatment Group (n=48)	29 (60.41%)	16 (33.33%)	3 (6.26%)
$\chi^2$ Value	13.228	10.471	9.225
P Value	0.001	0.001	0.001

### Comparison of improvement time of clinical symptoms in children

The improvement time of clinical symptoms in each group was statistically compared. The improvement time of fever, cough, runny nose and loss of appetite in combined treatment group was shorter than that in antibiotic group and Child Chiqiao Qingre granule group ( $P < 0.05$ ). The improvement time of fever, cough, runny nose and loss of appetite in antibiotic group was shorter than that in Child Chiqiao Qingre granule group ( $P < 0.05$ ). In the treatment group, the time to improvement of symptoms in terms of fever, cough, runny nose and decreased appetite was significantly shorter, indicating that the children were able to return to daily life more quickly and reduce the burden of parental care (Table 3).

**Table 3.** Comparison of improvement time of clinical symptoms in children ( $\bar{x} \pm s$ )

Effects	Antipyretic Time (h)	Improvement Time of Cough and Runny Nose (h)	Improvement Time for Loss of Appetite (h)
Antibiotic Group (n=45)	34.51±2.58	40.25±4.41	44.19±3.22
Child Chiqiao Qingre Granules Group (n=45)	39.26±2.42	47.63±4.56	49.57±3.25
Combined Treatment Group (n=48)	27.34±1.67	36.51±3.72	40.26±2.86
F Value	24.206	20.564	19.335
P Value	0.001	0.001	0.001

### Comparison of antibiotic usage

The average usage of antibiotics in each group was compared. Its usage in antibiotic group was higher than that in Child Chiqiao Qingre granule group and combined treatment group ( $P < 0.05$ ). The average usage in combined treatment group was higher

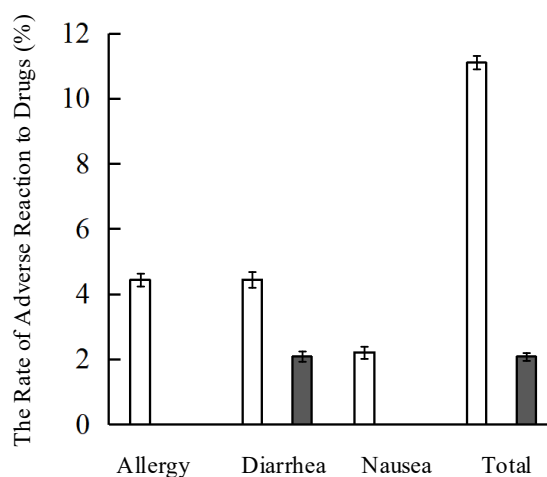
than that in Child Chiqiao Qingre granule group ( $P < 0.05$ ). Antibiotic use was significantly reduced in the treatment group, suggesting potential antibiotic savings and advantages in reducing the risk of antibiotic resistance, while also potentially reducing treatment costs (Table 4).

**Table 4.** Comparison of average usage of antibiotic ( $\bar{x} \pm s$ )

Group	Antibiotic Usage (mg)
Antibiotic Group (n=45)	225.46±16.58
Child Chiqiao Qingre Granules Group (n=45)	4.26±1.36
Combined Treatment Group (n=48)	68.35±5.29
F Value	35.539
P Value	0.001

### Analysis of adverse reactions to drug in children

According to the analysis of adverse reactions, two children were allergic to antibiotic, two children got struck in diarrhea and one child felt nausea in the antibiotic group. The rate of adverse reaction was 11.11%. There was no antibiotic allergy in Child Chiqiao Qingre granule group. In the combined treatment group, one child got struck in diarrhea and the rate of adverse reaction was 2.08%. The rate of adverse reaction in antibiotic group was higher than that of Child Chiqiao Qingre granule group and combined treatment group ( $P < 0.05$ ). The treatment group showed a lower incidence of adverse reactions, which underscores the safety advantage of this treatment regimen and reduces the discomfort and complications that children and their families may experience during treatment (Figure 1, Table 5).



**Figure 1.** Analysis of adverse reactions to drug in children (the white columns are the antibiotic group; the gray columns are Child Chiqiao Qingre Granules group; the black columns are the combined treatment group)

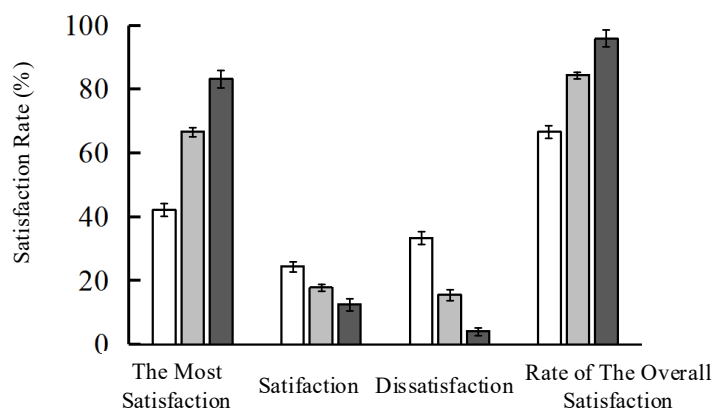
### Analysis of satisfaction rate

It was found that the most satisfaction rate and overall satisfaction rate in the combined treatment group were higher than those of the antibiotic group and the Child

Chiqiao Qingre granule group ( $P < 0.05$ ). The dissatisfaction rate in combined treatment group was lower than that of antibiotic group and Child Chiqiao Qingre granule group ( $P < 0.05$ ). The most satisfaction rate and total satisfaction rate in Child Chiqiao Qingre granule group were higher than those of antibiotic group ( $P < 0.05$ ). The dissatisfaction rate in Child Chiqiao Qingre granule group was lower than that of antibiotic group ( $P < 0.05$ ) (Figure 2, Table 6).

**Table 5.** Analysis of adverse reactions to drug in children ( $\bar{x} \pm s$ )

Group	Allergy (%)	Diarrhea.(%)	Nausea (%)	Total (%)
Antibiotic Group (n=45)	2 (4.44%)	2 (4.44%)	1 (2.22%)	5 (11.11%)
Child Chiqiao Qingre Granules Group (n=45)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Combined Treatment Group (n=48)	0 (0.00%)	1 (2.08%)	0 (0.00%)	1 (2.08%)
$\chi^2$ Value	2.115	3.048	1.663	13.228
P Value	0.156	0.557	0.493	0.014



**Figure 2.** Analysis of satisfaction rate (the white columns are the antibiotic group; the gray columns are Child Chiqiao Qingre Granules group; the black columns are the combined treatment group)

**Table 6.** Analysis of satisfaction rate ( $\bar{x} \pm s$ )

Effects	The Most Satisfaction (%)	Satisfaction (%)	Dissatisfaction (%)	Rate of The Overall Satisfaction (%)
Antibiotic Group (n=45)	19 (42.22%)	11 (24.46%)	15 (33.33%)	30 (66.67%)
Child Chiqiao Qingre Granules Group (n=45)	30 (66.67%)	8 (17.78%)	7 (15.56%)	38 (84.44%)
Combined Treatment Group (n=48)	40 (83.33%)	6 (12.50%)	2 (4.17%)	46 (95.83%)
$\chi^2$ Value	14.208	11.441	13.684	10.326
P Value	0.015	0.024	0.007	0.003

## Discussion

Acute cough and respiratory infections are common childhood illnesses, usually caused by viruses or bacteria (He et al., 2020; Chen et al., 2021; Li et al., 2022). These pathogens can infect the upper respiratory tract, causing symptoms such as cough, runny nose, and sore throat. Children are particularly vulnerable to these pathogens because their immune systems are not fully developed and they are exposed to other patients or viruses in their daily lives. Acute cough and respiratory infection are especially common in winter and spring (Tian et al., 2022; Wang et al., 2022). Clinically, symptomatic treatment is usually used, such as fever, water retention, rest, etc. Due to patients with more severe symptoms or co-existing bacterial infections, antibiotics may be required (Qi et al., 2023). In addition, some traditional Chinese medicine prescriptions, such as Child Chiqiao Qingre Granules, have been widely used in the treatment of respiratory infections in children and are considered to have certain curative effects (Zhao et al., 2022; Zhang et al., 2022).

This study investigated the effect of combination with antibiotic management and Child Chiqiao Qingre Granules on the treatment of children with acute cough and respiratory infection. Through the comparison of 138 children with three groups of different treatment plans, the rate of therapeutic effect, adverse reactions and satisfaction of each group were analyzed, in order to provide a more scientific reference for clinical treatment. As for the comparison of treatment effect, the study showed that the recovery rate in the combined treatment group was higher than that of the antibiotic group and Child Chiqiao Qingre granules, which means that the combination with antibiotics and Child Chiqiao Qingre granules can treat acute cough and respiratory infection more effectively. In addition, the recovery rate in Child Chiqiao Qingre Granules group was higher than that of the antibiotic group, indicating that it has certain effects in treating respiratory infections in children. The recovery rate of combined treatment group increased due to the complementary effects of the two drugs. Antibiotics have a significant therapeutic effect on bacterial infections, while Child Chiqiao Qingre Granules, as a traditional Chinese medicine, has certain advantages in improving symptoms and enhancing immunity. The combination with the two can comprehensively leverage their respective advantages to improve treatment effectiveness. At the same time, the recovery rate of Child Chiqiao Qingre Granules group was higher than that of the antibiotic group, indicating that it also has certain effects on treating respiratory infections in children. Child Chiqiao Qingre granules is commonly used formulas in traditional Chinese medicine, which contains various effective ingredients and have the effects of clearing heat, detoxifying, antiviral, and enhancing immunity (Yang et al., 2020; Fawzy et al., 2023). Therefore, to a certain extent, they can improve the symptoms, shorten the duration of the disease, and increase the recovery rate.

During the treatment process, the time for fever relief, cough, runny nose, and loss of appetite improvement in the combined treatment group was significantly shortened compared with the antibiotic group and the Child Chiqiao Qingre Granule group. The improvement time of symptoms in the antibiotic group was also shortened compared with that in Child Chiqiao Qingre Granules group. This result indicates that the combined treatment group has a faster improvement in symptoms such as fever reduction, cough, runny nose, and loss of appetite. Here are the following reasons. First, the use of antibiotics can more quickly inhibit the growth and reproduction of infectious pathogens, which can quickly relieve symptoms such as fever, cough, and runny nose.

Secondly, as a traditional Chinese medicine, Child Chiqiao Qingre Granule has a certain effect in the treatment of respiratory infection, but its efficacy may take longer to show. The combination with antibiotics and Child Chiqiao Qingre Granule can give full play to the advantages of both, so symptoms can be improved more quickly. In addition, when it comes to the faster improvement of symptoms in the antibiotic group compared with Child Chiqiao Qingre Granule group, it also need to be further discussed. This may be related to the rapid effect of antibiotics in controlling bacterial infections. However, at the same time, it should be noted that the abuse of antibiotics may lead to the development of antibiotic resistance, so we should be cautious about using it.

In terms of adverse reactions, the combined treatment group performed better while the antibiotic group had the highest incidence. This may be related to the advantages of the combination treatment plan. The combination with antibiotics and Child Chiqiao Qingre Granules can reduce the dosage of antibiotics to a certain extent, thereby reducing the risk of adverse reactions in children. In addition, as a traditional Chinese medicine, Child Chiqiao Qingre Granule usually has lower toxic effects and are relatively mild (Zhang et al., 2022; Huang et al., 2023), so they are relatively safe in treating respiratory infections in children. The higher incidence of adverse reactions in the antibiotic group may be related to the characteristics of antibiotics. Antibiotics are widely used to treat bacterial infections (Cheng, 2021). However, the use of antibiotics may also cause a series of adverse reactions, including allergic reactions, intestinal discomfort, nausea, vomiting, etc. (Wu et al., 2023; Yang et al., 2022). In addition, the abuse and improper use of antibiotics may also lead to the development of antibiotic resistance, resulting in a decrease in the effectiveness of antibiotic treatment (Wang et al., 2022), which is also a cautionary issue. In terms of satisfaction, the most satisfaction rate and overall satisfaction rate in the combined treatment group are higher than that of the other two groups, while the dissatisfaction rate is lower than that of the other two groups. This indicates that patients are more satisfied with the combined treatment due to its good treatment effect and fewer adverse reactions, which are more recognized by children and parents for this plan.

Existing studies have shown that antibiotic reduction strategies have become an important direction for the management of infectious diseases in children worldwide. Several studies have shown that the emergence of resistant strains can be significantly reduced by optimizing the indication and duration of antibiotic use. The results of this study are consistent with this trend, suggesting that it is feasible to gradually reduce unnecessary antibiotic use in the management of febrile illness in children. For the application of pediatric Chinese medicine in child care, the existing literature usually focuses on its safety and effectiveness. Compared with previous studies, this study further verified the clinical effect of Xiaoyer soyqiaoqingre granules in reducing fever and relieving inflammation. The main pharmacological mechanism of this drug is reflected in the comprehensive action of its multiple active components: First, chlorogenic acid and luteolin in the extract of honeysuckle have significant anti-inflammatory and antibacterial activities, which can inhibit the growth of pathogenic microorganisms; Secondly, forsythiin in forsythia plays an anti-inflammatory role by activating the nuclear factor  $\kappa$ B pathway. In addition, the characteristics of saponins in radix platycodi have promote expectoration drainage effect, while the glycyrrhizic acid in glycyrrhiza can effectively relieve a cough. These pharmacological mechanisms explain the clinical effects observed in this study, including shorter time to fever resolution and faster improvement in signs and symptoms. Compared with the existing

literature, the advantage of this study lies in the quantitative evaluation of the clinical efficacy and safety of this Chinese medicine compound preparation through the randomized controlled trial design, which provides new evidence support for the application of Chinese medicine in the antibiotic reduction strategy in children.

According to the comprehensive research in terms of children with acute cough and respiratory infections, the combination with antibiotics and Child Chiqiao Qingre Granules shows significant advantages when it comes to efficacy. The recovery rate of the combination treatment group was significantly higher than that of the two groups, and the symptom improvement time was faster, with a more rapid therapeutic effect. This result indicates that antibiotic management has a significant impact. The study used a single-center design with a relatively limited sample size, which may have some impact on the generality of the findings. Single-center designs can lead to selective bias in patient populations, limiting the applicability of study findings in other healthcare Settings. At the same time, a small sample size may reduce the robustness of statistical results, and future studies need to verify the findings of this study in a larger sample size and more centers. In addition, the observation period of this study was short, and the long-term efficacy and safety of Xiaoer Zhiqiao Qingre granules could not be fully evaluated. The absence of long-term follow-up data may affect the full assessment of the overall value of the drug, especially the potential impact on the growth and development of children. Future studies should consider conducting longer follow-up studies to further validate the long-term safety and efficacy of the drug.

## Conclusion

In a word, this research indicates that the combination with antibiotics and Child Chiqiao Qingre Granules has good therapeutic effects and low adverse reactions in the treatment of acute cough and respiratory infections, so as to achieve high satisfaction. Therefore, in clinical practice to treat respiratory infections in children, the plan can be considered, but the medication plan should be reasonably selected based on the specific situation of the child.

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